ATOMIC ENERGY CENTRAL SCHOOL NO.4 RAWATBHATA

CLASS 12 - ENGLISH CORE Confidence Examination - 1 (2020-21)

Time Allowed: 3 hours

General Instructions:

- 1. This paper is divided into two parts: A and B. All questions are compulsory.
- 2. Separate instructions are given with each section and question, wherever necessary. Read these instructions very carefully and follow them.
- 3. Do not exceed the prescribed word limit while answering the questions.

Section A

1. Read the passage:

Education, no doubt, aims at bringing an all-round development and growth of 'head' and 'hand'. As the years are rolling by, new educationists are propounding new principles and advocating for new systems. But to our great dismay, the latest systems of education have not yielded the desired results. Only a meagre percentage of students who devote themselves to the cause of education is available. But the majority of the students become either 'drop-outs' or 'truants'. They are reluctant to attend their classes. Their growth dwindles on account of some reasons or the other. Out educational authorities should pay their heed to the start reality of the majority of students who are put into the reverse gear and who cannot earn their bread and butter. They become parasites on their aged parents.

They learn languages but they can neither speak nor write correct compositions. Their bright childish imagination is utterly discouraged. Neither the feeling of social service nor love for manual labour is inculcated, among the children. The ethical and aesthetical values were chiefly inculcated among the students in the olden times but not now. 'Sound mind in producing physical, mental, and moral wrecks. It looks like a leap into the darkness of perverted thinking. Modern students make fun of the values of loyalty, integrity, honesty, and perseverance which are the very basis of humanism. They show compassion neither for the animals nor for the aged nor children. The terrorists and the extremists, pick-pockets, and other anti-social elements are the by-products of modern education. The existence of lawmakers and law-abiding people is in danger and the future of civilization is in jeopardy.

On the basis of your understanding of the above passage, answer ANY TEN questions from the eleven given below:

- i. The real education is that _____
 - a. People score good marks
 - b. People get good jobs
 - c. People do not drop out

Maximum Marks: 80

[10]

- d. People have an all-round development
- ii. Despite new principles for education by the educationists _____.
 - a. Desired results are not being achieved
 - b. Great dismay worries one and all
 - c. Students are taking no interests
 - d. Growth is dwindling
- iii. The real concern of our educational authorities should be _____.
 - a. Building more schools to spread education
 - b. Appointing capable teachers
 - c. Keeping an eye on the student from the start
 - d. Preparing new policies for the benefit of students
- iv. The major drawback of the present education is _____
 - a. Students learn languages but can't write
 - b. Students have creative thoughts but can't share
 - c. It does not teach them to have sympathy towards anyone
 - d. It does not inculcate ethical and aesthetical values
- v. In the past students used to _____.
 - a. Respect the values being inculcated in them
 - b. Didn't make fun of the bases of humanism
 - c. Leap into darkness
 - d. Bright childish imagination
- vi. The present-day students lack in basic humanism because _____.
 - a. They aren't compassionate
 - b. They aren't having a sound mind
 - c. They are busy having fun in life
 - d. They don't respect the values of honesty and perseverance
- vii. The present-day system of education has made the students _____.
 - a. Academically exceptional
 - b. parasites on their aged parents
 - c. inhumane and liars
 - d. respectable and compassionate
- viii. Why is the future of civilization in jeopardy?
 - a. Modern Education is ruining lives
 - b. Education has just become a money-oriented field
 - c. Students are becoming terrorists
 - d. Our educational authorities take concern about a child's future
- ix. Find the synonym of "low" in the passage.
 - a. dismay
 - b. meagre
 - c. truants
 - d. heed

- x. Find the synonym of "right" in the passage.
 - a. reality
 - b. reverse
 - c. manual
 - d. ethical
- xi. Find the antonym of "inutility".
 - a. perseverance
 - b. aesthetical
 - c. wrecks
 - d. extremists

2. Read the passage:

Punctuality is a necessary habit in public affairs of a civilized society. Without it nothing could ever be brought to a conclusion, everything would be in a state of chaos. Only in a sparsely populated rural community is it possible to disregard it. In the ordinary living there can be some tolerance of unpunctuality. The intellectual, who is working on some abstruse problem, has everything coordinated and organized for the matter in hand. He is therefore forgiven, if late for the dinner party. But people are often reproached for unpunctuality when their only fault is cutting fine. It is hard for energetic, quick-minded people to waste time, so they are often tempted to finish a job before setting out to keep an appointment. If no accidents occur on the way, like punctured tires, diversion of traffic, sudden descent of fog, they will be on time. They are often more industrious, useful citizens than those who are never late. The over-punctual can as much be a trial to others as the unpunctual. The guest who arrives half an hour too soon is the greatest nuisance. Some friends of my family had this irritating habit. The only thing to do was to ask them to come half an hour later than the other guests. Then they arrived just when we wanted them. If you are catching a train, it is always better to be comfortably early than even a fraction of a minute too late. Although being early may mean wasting a little time, this will be less than if you miss the train and have to wait an hour or so for the next one. And you avoid the frustration of arriving at the very moment when the train is drawing out of the station and being unable to get on it. An even harder situation is to be on the platform in a good time for a train and still to see it go off without you. Such an experience befell a certain young girl the first time she was travelling alone. She entered the station twenty minutes before the train was due since her parents had impressed upon her that it would be unforgivable to miss it and cause the friends with whom she was going to stay to meet her. She gave her luggage to a porter and showed him her ticket. To her horror, he said that she was two hours too soon. She felt in her handbag, for the piece of paper on which her father had written down all the details of the journey and gave it to the porter. He agreed that a train did come into the station at the time on the paper and that it did stop, but only to take on water, not passengers. The girl asked to see a timetable, feeling sure that her father could not have made such a mistake. The porter went to fetch one and arrived back with the station master, who produced it with a flourish and pointed out a microscope 'o' beside the time of the arrival of the train at his station. This little 'o' indicated that the train only stopped for water. Just at that moment, the train came

[10]

into the station. The girl, tears streaming down her face, begged to be allowed to slip into the guard's van. But the station master was adamant: rules could not be broken. And she had to watch that train disappear towards her destination while she was left behind.

On the basis of your understanding of the above passage, answer ANY TEN questions from the eleven given below:

- i. Why is punctuality necessary in a civilized society?
 - a. To avoid chaos
 - b. To cause disregard
 - c. To manage public affairs
 - d. To bring things to a conclusion
- ii. What is the danger of leaving the bare minimum of time for appointments?
 - a. You will be wasting time
 - b. You will be to avoid frustrations
 - c. You will feel comfortable
 - d. You will not have to wait
- iii. The over-punctual can be as much a trial to others as the unpunctual
 - a. He has everything coordinated and organized
 - b. He believes that the early bird gets the worm
 - c. He is wasting as much time as the unpunctual ones
 - d. There is hardly any difference between the unpunctual and over punctual
- iv. Why did the author's family ask some guests to come half an hour later than others?
 - a. His presence is not celebrated
 - b. He always wants first-hand treatment
 - c. He is considered a nuisance
 - d. He is asked to come later so that he arrives when he is wanted
- v. Why according to the author, is it better to the platform before the train arrives?
 - a. You will have time to relax at the station
 - b. It's good to waste some time in life
 - c. It can help you avoid frustrations of work
 - d. It's better than watching the train leave in front of your eyes
- vi. How early did the girl reach the station of her train's actual time of departure?
 - a. Just on time of the train
 - b. 20 minutes before
 - c. 2 minutes before
 - d. 2 hours before
- vii. Who clarified it to the girl that her father had made a mistake?
 - a. Station Master
 - b. Porter
 - c. Timetable
 - d. Her mother

viii. Why the little girl did have tears streaming down her face?

- a. She wanted to reach her destination at the earliest
- b. The station master let her board the train
- c. She had to watch the train come in front of her eyes
- d. Her early-coming made no difference

ix. Find a word opposite in meaning to "clear/obvious" in the passage:

- a. community
- b. abstruse
- c. diversion
- d. industrious
- x. Find a word similar in meaning to "display" in the passage:
 - a. flourish
 - b. nuisance
 - c. timetable
 - d. fetch

xi. Find a word similar in meaning to "inflexible" in the passage:

- a. Over-punctual
- b. energetic
- c. adamant
- d. abstruse

Read the extracts given below and attempt ANY TWO of the three given by answering the [8] questions that follow. (4+4=8)

a) **Read the extract and answer the following questions:**

I have nothing else to do, he mutters, looking away.

"Go to school," I say glibly, realising immediately how hollow the advice must sound.

- i. Who does 'I' in the first line refer to?
 - a. Saheb
 - b. Mukesh
 - c. Savita
 - d. Saheb's father
- ii. What did Saheb do to earn a living?
 - a. Stealing
 - b. Washing clothes
 - c. Working as a domestic help
 - d. Rag picking
- iii. Why does the second speaker think his advice sounded hollow?
 - a. For it would never be accomplished
 - b. For it was senseless
 - c. For it was not trustworthy
 - d. For it was purposeless
- iv. Which word in the extract means 'insincere or superficial'?

- a. Mutter
- b. Advice
- c. Glibly
- d. Hollow

b) **Read the extract and answer the following questions:**

Presently, the landlords learned that Germany had developed synthetic indigo. They, thereupon, obtained agreements from the sharecroppers to pay them compensation for being released from the 15 percent arrangement.

- i. What product was endorsed by Germany?
 - a. Synthetic indigo
 - b. Herbal tea
 - c. Coffee beans
 - d. Synthetic fibre
- ii. What percentage of land were the peasants compelled to plant indigo?
 - a. 50 percent
 - b. 100 percent
 - c. 15 percent
 - d. 33 percent
- iii. What did the British want the peasants to do instead?
 - a. To surrender their lands
 - b. To work for free
 - c. To work at a reduced price
 - d. To compensate for being released from 15 percent arrangement
- iv. What would be the impact of synthetic indigo on the prices of natural indigo?
 - a. Price of natural indigo would fall
 - b. Price of natural indigo would rise marginally
 - c. Price of natural indigo would be doubled
 - d. Price of natural indigo would be stagnant

c) Read the given passage and answer the questions that follow:

- I...there...I thought this was an empty place. I didn't know there was anybody here....
- i. From which lesson, the following excerpt has been taken?
 - a. The Third Level
 - b. The Enemy
 - c. On the Face of It
 - d. Should Wizard hit Mommy
- ii. Who is the speaker of these lines?
 - a. Mr. Lamb
 - b. Susan Hill
 - c. Derry's Mother
 - d. Derry
- iii. With whom, "I" is talking?

- a. Derry's Mother
- b. Derry
- c. Mr. Lamb
- d. Susan Hill
- iv. Why did "I", think that was an empty place?
 - a. I couldn't see anyone there
 - b. I ignored the presence of anyone
 - c. I knew, that place always remains empty
 - d. I was telling a lie
- 4. Read the extracts given below and attempt ANY ONE of the two given by answering the [4] questions that follow. (1 x 4 =4)

a) **Read the extract and answer the following questions:** What I want should not be confused with total inactivity.

Life is what it is about;

I want no truck with death.

- i. What is it that should not be confused with total inactivity?
 - a. Silence
 - b. Lack of desires
 - c. Illness
 - d. Sufferings
- ii. What is life all about?
 - a. Moving forward
 - b. Introspecting deeply
 - c. Attaining our goals
 - d. All of these
- iii. Explain "no truck with death"?
 - a. Silence is not completely associated with death
 - b. No accident with a truck
 - c. Death caused by a truck
 - d. Death caused due to a silent disease
- iv. What should be the aim of our life?
 - a. To walk on a meaningful and purposeful path
 - b. To travel
 - c. To fight our foes
 - d. To reach heights
- b) Read the extract given below and answer the following questions:

All lovely tales that we have heard or read;

An endless fountain of immortal drink.

Pouring unto us from the heaven's brink.

- i. Name the poet of the given stanza.
 - a. John Keats

- b. Pablo Neruda
- c. Stephen Spender
- d. Robert Frost
- ii. What is the thing of beauty mentioned in these lines?
 - a. Trees
 - b. Tales
 - c. Sun
 - d. Daffodils
- iii. What does the immortal drink provide us with?
 - a. Never-ending joy
 - b. Everlasting pleasure
 - c. Beauty that lasts forever
 - d. All of these
- iv. What does the word 'immortal' mean?
 - a. Living forever
 - b. Important

c)

- c. Improved
- d. Living briefly
- 5. Attempt ANY EIGHT questions from the ten given below. (1x 8 = 8)
 - a) In the prose The Last Lesson, France was invaded by which country?
 - a) Prussia b) Russia
 - c) Spain d) Sweden
 - b) What were Roosevelt's famous words as mentioned in the text **Deep Water**?
 - a) A smooth sea never made a b) Above all, try something skilled sailor
 b) Above all, try something d) Peace, like charity, begins at home
 c) All we have to fear is fear itself home
 According to Gandhi, who made an attempt to bully him at Tirhut, as discussed in the text Indigo?
 - a) The British official commissionerb) The magistrateof the Tirhut divisionc) The secretary of the Britishd) The police superintendent's
 - landlord's association messenger
 - d) The poet Kamala Das has described her mother's face **ashen** to display:
 - a) her customary hard work b) her pale face and grey coloured skin
 - c) her inner beauty and charm d) a cloud of dust on her face
 - e) Which poetic device was used by the poet in the phrase, sudden strangeness? (Keeping quiet)

[8]

	a) Transferred Epithet	b) Metaphor
	c) Alliteration	d) Simile
f)	Gandhiji felt that taking Champaran case	to court was useless.
	a) because the peasants were fear - stricken and crushed under the British rulers.	b) because the peasants did not have the money.
	c) because he did not trust the lawyers.	d) because lawyers did not agree to stand by Gandhiji's side.
g)	In the prose The Third Level , what does t	he third level mean to the narrator?
	a) The way to reach his wife	b) The way to a peaceful life
	c) The way to reach his home	d) The way to Galesburg
h)	h) What is that draws Derry towards Mr. Lamb in spite of himself?	
	a) Mr. Lamb's loving words	b) Mr. lamb's nature
	c) Words of motivation	d) Words of encouragement
i)	In the prose Deep Water, where did Willia	am decide to learn to swim as a child?
	a) At the cascades	b) facts
	c) At the Bumping River	d) At the Yakima river
j)	Why did Roger Skunk visit the owl?	
	a) Skunk wanted to his things back	b) To seek his advise
	c) Skunk wanted perfume from owl	d) Skunk was missing him

Section **B**

6. You have a three bedroom flat in Dwarka, which you want to let out on rent. Draft an [3] advertisement in not more than 50 words to be published in 'The Times of India', under classified columns.

OR

Sarvodaya Education Society, a charitable organisation, is coming to your school to distribute books among needy students. As Head Boy/Head Girl, Sunrise Public School, Surat, write a notice in about 50 words asking such students to drop the list of books they need in the box kept outside the Principal's office. You are Navtej/Navita.

Your friend, PV Sathish, has invited you to attend the wedding of his sister, Jaya. You find that [3] you have an important paper of pre-board examination on the day of the wedding. Thus you cannot attend the event. Write in about 50 words a formal reply to the invitation expressing your regret. You are Puneet / Puneeta Vij, M-114, Fort Road, Chennai.

OR

On 15th April, your school is going to hold its annual sports day. You want Mr. Dhanraj Pillai, a noted hockey player to give away the prizes to the budding sportspersons of the school. Write a formal invitation in about 50 words requesting him to grace the occasion. You are Karuna/Karan, Sports Secretary, Sunrise Global School, Agra.

8. After passing the secondary school examination, a candidate has to make a very difficult [5]

choice from a number of streams available to him at the senior school level for further studies. There is not a valid mechanism to assess the suitability of a candidate for a particular stream. Write a letter to the Editor of a national daily emphasising the need for educational counsellors for guidance in this matter in each school. You are Vinita/Vinay, 48, Agra Fort, Agra.

OR

You are Chetan Sharma, a commerce graduate from Delhi University. You are seeking for a suitable job. You came across an advertisement in 'The Times of India', inviting young and dynamic fresh graduates as sales assistants in a reputed company. Apply for the said job to Box No. 8365, C/o The Times of India, New Delhi.

9. The present day youth is greatly stressed due to the cut throat competition and consumerist [5] culture. Write an article in 150-200 words on the causes of the stress on the modern generation suggesting suitable solutions.

OR

You witnessed a fire accident in a slum area near your colony on Saturday night. You were very much disturbed at the pathetic sight. Write a report in 100-125 words for your school magazine. You are Lakshmi/Lakshman, a student of PDK International School, Madurai.

- 10. Attempt ANY FIVE out of the six questions given below, in 30-40 words each. (2x5=10) [10]
 - a) Why will 'counting up to twelve and keeping still' help us achieve?
 - b) Describe the concept of beauty, according to John Keats.
 - c) Whom does Anees Jung blame for the sorry plight of the bangle makers?
 - d) What does the title, 'Lost Spring' convey?
 - e) Why was the crofter happy when the peddler knocked on his door?
 - f) What were the conditions of the sharecroppers of Champaran?
- 11. Attempt ANY TWO out of the three questions given below in 30-40 words each. (2 x2=4) [4]
 - a) Why Hana had to wash the wounded man herself?
 - b) What made Louisa, Charley's wife, believe that the third level was a reality?
 - c) How did the Skunk's mother get his old smell back?
- 12. Attempt ANY ONE of the following questions in 120-150 words (1x5=5)
 - a) What were the unfamiliar sights Franz noticed as he entered the classroom?
 - b) Why did the crofter repose confidence in the peddler? How did the peddler betray that and with what consequence?
- 13. Attempt ANY ONE of the following questions in 120-150 words (1x5=5)
 - a) Derry sneaked into Mr Lamb's garden and it became a turning point in his life. Comment.
 - b) How could Gandhiji emerge successful in the episode of Champaran?

[5]

[5]

Solution

Class 12 - English Core

Confidence Examination - 1 (2020-21)

Section A

- 1. i. (d) People have an all round development
 - ii. (a) Desired results are not being achieved
 - iii. (c) Keeping an eye on the student from the start
 - iv. (d) It does not inculcate ethical and aesthetical values
 - v. (a) Respect the values being inculcated in them
 - vi. (d) They don't respect the values of honesty and perseverance
 - vii. (b) Parasites on their aged parents
- viii. (a) Modern Education is ruining lives
- ix. (b) Meagre
- x. (d) Ethical
- xi. (a) Perseverance
- 2. i. (a) To avoid chaos
 - ii. (b) You will be able to avoid frustrations
 - iii. (c) He is wasting as much time as the unpunctual ones
 - iv. (c) He is considered a nuisance
 - v. (d) It's better than watching the train leave in front of your eyes
 - vi. (d) 2 hours before
 - vii. (a) Station master
- viii. (a) She wanted to reach her destination at the earliest
 - ix. (b) Abstruse
 - x. (a) Flourish
 - xi. (c) Adamant
- 3. Read the extracts given below and attempt ANY TWO of the three given by answering the questions that follow. (4+4=8)
 - a) i. (a) Saheb
 - ii. (d) Rag picking
 - iii. (a) For it would never be accomplished
 - iv. (c) Glibly
 - b) i. (a) Synthetic indigo
 - ii. (c) 15 percent
 - iii. (d) To compensate for being released from 15 percent arrangement
 - iv. (a) Price of natural indigo would fall
 - c) i. (c) On the Face of It
 - ii. (d) Derry
 - iii. (c) Mr. Lamb
 - iv. (a) I couldn't see anyone there
- 4. Read the extracts given below and attempt ANY ONE of the two given by answering the questions that follow. (1 x 4 =4)
 - a) i. (a) Silence
 - ii. (d) All of these
 - iii. (a) Silence is not completely associated with death
 - iv. (a) To walk on a meaningful and purposeful path
 - b) i. (a) John Keats
 - ii. (b) Tales
 - iii. (d) All of these
 - iv. (a) Living forever
- 5. Attempt ANY EIGHT questions from the ten given below. (1x 8 = 8)

a) (a) Prussia

Explanation: France was invaded by Prussia around the late nineteenth century which then consisted of the present-day nations of Germany, Poland and parts of Austria.

- b) (c) All we have to fear is fear itself
 Explanation: William's experience of conquering his fear of water had a deep meaning for him which he explained by quoting Roosevelt who had said "All we have to fear is fear itself."
- c) (a) The British official commissioner of the Tirhut division
 Explanation: Mahatama Gandhi had decided to gather all the facts about the British landlord system that existed in Champaran though his first attempt was futile, he had called upon the British official commissioner of the Tirhut division in which the Champaran district lay but the commissioner proceeded to bully him instead and told him to leave the place.
- d) (b) her pale face and grey coloured skin
 Explanation: The poet Kamala Das has utilized 'ashen' to exhibit her mother's pale and dull face. She looked stagnant like a dead body.
- e) (c) Alliteration
 Explanation: The repetition of the consonant sound 's' established the use of poetic device alliteration in the phrase sudden strangeness.
- f) (c) because he did not trust the lawyers.
 Explanation: Gandhiji had felt and noticed it.
- g) (b) The way to a peaceful life
 Explanation: The third level represented Charley's wish to return to a peaceful life where there will be no worries, fears, insecurities, war and the rest of it.
- h) (d) Words of encouragement

Explanation: Acid burns only the face, but hatred burns one away inside. He advises Derry never to think of his burned face and tells him that if he has a firm mind, he can do better than others. Thus, such words of encouragement that draws Derry towards Mr Lamb.

- i) **(b)** facts **Explanation:** At the YMCA pool
- j) **(b)** To seek his advise

Explanation: Roger Skunk visited the wise owl to seek the advice as to what he should do to get rid of the stink. The owl advice him to go to the wizard to have his problem solved.

Section B

TO LET

A fully furnished, 3 BHK flat in Dwarka with balconies on two sides is available for rent. The flat is vastu compliant on fourth floor, lift, modular kitchen, marble flooring, 24 hours water and power supply. Covered parking for one car. Nearest metro station just 1 km away. Interested parties may contact between 7 to 9 in the evening.

Mr. Sharma

6. Phone 225690XX

OR

SUNRISE PUBLIC SCHOOL, SURAT NOTICE Free Book Distribution for Students

7th July 20XX

Sarvodaya Education Society, a charitable organisation, will distribute free of cost textbooks next week in the school. All such students who need certain textbooks may drop list of books required by them in the box kept for this purpose outside the Principal's office. The lists must be given by the evening of 9th July. Navtej

(Head Boy)

M-114, Fort Road

Chennai - 600009 16th March 20XX Dear Satish, It was indeed a pleasure to receive a

It was indeed a pleasure to receive an invitation to your sister's wedding. I would have loved to attend this great event. However, it will not be possible for me to do so, as my pre-board exams are going on and I have Chemistry paper on the wedding day.Therefore, I regret I would not be able to join you in the celebration. Best wishes to your sister for her future life .

Yours faithfully,

7. Puneet Vij

OR

Sunrise Global School, Agra 29 March 2019 Dear Sir, Our school is going to organise its Annual Sports Day on 15 April 2019. Your gracious presence will motivate students and inspire all of us. We request you to come and hand over the prizes to the budding sportspersons of our school at 2 pm. Looking forward to your acceptance by 5 April. Yours faithfully Karuna Contact no. XXXXXXXXXX Sports Secretary 8.48, Agra Fort Agra-282004 9th March, 20XX The Editor The Times of India New Delhi Sir,

Subject: Educational counsellors needed in schools

Through the columns of your esteemed daily, I would like to raise an issue about the perplexitythat every student confronts after appearing for the secondary school examination. This is an important phase in a student's life as he has to decide what he aims at and how he would accomplish it. The students have to make a difficult choice from a number of streams available to them at the senior school level for further studies. Students appear to be totally helpless and sometimes even end up making the wrong choice, which they regret later. There is no valid mechanism to assess the suitability of a candidate for a particular stream. If there was, the process of stream selection would have been much easier for them. They must go for the stream they feel themselves to be good at and wherein they can have their utmost growth, personally as well as professionally. But the irony is that they take subjects forced by peer pressure or parental pressure without realising their own capabilities. Hence, I feel that there is a need for educational counsellors who can help the students to understand their hidden qualities. They are required in every school on a regular basis. Parents and teachers can also play a very important role in shaping young minds.

As it is a critical decision wherein the students need the utmost help, I request you to highlight this in your newspaper in order to spread awareness about it.

Yours sincerely Vinita

C-40, Ashok Vihar New Delhi 1 April 2019

The Advertiser Box. No. 8365 In response to your advertisement published in 'The Times of India', dated 20 March 2019, stating the requirement of young and fresh graduates as sales assistants, I offer my candidature for the same.

I have passed my B. Com. (Hons) from S.R.C.C. Delhi, securing 75% marks. I am a zestful and potential student of 21 years. The challenges that the above-mentioned post offers me are big and I am excited to face them under the guidance of your expert team with full enthusiasm for my personal growth and the organisation as well. I enjoy sound health and pleasing personality. I have a reasonably good command over both Hindi and English and possess convincing power and good communication skills which, I hope, make me eligible for this position.

If selected, I shall certainly prove myself worthy of the post. If you find my profile worthy of it, please feel free to call me at any time suitable to you. I would be glad to come in for an interview. Yours truly Chetan Sharma

Name	Chetan Sharma	
Father's Name	Sh. Mohan Lal Sharma	
Address	C-40, Ashok Vihar, New Delhi	
Date of Birth	15 September 1998	
Educational Qualifications	(i) B.Com (Hons.) in the year 2019 (75%) (ii) CBSE (10+2) Passing year 2016 (83%)	
Salary Expected	Rs.15,000pm + perks	
Marital Status	Unmarried	
Language Known	Hindi, English	

9.

Today's Youth And Stress

by XYZ

The present-day youth is greatly stressed due to the cut-throat competition and consumerist culture. It is facing unbearable pressure and problems in the field of education, employment and relationships. Educational problems are related to scoring high marks at school so as to get admission in a good college or university or getting a higher degree in university. The pressure is so much that students don't even have time for recreational activities. As a result, this stress comes out in the form of aggression and violence, as they are not given time to even relax or enjoy with their peers. They display this sort of behaviour at home, in school or among friends. The young generation is not getting desired employment, which results in depression and unbearable pressure. Certain reasons and government policies are to be blamed for this. Another problem faced by the youth is the instability in their relationships with parents, siblings or friends. The government and the parents should actively take actions to reduce this stress among the youth. The youth, on their part, can reduce the stress through yoga, meditation and engaging themselves in any of their stress-busters or hobbies like painting, reading books, listening to music etc.

OR

Fire in a Slum Area by Lakshmi

Madurai, **16th June**, **20XX**: On the evening of 15 June, 20XX, at about 7 PM, a horrifying fire broke out in the slum area near Laxmi Vihar Extension.

The ghastly fire burnt down at least 30 shanties. Nearly 15 casualties were reported. The meagre belongings of daily wagers and labourers living in that slum area were turned to ashes within minutes. The pathetic

sight of wailing children and women was heart-wrenching. Most of the women were cooking their evening meals when this incident happened. Since the fire brigades took almost four hours to wipe out the flames and control the fire, many slum dwellers had to go without any food that night.

People from nearby colony came forward to help the distressed people. They also offered packed food and water to some of them. The miserable plight of those people will continue to haunt the residents of the colony for a long time.

- 10. Attempt ANY FIVE out of the six questions given below, in 30-40 words each. (2x5=10)
 - a) 'Counting up to twelve and keeping still' will help us in introspecting ourselves. The poet believes that
 in this moment of extreme stillness and silence we will achieve peace, tranquillity, and brotherhood.
 We will forget our differences and barriers between communities will break. We will also get an
 opportunity to realize how we are harming nature and ourselves in the name of progress.
 - b) According to the poet, Aunt Jennifer's tigers are golden-yellow in color and are prancing across the screen which is a cloth panel. They are the dwellers of green forests and are sleek, chivalric, majestic, elegant and unafraid of men. This beautiful image is created by Aunt Jennifer.
 - c) Anees Jung blames the middlemen, the policemen, the lawmakers, the bureaucrats and the politicians for the sorry plight of the bangle makers. They are caught in this vicious circle according to her. All the policie, rules and regulations are made to exploit the poor whereas upper class remains unaffected by that. The children have to accept their fate else they need to dare to break this circle.
 - d) The title 'Lost Spring' conveys how millions of children in India lose the best season that is 'spring' of their lives which is childhood because of poverty. Their life is lost because of hardships in which they are involved to earn their livelihood.
 - e) The crofter was happy when the peddler knocked on his door because he was very lonely and lived alone in a cottage. He did not have a wife or a child. He felt happy as he thought that the peddler would give him company.
 - f) The peasants of Champaran were tenants of British landlords. They were growing Indigo on 15 percent of the land and surrendering the harvest as rent to them. But when synthetic Indigo developed in Germany dropped the price of actual crop, the peasants were forced to pay compensation. Their misery compounded when they refused to pay compensation as the landlords hired thugs. They had to turn to the court that always favored the British.
- 11. Attempt ANY TWO out of the three questions given below in 30-40 words each. (2 x2=4)
 - a) Hana's maidservant, Yumi, had refused to wash the wounded man. She told her that she had never washed a white man and that she would not wash such a dirty one. Hana and her husband, Dr. Hoki, had decided to save the soldier's life and as they were helpless and no help was at hand so Hana washed him herself.
 - b) Louisa, like Charley's friends, believed whatever explanations the psychiatrist friend had given. But later, when she received a mail from Sam himself from the old Galesburg, Louisa believed that Charley was true to his claims and even began to search for the third level.
 - c) When Roger Skunk reached home smelling like roses, she felt his smell different. She asked Roger about it. On hearing the truth, she got infuriated and took him back to the wizard. She hit the wizard on the head with her umbrella and asked him to change his smell to the original.
- 12. Attempt ANY ONE of the following questions in 120-150 words (1x5=5)
 - a) Usually, In the morning when the school began, it was full of chaos. There was a great bustle created by the sound of the opening and closing of desks, lessons repeated in unison, the teacher's ruler rapping on the table, a whisper of students and so on. But today it was quiet and calm just like a Sunday morning. There was an unusual stillness. Franz noticed that all his classmates were seated in their places and that M. Hamel was dressed formally which was very unusual because he dressed formally only on inspection and prize distribution day. He was surprised to see that the backbenches that were usually empty were occupied by the villagers. Moreover, when Franz was expected to get a scolding by M. Hamel for being late to class, to his surprise, he was rather kind to him and asked him to go to his place. Everyone in the classroom seemed solemn and were eager to attend the last lesson.
 - b) The crofter reposed confidence in the peddler because he was lonely and wanted someone with whom he could share his feelings. He trusted the peddler to the extent of showing him where he had kept his money. He was really concerned to make him comfortable.
 The peddler betraved his trust by pebbing the money and mapping every He did not feel anything hed

The peddler betrayed his trust by robbing the money and running away. He did not feel anything bad

about cheating the old man. However, when the peddler went in the forest instead of taking the highway to avoid police, he got lost and kept returning to the same place again and again. Ultimately, the peddler realised that he was like a rat caught in a rattrap. The bait he had fallen for was the crofter's money and he could not escape with it. Thus, the consequence of falling for the bait was that he himself had fallen into the trap of the world and couldn't find any way to escape it. He was even sure that God would be punishing him; so he would be unable to come out of that forest ever again.

- 13. Attempt ANY ONE of the following questions in 120-150 words (1x5=5)
 - a) Derry, a complex-stricken lad of fourteen, is a victim of inferiority complex which is borne out of a misinterpretation of himself and the world. He thinks people despise and hate him on account of his ugly face. So he wants seclusion. He suffers from an acute sense of self-hatred and rejection due to his burnt face and this leads him to total alienation. Mr Lamb, too, has a disability, a tin leg, but he never allows his handicap to interfere with the peace and pleasures of his life.

Mr Lamb's meeting with Derry becomes a turning point in the latter's life. Mr. Lamb brings a sealevel change in the viewpoint of Derry. He helps in boosting self-esteem and confidence to overcome his physical ugliness. He motivates him to think positively on life, people and things. He gives Derry confidence and persuades him to develop a positive attitude towards life. His message to Derry is very clear that alienation and withdrawal is not the solution.

Derry believes in running away from people but Mr. Lamb lives among people. Derry's brief association with Mr Lamb proves to be quite rewarding. Mr Lamb teaches him a new perspective of looking at life, people and things.

Derry decides never to get back to his old habit of seclusion. His burnt face will no longer interfere with his self-respect, poise and confidence. Mr Lamb helps Derry rediscover himself and gives a new meaning to his life. Mr. Lamb removes all the negativity from the mind of Derry. Now Derry wants to leave his handicap behind, forge ahead in life and live life to the fullest.

b) Evans was known as Evans the break as he had successfully escaped from the prison thrice. Thus when he was being sent to the Oxford prison the other governors warned the Governor of Oxford prison to be careful. Proper precautionary measures were lacking so Evans who was a crafty and smart prisoner was able to fool the jail authorities and he successfully escaped. He was always into some trick or the other to escape from prison. The jail authorities though were skeptical, still they appointed a German teacher for him. He taught Evans for six months. The mistake made by the prison authorities was that they never checked the authenticity of the German tutor. For the whole year he never taught German to Evans rather they planned his escape. Mr Jackson left a razor with Evans for a very long time and Evans used it to trim his hair. After the completion of the exam, he impersonated the invigilator, Mc Leery. When Stephens came to check whether Evans was in his place or not, he found a bleeding McLeery who was bound to the chair Evans was sitting. Fake phone calls play really important role in his escape, had the jail authorities been careful with fake people and calls Evans escape wouldn't have been possible. In his panic, Stephens informed the governor of Evans' escape in the disguise of McLeery. Baffled Governor didn't check the identity of injured McLeery and sent him to hospital. But later on the Governor got the news that McLeery was not admitted in the hospital, and he discovered that it was Evans who had deceived the Governor and escaped from his imprisonment. Infact the rubber tube should also have been disallowed because it played a major role in Evans escape.

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ATOMIC ENERGY CENTRAL SCHOOL NO.4 RAWATBHATA

CLASS 12 - PHYSICS

Confidence Test Objective questions Part

Time Allowed: 1 hour

1. Careful measurement of the electric field at the surface of a black box indicates that the net [1] outward flux through the surface of the box is $8.0 \times 10^3 Nm^2/C$. What is the net charge inside the box?

a) 0.04 $\mu { m C}$	b) 0.06 $\mu { m C}$
c) 0.05 $\mu { m C}$	d) 0.07 $\mu { m C}$

2. In series combination of capacitors, potential drops across the individual capacitors is [1]

- a) inverse ratio of charges storedb) direct ratio of capacitorsc) none of thesed) inverse ratio of capacitors
- 3. A current passes through a wire of non-uniform cross section. Which of the following [1] quantities are independent of the cross section?
 - a) Current densityb) Drift speedc) Free electron densityd) The charge crossing in a given time interval

A wire of given length is first bent in one loop and the next time it is bent in three loops. If the [1] same current is passed in both the cases, the ratio of the magnetic field induction at their centres will be

a) 1:9	b) 9:1
c) 1:3	d) 1:4

- 5. A toroid of n turns, mean radius R and cross-sectional radius a carries a current I. It is placed [1] on a horizontal table taken as x-y plane. Its magnetic moment m
 - a) is zero, otherwise there would be a field falling as ¹/_{r³} at large distances outside the toroid.
 c) is non-zero and points in the zb) points along the axis of the tortoid (m = m φ̂).
 d) is pointing radially outwards.
 - c) is non-zero and points in the zdirection by symmetry.
- 6. The magnetic flux through a circuit of resistance R changes by an amount $\Delta \phi$ in a time Δt . [1] Then the total quantity of electric charge Q that passes any point in the circuit during the time Δt is represented by:

a)
$$Q = \frac{\Delta \phi}{\Delta t}$$

b) $Q = \frac{1}{R} \frac{\Delta \phi}{\Delta t}$
c) $Q = R \frac{\Delta \phi}{\Delta t}$
d) $Q = \frac{\Delta \phi}{R}$

Maximum Marks: 18

7. A series circuit consists of an ac source of variable frequency, a 115.0 Ω resistor, a 1.25 μ F [1] capacitor, and a 4.50-mH inductor. The impedance of this circuit when the angular frequency of the ac source is adjusted to half the resonant angular frequency is

a) 156.0 Ω	b) 166.0 Ω
c) 176.0 Ω	d) 146.0 Ω

8. Medical x-rays are taken with electromagnetic waves having a wavelength of around 0.10 nm. **[1]** What are the frequency and period of such waves?

a) $20.4 imes 10^{15} m kHz, 5.7 imes 10^{-17} m s$	b) $3 imes 10^{15} \mathrm{kHz}, 3.3 imes 10^{-17} \mathrm{s}$
c) $4.2 imes10^{15} m kHz, 2.8 imes10^{-17} m s$	d) $37.8 imes 10^{15} { m kHz}, 5.6 imes 10^{-17} { m s}$

9. A thin convergent glass lens ($\mu_g = 1.5$) has a power of +5.0 D. When this lens is immersed in a **[1]** liquid of refractive index μ_1 it acts as a divergent lens of focal length 100 cm. The value of μ_1 must be

a)
$$\frac{4}{3}$$
 b) $\frac{5}{3}$
c) $\frac{5}{4}$ d) $\frac{6}{5}$

10. Consider a beam of electrons (each electron with energy E₀) incident on a metal surface kept [1] in an evacuated chamber. Then

a) electrons can be emitted with any	b) electrons can be emitted with any
energy, with a maximum of $E_0-\phi$ (energy, with a maximum of E ₀ .
ϕ is the work function)	
c) no electrons will be emitted as only	d) electrons can be emitted but all with
photons can emit electrons.	an energy, E ₀ .

11. In Bohr's model of hydrogen atom, the total energy of the electron in nth discrete orbit is **[1]** proportional to

a) _n ²	b) $\frac{1}{n}$
c) $\frac{1}{2}$	d) n

Assertion (A): When a capacitor is charged by a battery, both the plates receive charge equal [1] in magnitude, no matter the sizes of plates are identical or not.
 Reason (R): The charge distribution on the plates of a capacitor is in accordance with the charge conservation principle.

a) Both A and R are true and R is the	b) Both A and R are true but R is NOT
correct explanation of A	the correct explanation of A
c) A is true but R is false	d) A is false and R is also false

13. Assertion (A): In a simple battery circuit the point at the lowest potential is the positive [1] terminal of the battery.

Reason (R): The current flows towards the point of the lower potential, as it does in a circuit from negative to the positive terminal.

a) Both A and R are true and R is the b) Both A and R are true but R is NOT

	correct explanation of A	the correct explanation of A	
	c) A is true but R is false	d) A is false and R is also false	
14. Assertion: Out of galvanometer, ammeter and voltmeter, the resistance of ammeter is the lowest and resistance of voltmeter is highest.			[1]
	Reason: An ammeter is connected in series an circuit.	nd a voltmeter is connected in parallel, in a	
	a) Both A and R are true and R is the correct explanation of A	b) Both A and R are true but R is NOT the correct explanation of A	
	c) A is true but R is false	d) A is false and R is also false	
15.	 Assertion (A): A conducting rod is moving in the rod, its velocity and the magnetic field are induced between the ends of the rod. Reason (R): As the rod moves as stated above force towards an end of the conductor. 	a uniform magnetic field such that the length of mutually perpendicular, then, an emf will be , free electrons in it will experience magnetic	[1]
	a) Both A and R are true and R is the correct explanation of A	b) Both A and R are true but R is NOT the correct explanation of A	
	c) A is true but R is false	d) A is false and R is also false	
16.	Assertion (A): An inductance and resistance a circuit the current and the potential difference difference across the inductance by an angle - Reason (R): In L-R AC circuit voltage leads the value of L and R both.	are connected in series with an AC circuit. In this e across the resistance lag behind potential $\frac{\pi}{2}$. e current by phase angle which depends on the	[1]
	a) Both A and R are true and R is the	b) Both A and R are true but R is NOT	
	correct explanation of A	the correct explanation of A	
	c) A is true but R is false	d) A is false and R is also false	
17.	Fill in the blanks:		[1]
18	The angle of incidence when a ray of light fa	lls normally on a mirror is	[1]
10.	In the photoelectric effect, the number of en of incident light.	nitted photoelectrons is proportional to the	[1]

Aromic Energy Central School No.4 rawatbhata Confidence Examination – I (2020-21) Descriptive Part

Maximum Marks: 52 Marks

Time Allowed: 2 hours

- 1. All questions are compulsory. There are 18 questions in all.
- 2. This question paper has four sections: Section A, Section B, Section C, Section D.
- Section A has 1 case based question of 4 marks, Section B contains 9 short answer questions of 2 marks each, Section C contains 5 short answer questions of 3 marks each and Section D contains 3 long answer questions of 5 marks each.
- 4. There is no overall choice. However internal choice is provided. You have to attempt only one of the choices in such questions.

Section A

Question 1 is Case Study based questions and is compulsory. Attempt 4 sub parts from each question. Each question carries 1 mark (MCQ Type

1. The oil drop experiment

In 1909, Robert Millikan and Harvey Fletcher conducted the oil drop experiment to determine the charge of an electron. They suspended tiny charged droplets of oil between two metal electrodes by balancing downward gravitational force with upward drag and electric forces. The density of the oil was known, so Millikan and Fletcher could determine the droplets' masses from their observed radii (since from the radii they could calculate the volume and thus, the mass). Using the known electric field and the values of gravity and mass, Millikan and Fletcher determined the charge on oil droplets in mechanical equilibrium. By repeating the experiment, they confirmed that the charges were all multiples of some fundamental value. They calculate d this value to be 1.5924×10^{-19} Coulombs (C), which is within 1% of the currently accepted value of $1.602176487 \times 10^{-19}$ C. They proposed that this was the charge of a single electron. (i)What was determined from Millikan's oil drop experiment?

- (a)Electric Charge of alpha particle (b) Electric charge of oil drop
- (c) Mass of electron (d) none of these
- (ii) What is the currently accepted value of electric charge of an electron?

(a) 1.5924×10^{-19} C (b) 9.1×10^{-31} C (c) $1.602176487 \times 10^{-19}$ C (d) None of these (iii) How was the mass of an electron determined?

- (a)By the calculation of electric charge (b) by the calculation of density and Volume
- (c) By the calculation of electric field (d) by the calculation of gravitational forc
- (iv) What was the conclusion of Millikan's oil drop experiment?

(a) Electric charge is integral multiple of fundamental charge (b) Electric charge is integral multiple of charge of alpha particle(c) No result(d) All of the above

Section-B

- 2. Write two properties of equipotential and draw equipotential surface for electric dipole.
- 3. Two metallic wires of the same materials have the same length but cross sectional area is in the ratio of 1:2. They are connected in seriescompare the drift velocities of electrons in the two wires.ORA 9 V battery is connected in series with a resistor. The terminal voltage is found to be 8 Current through the circuit is measured as 5 A. What is the internal resistance of the battery?
- 4. A straight wire of mass 200 g and length 1.5 m carries a current of 2 A. It is suspended in mid air by a uniform horizontal magnetic field. What is the magnitude of the field?
- 5. Define angle of Dip. What is the value of angle of dip at any place on earth where horizontal and vertical component of earth magnetic field are equal to each other.
- 6. .Define self-induction. Whyself-induction is called inertia of electricity?

- 7. Draw a sketch of a plane electromagnetic wave propagating along the z-direction. Depict clearly the directions of electric and magnetic fields varying sinusoid ally with z.
- 8. Derive the average value of Sinusoidal Alternating current for half cycle.
- 9. What do you mean by total internal reflection? Write two conditions to occur TIR.
- 10. The total energy of an electron in H-atom in ground state is -13.6ev .Find its kinetic energy and potential energy.

Section- C

- 11. Define mutual inductance between a pair of coils. Derive an expression for the mutual inductance of two long coaxial solenoids of same length wound one over the other having radius of cross section r_1 and r_2 where $r_{1>} r_2$
- 12. Derive the expression for the force between two parallel long straight conductor carrying current in the same direction. Hence define one ampere.
- 13.Using photon picture of light, show how Einstein's photoelectric equation can be established. Write two features of photoelectric effect which cannot be explained by wave theory.
- 14.A parallel plate capacitor is charged to a potential difference V by d.c. source and then disconnected. The distance between the plates is then halved. Then write the change in (1) Electric potential difference between the plates (2) Electric field intensity (3) Capacitance of parallel plate capacitor. OR 64 identical liquid drops coalesce to each other to form a bigger drop. (a) Find ratio of potential of bigger drop to the smaller drop. (b) Find ratio of capacitance of bigger drop to the smaller drop.
- 15.Draw the ray diagram of a compound microscope, when the final image is formed at the least distance of distinct vision. Write the formula for magnifying power in the above noted case.

Section D

16.(a)Define the term 'conductivity' of a metallic wire. Write its SI unit.

(b)Using the concept of free electrons in a conductor, derive the expression for the conductivity of a wire in terms of number density and relaxation time. Hence obtain the relation between current density and the applied electric field E.**OR**

(a) Write statement of Kirchhoff laws of circuit analysis.

(b) What do you mean by balance condition of Wheatstone bridge, deduce the balance condition of Wheatstone bridge. What will be effect on balance condition of this bridge if position of battery and galvanometer are interchanged?

17. With the help of a ray diagram, show the formation of image of a point object by refraction of light at a spherical surface separating two media of refractive indices n_1 and n_2 ($n_2 > n_1$)

respectively. Using this diagram, derive the relation $\frac{n_2}{v} - \frac{n_1}{u} = \frac{n_2 - n_1}{R}$.OR

(a) Derive the formula of angle of minimum deviation for a glass prism of refractive index n and angle of prism A.

(b) A ray of light passing from air through an equilateral glass prism undergoes minimum deviation when the angle of incidence is $4/3^{\text{th}}$ of the angle of prism. Calculate the speed of light in the prism.

18.A series LCR circuit is connected to an ac source. Using the phasor diagram, derive the expression for the impedance of the circuit. Plot a graph to show the variation of current with frequency of the source. Define Band width in this graph.**OR**

Draw a schematic diagram of a step-up transformer. Explain its working principle. Deduce the expression for the secondary to primary voltage in terms of the number of turns in the two coils. In an ideal transformer, how is this ratio related to the currents in the two coils? How is the transformer used in large scale transmission and distribution of electrical energy over long distances?

Solution

Class 12 - Physics

Confidence Test Objective questions Part

1. **(d)** 0.07 μC

Explanation: Net outward flux through the surface of the box, φ = 8.0 \times 10³ N m²/C

 \in_0 = Permittivity of free space = 8.854 \times 10 $^{\text{-}12}$ $\text{N}^{\text{-}1}\text{C}^2$ $\text{m}^{\text{-}2}$

For a body containing net charge q, flux is given by the relation,

 $\phi = \frac{q}{\epsilon_0}$

So, $q \stackrel{\scriptstyle \smile}{=} \in_0 \phi = 8.854 imes 10^{-12} imes 8.0 imes 10^3 = 7.08 imes 10^{-8}$ = 0.07 μ C

Therefore, the net charge inside the box is 0.07 $\mu\text{C}.$

2. (d) inverse ratio of capacitors

Explanation: When capacitors are connected in series, they have equal charge but the potential difference across them is given by $V_1 = \frac{Q}{C_1}$; $V_2 = \frac{Q}{C_2}$... and so on.

Therefore, $V \propto rac{1}{C}$

3. (c) Free electron density

Explanation: Free electron density,

$$egin{array}{ll} J=rac{I}{A}\ \Rightarrow J=neV_d \end{array}$$

n is number density, e is electronic charge and $V_{\mbox{d}}$ is electron drift velocity.

4. **(a)** 1:9

Explanation: If the wire has length L, when it is coiled into a coil of 1 turn of radius r, $L = 2\pi r$ When it is coiled into a coil of 3 turns of radius r', $L = 3 \times 2\pi r'$ $2\pi r = 3 \times 2\pi r'$; r = 3r'

The magnetic field in the first case, $B = \frac{\mu_0 I}{2\pi r}$ and in the second case, $B' = \frac{\mu_0 nI}{2\pi r'} = \frac{3\mu_0 I}{2\pi r_3^2} = 9\frac{\mu_0 I}{2\pi r}$

So,
$$\frac{B}{B'} = \frac{1}{9}$$

5. (a) is zero, otherwise there would be a field falling as $\frac{1}{r^3}$ at large distances outside the toroid.

Explanation:

Key concept: Toroid'. A toroid can be considered as a ring shaped closed solenoid. Hence it is like an endless cylindrical solenoid.



The magnetic field is only confined inside the body of a toroid in the form of concentric magnetic lines of force. For any point inside the empty space surrounded by toroid and outside the toroid, the magnetic field B is zero because the net current enclosed in these spaces is zero and it varies as inversely proportional to the cube of the distance of the point. Thus, the magnetic moment of toroid is zero.

6. **(d)**
$$Q = \frac{\Delta \phi}{R}$$

Explanation: $Q = i\Delta t = \frac{e}{R}\Delta t = \frac{\Delta \phi}{\Delta t R}\Delta t$
Thus, $Q = \frac{\Delta \phi}{R}$

(d) 146.0 Ω 7. Explanation: $R = 115\Omega$ $C = 1.25 \mu F = 1.25 imes 10^{-6} F$ $L = 4.5 mH = 4.5 imes 10^{-3} H$ Resonant angular frequency is given by , $\omega_0 = \frac{1}{\sqrt{LC}} = \frac{1}{\sqrt{4.5 \times 10^{-3} \times 1.25 \times 10^{-6}}} = \frac{1}{7.5 \times 10^{-5}}$ Given that the angular frequency of the ac source, $\omega=rac{\omega_0}{2}=rac{1}{15 imes10^{-5}}=6666.6 rad/s$ Thus, Impedance is given by , $Z = \sqrt{R^2 + \left(rac{1}{\omega C} - \omega L
ight)^2} = \sqrt{115^2 + \left[\left(rac{1}{6666.6 imes 1.25 imes 10^{-6}}
ight) - \left(66666.6 imes 4.5 imes 10^{-3}
ight)
ight]^2}$ $Z = 146\Omega$ (b) $3 \times 10^{15} \mathrm{kHz}, 3.3 \times 10^{-17} \mathrm{s}$ 8. Explanation: $u = \frac{c}{\lambda} = \frac{3 \times 10^8}{0.1 \times 10^{-9}} = 3 \times 10^{18} Hz = 3 \times 10^{15} kHz$ $T = \frac{1}{\nu} = \frac{1}{3 \times 10^{18} Hz} = 3.33 \times 10^{-17} s$ 9. (b) $\frac{5}{2}$ **Explanation:** f = 1/P = 1/5 m = 20 cm Now, $\frac{1}{f} = (\frac{\mu_2}{\mu_1} - 1)(\frac{1}{R_1} - \frac{1}{R_2})$ In air, $\frac{1}{20} = (\frac{1.5}{1} - 1)(\frac{1}{R_1} - \frac{1}{R_2}) = 0.5(\frac{1}{R_1} - \frac{1}{R_2})$ (i) In liquid, $\frac{1}{-100} = (\frac{1.5}{\mu_1} - 1)(\frac{1}{R_1} - \frac{1}{R_2})$ (ii) Dividing (i) by (ii), we get $-5 = \frac{0.5}{(rac{1.5}{\mu_1} - 1)}$

On solving we get, $\mu_1=5/3=1.67$

10. **(b)** electrons can be emitted with any energy, with a maximum of E_0 .

Explanation: When a beam of electrons of energy E_0 of each electron incident on a metal surface kept in a vacuum, then due to elastic collisions with electrons on surface, the energy of incident electrons will be transferred to the emitted electrons. To emit the electrons below the surface a part of E_0 of incident electrons is consumed against work function so the energy of emitted electrons becomes less than E_0 . So, the maximum energy of emitted electrons can be E_0 and with any energy less than E_0 , when part of the incident energy of the electron is used in liberating the electrons from the surface of the metal.

11. (c) $\frac{1}{n^2}$

Explanation: In Bohr's model of the hydrogen atom, the total energy of the electron in nth discrete orbit is proportional to $\frac{1}{n^2}$

- 12. **(a)** Both A and R are true and R is the correct explanation of A **Explanation**: Both A and R are true and R is the correct explanation of A
- (d) A is false and R is also false
 Explanation: Both assertion and reason are false. In a simple battery circuit, the point at the lowest potential is the negative terminal of the battery. The current flow in the circuit, from a positive terminal to the negative terminal.
- 14. **(c)** A is true but R is false **Explanation:** A is true but R is false
- 15. (a) Both A and R are true and R is the correct explanation of AExplanation: Both A and R are true and R is the correct explanation of A
- 16. (b) Both A and R are true but R is NOT the correct explanation of AExplanation: Both A and R are true but R is NOT the correct explanation of A
- 17. 1. Zero degree

18. 1. Intensity

ATOMIC ENERGY CENTRAL SCHOOL NO.4 RAWATBHATA

CLASS 12 - CHEMISTRY Confidence Examination I 2020-21 Chemistry

Time Allowed: 3 hours

Maximum Marks: 70

General Instructions:

- 1. There are 33 questions in this question paper. All questions are compulsory.
- 2. Section A: Q. No. 1 to 16 are objective type questions. Q. No. 1 and 2 are passage based questions carrying 4 marks each while Q. No. 3 to 16 carry 1 mark each.
- 3. Section B: Q. No. 17 to 25 are short answer questions and carry 2 marks each.
- 4. Section C: Q. No. 26 to 30 are short answer questions and carry 3 marks each.
- 5. Section D: Q. No. 31 to 33 are long answer questions carrying 5 marks each.
- 6. There is no overall choice. However, internal choices have been provided.
- 7. Use of calculators and log tables is not permitted.

Section A

Read the following passage and answer any four out of the following questions: Transition metal oxides are generally formed by the reaction of metals with oxygen at high temperatures. The highest oxidation number in the oxides coincides with the group number. In vanadium, there is a gradual change from the basic V₂O₃ to less basic V₂O₄ and to

amphoteric V₂O₅. V₂O₄ dissolves in acids to give VO²⁺ salts. Potassium dichromate is a very important chemical used in the leather industry and as an oxidant for the preparation of many azo compounds. Dichromates are generally prepared from chromate. Sodium dichromate is more soluble than potassium dichromate. The latter is, therefore, prepared by treating the solution of sodium dichromate with potassium chloride. Sodium and potassium dichromates are strong oxidising agents; sodium salt has a greater solubility in water and is extensively used as an oxidising agent in organic chemistry. Potassium dichromate is used as a primary standard in volumetric analysis.

The following questions are multiple-choice questions. Choose the most appropriate answer.

- i. All transition metal reacts with oxygen to form MO oxide except
 - a. scandium
 - b. vanadium
 - c. cupper
 - d. zinc
- ii. As the oxidation number of a metal increases, ionic character
 - a. increases
 - b. decreases

[4]

- c. remain the same
- d. none of these
- iii. The shape of chromate ion is
 - a. tetrahedral
 - b. pyramidal
 - c. square planer
 - d. triangular

iv. Dichromates are generally prepared from chromate, which in turn are obtained by the fusion of

- a. FeCr₂O
- b. $FeCr_2O_4$
- c. Na₂CrO₄
- d. Na₂Cr₂O₇
- v. The oxo cations stabilise $V^{\ensuremath{\mathrm{IV}}}$
 - a. VO
 - b. VO⁴⁺
 - c. VO²⁺
 - d. all of these

2. Read the passage and answer the following questions:

The crystal field theory (CFT) is an electrostatic model which considers the metal-ligand bond to be ionically arising purely from electrostatic interactions between the metal ion and the ligand. Ligands are treated as point charges in case of anions or point dipoles in case of neutral molecules. The five d orbitals in an isolated gaseous metal atom/ion have the same energy, i.e., they are degenerate. In an octahedral coordination entity with six ligands surrounding the metal atom/ion, there will be repulsion between the electrons in metal d orbitals and the electrons (or negative charges) of the ligands. This splitting of the degenerate levels due to the presence of ligands in a definite geometry is termed as crystal field splitting and the energy separation is denoted by Δ_0 . The colour in the coordination compounds can be readily explained in terms of the crystal field theory.

In these questions, a statement of assertion followed by a statement of reason is given. Choose the correct answer out of the following choices.

- a. Assertion and reason both are correct statements and reason is correct explanation for assertion.
- b. Assertion and reason both are correct statements but reason is not correct explanation for assertion.
- c. Assertion is correct statement but reason is wrong statement.
- d. Assertion is wrong statement but reason is correct statement.
- i. Assertion: The $d_{x^2-y^2}$ and d_{z^2} orbitals which point towards the axes along the direction of the ligand will experience more repulsion.

Reason: The d_{xy} , d_{yz} and d_{xz} orbitals which are directed between the axes will be lowered in energy.

ii. Assertion: The complex $[Ti(H_2O)_6]^{3+}$, which is red in colour.

Reason: The crystal field theory attributes the colour of the coordination compounds to d-d transition of the electron.

iii. Assertion: Ligands for which Δ_0 < P are known as weak field ligands and form high spin complexes.

Reason: If $\Delta_0 > P$, than the fourth electron enters one of the e_g orbitals giving the configuration $t_{2g}^3 e_g^{-1}$.

- iv. Assertion: In tetrahedral coordination entity formation, the d orbital splitting is inverted and is smaller as compared to the octahedral field splitting.
 Reason: Spectrochemical series is based on the absorption of light by complexes with different ligands.
- v. Assertion: The crystal field model is successful in explaining the formation, structures, colour and magnetic properties of coordination compounds.
 Reason: The anionic ligands are found at the low end of the spectrochemical series.
- 3. Which of the following will give methyl tert. Butyl ether?

[1]

a) Tert. Butyl alchol and conc $ m H_2SO_4$	b) All of these
c) Tert. Butyl chloride and CH ₃ ONa	d) Sodium tert. Butoxide and CH ₃ I

4. Staturated solution of KNo3 is used to make salt bridge because

5.

[1]

a)	b) Velocity of NO ₃ ⁻ is greater than K ⁺	
Velocity of K ⁺ is		
more than that of		
NO ₃ -		
c) KNO ₃ is highly soluble in water	d) Velocity of K ⁺ and NO ₃ ⁻ are equal	
	OR	
Product of hydrolysis of cyanohydrin is		
a) Hydroxy acids	b) Aromatic acids	
c) Amino acids	d) Dicarboxylic acids	
Which of the following has highest boiling po	int?	[1]

	a) 0.1 molal urea solution	b) 0.1 molal NaCl solution	
	c) 0.1 molal BaCl ₂ solution	d) 0.1 molal sugar solution	
6.	Methyl bromide is converted into ethane by heating it in ether medium with:		[1]
	a) Na	b) Cu	
	c) Al	d) Zn	
		OR	
	Which branched chain isomer of the hydro of monosubstituted alkyl halide?	carbon with molecular mass 72u gives only one is	omer
	a) Tertiary butyl chloride	b) Neohexane	
	c) Isohexane	d) Neopentane	
7.	Which of the following has highest boiling	point?	[1]
	a) HCOOH	b) CH ₃ CH ₃	
	c) CH ₃ NH ₂	d) CH ₃ OH	
		OR	
	The reaction $Ar \overset{+}{N_2}Cl^- \overset{\mathrm{Cu/HCl}}{\longrightarrow}$ Cu/HCl Ar(Cl + N ₂ + CuCl is named as	
	a) Sandmeyer reaction	b) Carbylamine reaction	
	c) Claisen reaction	d) Gatterman reaction	
8.	Which of the following methods is used for sol destruction?		
	a) Dialysis	b) Addition of an electrolyte	
	c) Diffusion through semi permeable membrane	d) Condensation	
		OR	
	Liquid – liquid solutions are known as		
	a) Foam	b) Aerosols	
	c) Gel	d) Emulsions	
9.	In which of the following reactions heterogenous catalysis is involved?		[1]
	a. $2SO_2(g) + O_2(g) \xrightarrow{NO(g)} 2SO_3(g)$		
	b. $2SO_2$ (g) $\xrightarrow{Pt(S)} 2SO_3$ (g)		
	c. N ₂ (g) + 3H ₂ (g) $\xrightarrow{Fe(S)}$ 2NH ₃ (g)		
	d. CH_3COOCH_3 (l) + H_2O (l) $\xrightarrow{H_2O(l)}$ CH ₃ COOH (aq) + CH ₃ OH(aq)		
	a) (d)	b) (b), (c), (d)	
	c) (a), (b), (c)	d) (b), (c)	
10.	Reactions with iodine in preparation of ary of	l iodide from arenes require the presence	[1]

a) diazonium salt	b) an oxidizing agent
c) a reducing agent	d) ZnCl ₂ catalyst

[1] A substance forms face centered cubic crystals. Its density is 1.984 g/cm³ and the length of the 11. edge of the unit cell is 630 pm. Calculate the molar mass in g/mol?

a) 18.66	b) 149.35
c) 74.65	d) 29.85

12. Assertion: The complex [Co(NH₃)₄CI₂]CI gives precipitates corresponding to 2 mol of AgCl [1] with AgNO₃ solutions.

Reason: It ionises as $[Co(NH_3)_4CI_2]^+ + CI^-$.

a) Both assertion and reason are	b) Both assertion and reason are
CORRECT and reason is the	CORRECT but, reason is NOT THE
CORRECT explanation of the	CORRECT explanation of the
assertion.	assertion.
c) Assertion is CORRECT but, reason is	d) Assertion is INCORRECT but, reason

INCORRECT. is CORRECT.

Assertion: The IUPAC name of CH₃-CH (OH)-COOH is lactic acid.

Reason: Lactic acid present in curd due to which it is sour in taste. 13.

a) Assertion and reason both are	b) Assertion and reason both are	
correct statements and reason is	correct statements but reason is not	
correct explanation for assertion.	correct explanation for assertion.	
c) Assertion is correct statement but	d) Assertion is wrong statement but	

- reason is wrong statement.
- d) Assertion is wrong statement but reason is correct statement.

Assertion: Osmotic pressure of 0.1 M urea solution is less than that of 0.1 M NaCl solution. [1] 14. Reason: Osmotic pressure is not a colligative property.

a) Both assertion and reason are	b) Both assertion and reason are
CORRECT and reason is the CORRECT	CORRECT but, reason is NOT THE
explanation of the assertion.	CORRECT explanation of the
	assertion.
c) Assertion is CORRECT but, reason is	d) Assertion is INCORRECT but, reason
INCORRECT.	is CORRECT.

OR

Assertion: When methyl alcohol is added to water, the boiling point of water increases. Reason: When a volatile solute is added to a volatile solvent elevation in the boiling point is observed.

- a) Assertion and reason both are correct statements and reason is the
- b) Assertion and reason both are correct statements but the reason is

[1]

	correct explanation for the assertion.	not the correct explanation for the assertion.	
	c) The assertion is a correct statement but the reason is the wrong statement.	d) Assertion and reason both are incorrect statements.	
15.	Assertion: Alcohols have higher boiling points than ethers of comparable molecular masses. Reason: Alcohols and ethers are isomeric compounds.		[1]
	a) Both assertion and reason are CORRECT and reason is the CORRECT explanation of the assertion.	b) Both assertion and reason are CORRECT but, reason is NOT THE CORRECT explanation of the assertion.	
	c) Assertion is CORRECT but, reason is INCORRECT.	d) Assertion is INCORRECT but, reason is CORRECT.	
16.	Assertion: Hydrolysis of (–)-2-bromooctane proceeds with inversion of configuration. Reason: This reaction proceeds through the formation of a carbocation.		[1]
	a) The assertion is correct but the	b) Assertion and reason both are	

The assertion is correct but the	b) Assertion and reason both ar
reason is the wrong statement.	correct and reason is correct
	explanation of assertion.

- c) Assertion and reason both are wrong statements.
- d) Assertion and reason both are correct statements but reason is not correct explanation of assertion.

Section **B**

17.	Identify the compounds A, B, C and D in the following sequence of reaction			[2]
	$C_2H_5OH \xrightarrow{Conc.H_2SO_4} A \xrightarrow{HB}$	$\stackrel{r}{\to} B \xrightarrow{KOH(aq)} C$	\rightarrow D	
	443K	$I_2, NaOH$	yellow ppt.	
			<u>AD</u>	

OR

Write the structure of the major organic product of the reaction: $(CH_3)_3 CBr + KOH \xrightarrow[heat]{ethanol}{heat}$

- 18. The vapour pressure of pure benzene at a certain temperature is 0.850 bar. A non-volatile, [2] non-electrolyte solid weighing 0.5 g when added to 39.0 g of benzene (molar mass 78 g mol⁻¹). Vapour pressure of the solution, then, is 0.845 bar. What is the molar mass of the solid substance?
- Adsorption of a gas on the surface of solid is generally accompanied by a decrease in entropy. [2]
 Still it is a spontaneous process. Explain.

OR

Define the term adsorption. Represent the variation of gas adsorption on a solid surface graphically with temperature and pressure.

20. For the reaction at 500 K $NO_2(g) + CO(g) \rightarrow CO_2(g) + NO(g)$. The proposed mechanism [2] is as follows:

i. $NO_2 + NO_2
ightarrow NO + NO_3$ (slow)

ii. $NO_3+CO_2
ightarrow CO_2+NO_2$ (fast)

What is the rate law & order for this reaction?

- The half-life for radioactive decay of ¹⁴C is 5730 years. An archaeological artifact wood had [2] only 80% of the ¹⁴C found in a living tree. Estimate the age of the sample.
- 22. Explain a chemical test to distinguish between primary, secondary and tertiary alcohols. [2]
- 23. Account for the following statement: Zinc salts are white while Cu²⁺ salts are coloured. [At. [2] No. Zn = 30, Cu = 29]
- 24. Write the products of the following reactions:

i.
$$H \to H^{H} \to H^{H}$$

ii. $CH_3 - CH_2 - CH = CH_2 + HCl$

25. Ionic solids, which have anionic vacancies due to metal excess defect develop colour. Explain [2] with the help of suitable example..

Section C

- 26. Explain the following observations:
 - a. CIF₃ exists but FCl₃ does not.
 - b. Among the hydrides of elements of group 16, water shows unusual physical properties.Justifying the order of your choice,
 - c. Arrange the following in decreasing order of property indicated.
 - i. HClO₄, HClO₃, HClO₂, HClO oxidizing power.

OR

Draw the structural formulae of the following:

- 1. IF₃
- 2. H2SO5
- 3. XeF₄
- 27.
- Explain the mechanism of acid catalysed hydration of an alkene to form [3] corresponding alcohol.

OR

- i. Stating the necessary reaction conditions, write chemical equations to obtain the following: Chlorobenzene from aniline
- ii. Identify A and B in the following:

a.
CN⁻ A LIAIH₄ B
b. **R**₂**CO**
$$\xrightarrow{\mathbf{NH}_3} \mathbf{A} \xrightarrow{\mathbf{Ni/H}_2} \mathbf{B}$$

- 28. Analysis shows that nickel oxide has the formula $Ni_{0.98}O_{1.00}$. What fractions of nickel exist as [3] Ni^{2+} and Ni^{3+} ions?
- 29. Write the equation involved in the following reactions:a, Wolff reduction

[3]

[2]

[3]

- b. HVZ reaction
- c. Etard reactio
- 30. Name the reagents used in the following reactions:
 - i. Oxidation of a primary alcohol to carboxylic acid.
 - ii. Oxidation of a primary alcohol to an aldehyde.
 - iii. Bromination of phenol to 2, 4, 6-tribromophenol.

Section D

- 31. i. Give reasons for the following observations:
 - a. Halogens are strong oxidising agents.
 - b. Noble gases have very low boiling points.
 - c. O and Cl has nearly the same electronegativity, yet oxygen forms H bond while Cl doesn't.
 - ii. Complete and balance the following chemical equations:

a.
$$NaOH+Cl_2 = (cold + dil.)$$

b. I⁻(aq) + OH⁻(l) + O₂ (g) \rightarrow

OR

a. i. Write the disproportionation reaction of H_3PO_3 .

ii. Draw the structure of XeF₄.

- b. Account for the following :
 - i. Although Fluorine has less negative electron gain enthalpy yet F₂ is strong oxidizing agent.
 - ii. Acidic character decreases from N_2O_3 to Bi_2O_3 in group 15.
- c. Write a chemical reaction to test sulphur dioxide gas. Write chemical equation involved.
- 32. a. Predict the main product of the following reactions :

i.
$$O \xrightarrow{(\operatorname{Ag}(\operatorname{NH}_{3})_{2}]^{+}}$$

ii.
$$O \xrightarrow{(\operatorname{H}_{3})_{2}} \xrightarrow{$$

b. Give a simple chemical test to distinguish between



c. Why is alpha (α) hydrogen of carbonyl compounds are acidic in nature?

OR

An unknown aldehyde **A** on reacting with alkali gives a β - hydroxy-aldehyde, which losses water

[3]

[5]

to form an unsaturated aldehyde, 2-butenal. Another aldehyde **B** undergoes disproportionation reaction in the presence of conc. alkali to form products C and D. C is an aryl alcohol with formula C₇H₈O.

- i. Identify A and B
- ii. Write the sequence of reactions involved.

iii. Name the product, when 'B' reacts with Zn amalgam and hydrochloric acid.

A voltaic cell is set up at 25°C with the half cells, Al|Al³⁺ (0.001 M) and Ni|Ni⁺² (0.50 M). Write [5] the equation for the reaction that occurs when the cell generates an electric current and determine the cell potential.Calculate standared gibbs free energy & equilibrium constant for this cell.

Given:
$$E^0_{(Ni^{2+}/Ni)} = -0.25 V E^0_{(Al^{3+}/Al)} = -1.66 V$$

Define conductivity & molar conductivity of the solution

Resistance of a conductivity cell filled with 0.1 mol L^{-1} KCl solution is 100 Ω . If the resistance of the same cell when filled with 0.02 mol L^{-1} KCl solution is 520 Ω , calculate the conductivity and molar conductivity of 0.02 mol L^{-1} KCl solution. The conductivity of 0.1 mol L^{-1} KClsolution is 1.29 S/m.

Solution

Class 12 - Chemistry

Confidence Examination I 2020-21 Chemistry

Section A

- 1. i. (a) scandium
 - ii. (b) decreases
 - iii. (a) tetrahedral
 - iv. (b) $FeCr_2O_4$
 - v. (c) VO²⁺
- 2. i. (b) Assertion and reason both are correct statements but reason is not correct explanation for assertion ii. (d) Assertion is wrong statement but reason is correct statement
 - iii. (c) Assertion is correct statement but reason is wrong statement
 - iv. (b) Assertion and reason both are correct statements but reason is not correct explanation for assertion
 - v. (b) Assertion and reason both are correct statements but reason is not correct explanation for assertion
- (d) Sodium tert. Butoxide and CH₃I Explanation: -----
- 4. **(a)**

Velocity of K⁺ is more than that of NO₃⁻

Explanation: -----

OR

(a) Hydroxy acids **Explanation:** -----

5. **(c)** 0.1 molal BaCl₂ solution

Explanation: i=3 so ΔT_b will be maximum and hence Tb will be maximum.

6. **(a)** Na

Explanation: The Wurtz reaction, named after Charles-Adolphe Wurtz, is a coupling reaction in organic chemistry, organometallic chemistry and recently inorganic main group polymers, whereby two alkyl halides are reacted with sodium metal in dry ether solution to form a higher alkane: $2R-X + 2Na \rightarrow R-R + 2NaX$.

OR

(d) Neopentane

Explanation: Neopentane has all same type of hydrogen and has molecular weight 72u.

7. **(a)** HCOOH

Explanation: In carboxylic acids, the intermolecular hydrogen bonding is very strong compared to alcohols, therefore, it has the highest boiling point.

On the other hand, alcohols form stronger hydrogen bonds (intermolecular) compared to amines. And alkanes are non-polar so do not form any hydrogen bonds.

As the strength of hydrogen bonding increases, the boiling point also increases.

Thus boiling point order will be HCOOH > CH_3OH > CH_3NH_2 > CH_3CH_3 .

OR

(d) Gatterman reaction Explanation:



Cl is introduced in the benzene ring in the presence of Cu powder is named Gatterman reaction.

(b) Addition of an electrolyte
 Explanation: Electrolyte makes the colloid destroy.

OR

(d) Emulsions **Explanation:** Dispersed phase and dispersion medium both are liquids.

9. **(d)** (b), (c)

Explanation: In reaction (b) and reaction (c), catalysts are in solid-state, and reactants and products are gases hence they are heterogeneous catalysts.

10. (b) an oxidizing agent

Explanation: Reactions with iodine are reversible in nature and require the presence of an oxidizing agent (HNO₃, HIO₄) to oxidize the HI formed during iodination.

11. **(c)** 74.65

Explanation: $M = \frac{dN_A a^3}{Z}$ = $\frac{1.984 \times 6.02 \times 10^{23} \times 25.0 \times 10^{-23}}{4}$ = 74.65 g mol⁻¹

- 12. **(d)** Assertion is INCORRECT but, reason is CORRECT. **Explanation:** Assertion is INCORRECT but, reason is CORRECT.
- (d) Assertion is wrong statement but reason is correct statement.
 Explanation: ----
- 14. (c) Assertion is CORRECT but, reason is INCORRECT.Explanation: Assertion is CORRECT but, reason is INCORRECT.

OR

(d) Assertion and reason both are incorrect statements. Explanation: When methyl alcohol (volatile) is added to water, the boiling point of water decreases because vapour pressure increases when a volatile solute is added to a volatile solvent.

- (b) Both assertion and reason are CORRECT but, reason is NOT THE CORRECT explanation of the assertion.
 Explanation: Both assertion and reason are CORRECT but, reason is NOT THE CORRECT explanation of the assertion.
- (a) The assertion is correct but the reason is the wrong statement.
 Explanation: Hydrolysis of alkyl halides with inversion of configuration is an example of S_N2 mechanism.
 This mechanism is a one-step process and does not involve the formation of a carbocation.

$$\begin{array}{c} \text{Section B} \\ 17. \ C_2H_5OH \xrightarrow{Conc.H_2SO_4,443 \ K} CH_2 \underset{'A'}{=} CH_2 \xrightarrow{HBr} \\ CH_3CH_2Br \xrightarrow{KOH(aq)} CH_3CH_2OH \\ \xrightarrow{'B'} CH_3I \\ \xrightarrow{'D'} yellow \ ppt \\ \hline \\ (CH_3)_3CBr + KOH \xrightarrow{ethanol} CH_3 - C \\ \xrightarrow{L_2-Bromo-2methylpropane} CH_3 \xrightarrow{heat} \\ (Dehydrohalogenation) \\ \hline \\ \end{array}$$

2-Methyl propene

18. The various quantities known to us are as follows:

 $p_1^0 = 0.850$ bar; p = 0.845 bar; M₁ = 78g mol⁻¹; w₂ = 0.5 g; w₁ = 39 g

Substituting these values in equation of relative lowering of vapour pressure, we get

 $0.850 \; \mathrm{bar} - 0.845 \; \mathrm{bar} \; _ \; 0.5 \mathrm{g} { imes} 78 \mathrm{gmol}^{-1}$ $M_2 imes 39$ g 0.850 bar

Therefore, $M_2 = 170 \text{ g mol}^{-1}$

$$\Delta G = \Delta H - T \Delta S$$

19

For a process to be spontaneous ΔG should be negative. Even though ΔS is negative here, ΔG is negative because reactions is highly exothermic i.e. the ΔH is negative.

OR

Adsorption is a phenomenon in which concentration of solute is more at the surface and less in the bulk. Physical adsorption of a gas on solid decreases with increase in temperature and increases with increases in pressure.

Chemical adsorption first increases and then decreases with increase in temperature whereas, with the increase in pressure, adsorption first increase and then becomes independent of pressure.

Graphs between $\frac{x}{m}$ and T and $\frac{x}{m}$ and P for physical and chemical adsorption are shown in the figures below:



 $\frac{x}{m}$ represents extent of adsorption, where x is mass of adsorbate, m is mass of adsorbent.

20. Since step (i) is slowest step of reaction and slowest step determines the rate law.

Rate law
$$= rac{dx}{dt} = K [NO_2]^2$$
order is 2

21. Here,
$$k = \frac{0.693}{t_{1/2}} = \frac{0.693}{5730} years^{-1}$$

$$t = \frac{2.303}{k} \log \frac{[R]_0}{[R]} = \frac{2.303}{\frac{0.693}{5730}} \log \frac{100}{80}$$

= 1845 years (approximately)

Hence, the age of the sample is 1845 years.

22. Primary tertiary and secondary alcohols can be distinguished by oxidation reaction. Primary alcohols give aldehyde with CrO₃

$$RCH_2OH \xrightarrow{CrO_3} \operatorname{RCHO}$$

Secondary alcohols give ketone with CrO₃

 $R_2CHOH \xrightarrow{CrO_3} R_2CO$ Tertiary alcohol do not get oxidized with CrO₃ $R_3COH \xrightarrow{CrO_3}$ No reaction

23. In zinc salts, Zn²⁺ does not have unpaired electrons, therefore cannot undergo d-d transitions. Whereas in Cu²⁺ ions there is one unpaired electron in d orbital due to which it can undergo d-d transitions and hence Cu⁺² salts are coloured.

24. i.
$$H_{H} \xrightarrow{H} H_{H} \xrightarrow{H} H_{H} \xrightarrow{peroxide} C_{6}H_{5} - CH_{2} - CH_{2}Br$$
ii. CH₃ - CH₂ - CH = CH₂ + HCl \rightarrow CH₃ - CH₂ - CHCl-CH₃

25. Alkali metal halide like NaCl and KCl shows this type of defect. When its crystals of NaCl are heated in presence of sodium vapour, some chloride ion leaves their lattice sites to combine with sodium to form NaCl.

For this reaction to occur Na atoms lose electrons to form Na⁺ ions. The electron has released diffuse into the

crystal to occupy the anion vacancies created by Cl⁻ ions. The crystal now has excess of sodium. The sites occupied by unpaired electrons are called F-centres, as shown in figure. They impart yellow colour to the crystal because they absorb energy from the visible light and get excited.



Section C

- 26. a. It is because 'Cl' has vacant d-orbitals whereas 'F' does not have d-orbitals. So Cl can show higher oxidation state, but F cannot.
 - b.
- i. Water is liquid due to the presence of intermolecular hydrogen bonding and other hydrides are gases due to the absence of hydrogen bonding. Therefore, Water is thermally most stable among hydrides of group 16 elements.
- ii. HClO is unstable breaks down to HCl and [O]. Due to which it is a strong oxidizing agent. The stability increases, hence Oxidising power decreases in order: HClO > HClO₂ > HClO₃ > HClO₄

OR







b.
$$R_2CO \xrightarrow{NH_3} R - C = NH \xrightarrow{Ni/H_2} R - CH - NH_2$$

 $\stackrel{|}{\underset{A'}{R'}} \stackrel{|}{\underset{B'A'}{Ni/H_2}} R - CH - NH_2$

28. The formula of nickel oxide is $Ni_{0.98}O_{1.00}$.

Therefore, the ratio of the number of Ni atoms to the number of O atoms, Ni:O = 0.98 :1.00 = 98 : 100 Now, total charge on 100 O₂ -ions = $100 \times (-2) = -200$

Let the number of Ni^{2+} ions be *x*.

So, the number of Ni^{3+} ions is 98 -x.

Now, total charge on Ni²⁺ ions = x(+2) = +2x

And, total charge on Ni³⁺ ions = (98 - x)(+3) = 294 - 3x

hence, total positive charge on Ni ions= 2x+294-3x= 294-x

Since, the compound is neutral, we can write:

Total positive charge = total negative charge

294 - x = 200

(294 - x - 200) = 0

 \Rightarrow - x + 94 = 0

 \Rightarrow x = 94

Therefore, number of Ni²⁺ ions = 94

And, number of Ni^{3+} ions = 98 - 94 = 4

Hence, fraction of nickel that exists as $Ni^{2+} = \frac{94}{98} = 0.959$

And, fraction of nickel that exists as Ni³⁺ = $\frac{4}{98}$ = 0.041

Alternatively, fraction of nickel that exists as $Ni^{3+} = 1 - 0.959 = 0.041$

- 29. Write the equation involved in the following reactions:
 - a, Wolff reduction
 - b. HVZ reaction
 - c. Etard reaction
- 30. i. KMnO₄/KOH(alkaline KMnO₄)

ii. Cu/573 K (Hot reduced copper)

iii. Br₂(aq)(Bromine water)

Section D

- 31. i. a. The general electronic configuration of halogens is np⁵, where n = 2-6. Thus, halogens need only one more electron to complete their octet and to attain a stable noble gas configuration. Also, halogens are highly electronegative with low dissociation energies and high negative electron gain enthalpies. Therefore, they have a high tendency to gain an electron. Hence, they act as strong oxidizing agents.
 - b. Noble gases being monoatomic have no interatomic forces except weak dispersion forces and therefore, they are liquefied at very low temperatures. Hence, they have low boiling points. Helium has the lowest boiling point.
 - c. The formation of hydrogen bonding depends on the size of the atom. smaller the size greater the hydrogen bonding.although the electronegativity is the same but Oxygen has a smaller size than chlorine. Smaller size favours hydrogen bonding.
 - ii. a. With cold and dil. alkalies chlorine produces a mixture of chloride and hypochlorite. $2NaOH_{(aq)} + Cl_{2(q)} \rightarrow NaCl_{(aq)} + NaOCl_{(aq)} + H_2O_{(l)}$
 - b. The reaction of iodine with water is non-spontaneous. I⁻ can oxidised by oxygen 2I⁻ (aq) + 4H⁺ (aq) + O₂ (g) \rightarrow 2I₂(s) + 2H₂O(l)

a. i. Disproportionation reaction of H_3PO_3 : $4H_3PO_3 \rightarrow 3H_3PO_4 + PH_3$ ii. Structure of XeF₄:



- b. i. Fluorine (F₂) is strong oxidizing agent due to small size and low bond dissociation enthalpy.
 - ii. As the size increases, electronegativity decreases and non-metallic character also decreases. So, acidic character decreases from N₂O₃ to Bi₂O₃ in group 15.
- c. Chemical reaction to test sulphur dioxide gas: $5SO_2+2MnO_4+2H_2O\rightarrow 5SO_4^{2-}+4H^++2Mn^{2+}$



- b. Chemical test to distinguish between acetophenone and benzophenone: On adding NaOH / I₂ and heat, acetophenone forms yellow ppt. of iodoform(CHI₃) whereas benzophenone does not.
- c. Due to resonance stabilisation of conjugate base of carbonyl compound, alpha(α) hydrogen of carbonyl compounds are acidic in nature.



- i. 'A' is acetaldehyde, 'B' is Benzaldehyde.
- ii. Reactions are shown above. First one is Aldol condensation(aldehydes and ketones containing one alpha hydrogen atom) and second one is Cannizzaro reaction(aldehydes and ketones containing no alpha hydrogen atom)
- iii. This is Clemmensen Reduction.



33. Half cell equation are:

 $\begin{array}{rcl} \text{Al} &\longrightarrow \text{Al}^{3^{+}} + 3e^{-} & (\text{At Anode}) \\ \text{Ni}^{2^{+}} + 2e^{-} &\longrightarrow \text{Ni} & (\text{At cathode}) \\ \\ \text{2Al} + 3\text{Ni}^{2^{+}} &\longrightarrow 2\text{Al}^{3^{+}} + 3\text{Ni} & (\text{Overall reaction}) \end{array}$

The cell may be represented as:

$$\begin{split} &Al|Al^{3+}||Ni^{2+}|Ni\\ &E_{cell}^{0}=E_{right}^{0}-E_{left}^{0}\\ =(-0.25)\cdot(-1.66)\\ =-0.25+1.66\\ =1.41\,\text{V}\\ &\text{Applying Nernst equation to the above cell reaction.}\\ &E_{cell}=1.41\text{V}-\frac{0.0591}{6}\log\frac{\left(10^{-3}\right)^{2}}{\left(0.5\right)^{3}}=1.41\,\text{V}-\frac{0.0591}{6}\log\left(8\times10^{-6}\right)\\ =1.41\text{V}-\frac{0.0591}{6}\left(\log2^{3}+\log10^{-6}\right)\\ =1.41\text{V}-\frac{0.0591}{6}\left[3\times\log2+(-67)\log10\right]\\ =1.41\text{V}-\frac{0.0591}{6}\left[3\times0.3010-6\right]\\ =1.41\,\text{V}+0.050\,\text{V}\\ &E_{cell}=1.46\,\text{V} \end{split}$$

ATOMIC ENERGY CENTRAL SCHOOL NO.4 RAWATBHATA

CLASS 12 - MATHEMATICS Confidence Examination-I (2020-21)

Time Allowed: 3 hours

General Instructions:

- 1. This question paper contains two parts A and B. Each part is compulsory. Part A carries 24 marks and Part B carries 56 marks
- 2. Part-A has Objective Type Questions and Part -B has Descriptive Type Questions
- 3. Both Part A and Part B have choices.

Part – A:

- 1. It consists of two sections- I and II.
- 2. Section I comprises of 16 very short answer type questions.
- 3. Section II contains 2 case studies. Each case study comprises of 5 case-based MCQs. An examinee is to attempt any 4 out of 5 MCQs.

Part – B:

- 1. It consists of three sections- III, IV and V.
- 2. Section III comprises of 10 questions of 2 marks each.
- 3. Section IV comprises of 7 questions of 3 marks each.
- 4. Section V comprises of 3 questions of 5 marks each.
- 5. Internal choice is provided in 3 questions of Section –III, 2 questions of SectionIV and 3 questions of Section-V. You have to attempt only one of the alternatives in all such questions.

Part - A Section - I

1. Show that the function $f: R \to R: f(x) = x^5$ is one-one and onto.

[1]

OR

Show that f : R \rightarrow R, given by f (x) = x - [x], is neither one-one nor onto.

2. Let R is the equivalence relation in the set A = {0, 1, 2, 3, 4, 5} given by R = {(a, b): 2 divides (a - [1] b)}. Write the equivalence class [0].

OR

Determine the relation is reflexive, symmetric and transitive: Relation R in the set A of human beings in a town at a particular time is given by R = {(x, y) : x is father of y}

- 3. Show that the function $f: N \to N: f(x) = x^3$ is one one into [1]
- 4. Give an example of matrices A and B such that $A \neq 0$, $B \neq 0$, AB = BA = 0 [1]

5. Construct a 2 × 2 matrix A = [a_{ij}], whose element $a_{ij} = \frac{(i-2j)^2}{2}$.

[1]

Maximum Marks: 80

[1] [1] Section - II [4] $A(September \ sales) = \begin{bmatrix} 1000 & 2000 & 3000 \\ 5000 & 3000 & 1000 \end{bmatrix} \text{ RAMAKRISHAN}$ GURCHARAN SINGH BASMATI PERMAL NAURA RAMAKRISHAN

OR Evaluate: $\int \left(5x^3+2x^{-5}-7x+rac{1}{\sqrt{x}}+rac{5}{x}
ight)dx.$

Show that the following system of equations is inconsistent:

- Find the area of the region bounded by the curves y = |x 2|, x = 1, x = 3 and the x-axis. 8. [1]
- Determine order and degree (if defined) of differential equation: y'' + 2y' + siny = 09. [1]

OR

10. If $\overrightarrow{a} = 2\hat{i} + \hat{j} + 3\hat{k}$ and $\overrightarrow{b} = 3\hat{i} + 5\hat{j} - 2\hat{k}$, then find $ \overrightarrow{a} \times \overrightarrow{b} $ 11. Let $\vec{a} = \vec{i} + 2\vec{j}$ and $\vec{b} = 2\hat{i} + \hat{j}$. Is $ \vec{a} = \vec{b} $? Are the vector \vec{a} and \vec{b} equal? 12. Find the angle between two vectors \vec{a} and \vec{b} if $\vec{a} = \sqrt{3}, \vec{b} = 2$, and $\vec{a}, \vec{b} = \sqrt{6}$ 13. Show that the points A (2, 3, -4), B (1, -2, 3) and C (3, 8, -11) are collinear.		Solve the diff eq. $rac{dy}{dx}+\sqrt{rac{1-y^2}{1-x^2}}=0$
11. Let $\vec{a} = \vec{i} + 2\vec{j}$ and $\vec{b} = 2\hat{i} + \hat{j}$. Is $ \vec{a} = \vec{b} $? Are the vector \vec{a} and \vec{b} equal? 12. Find the angle between two vectors \vec{a} and \vec{b} if $\vec{a} = \sqrt{3}, \vec{b} = 2$, and $\vec{a}, \vec{b} = \sqrt{6}$ 13. Show that the points A (2, 3, -4), B (1, -2, 3) and C (3, 8, -11) are collinear.	10.	If $\overrightarrow{a} = 2\hat{i} + \hat{j} + 3\hat{k}$ and $\overrightarrow{b} = 3\hat{i} + 5\hat{j} - 2\hat{k}$, then find $ \overrightarrow{a} \times \overrightarrow{b} $
12. Find the angle between two vectors \vec{a} and \vec{b} if $\vec{a} = \sqrt{3}$, $\vec{b} = 2$, and \vec{a} . $\vec{b} = \sqrt{6}$ 13. Show that the points A (2, 3, -4), B (1, -2, 3) and C (3, 8, -11) are collinear.	11.	Let \vec{a} = \vec{i} + $2\vec{j}$ and \vec{b} = $2\hat{i}$ + \hat{j} . Is $ \vec{a} $ = $ \vec{b} $? Are the vector \vec{a} and \vec{b} equal?
13. Show that the points A (2, 3, -4), B (1, -2, 3) and C (3, 8, -11) are collinear.	12.	Find the angle between two vectors $ec{a}$ and $ec{b}$ if $ec{a}=\sqrt{3},ec{b}=2, ext{ and } ec{a}.ec{b}=\sqrt{6}$
	13.	Show that the points A (2, 3, -4), B (1, -2, 3) and C (3, 8, -11) are collinear.

Evaluate cos⁻¹ (cos 13 pi /6) 14.

2x + y = 3, 4x + 2y = 5.

Find the integral: $\int \frac{dx}{\sqrt{2x-x^2}}$

Find the points of discontinuity for the function f(x) = [x], where [.] represents greatest 15. integer function.

Find the area bounded by the curve $y = x^3$, the x-axis and the ordinates x = -2 and x = 116.

Two farmers Ramkishan and Gurcharan Singh cultivates only three varieties of rice namely Basmati, Permal and Naura. The Quantity of sale (in Kg) of these varieties of rice by both the farmers in the month of September and October are given by the following matrices A and B.



6.

7.

10.



Based on the above information answer the following:

OR

Show that the matrix $A = \begin{bmatrix} 0 & a & b \\ -a & 0 & c \\ -b & -c & 0 \end{bmatrix}$ is skew-symmetric. Show that A' = -A.

[1]

[1]

[1] [1] [1] [1]

[1]

(i) Find the combined sales in September and October for each farmer in each variety.

(a) Total salas -	6000	3000	9000	RAMAKRISHAN
(a) for all safes =	7000	13000	2000	GURCHARAN SINGH
(b) Total salas -	6000	PERMAL	9000	RAMAKRISHAN
(b) four sures =	7000	13000	2000	GURCHARAN SINGH
(c)Total sales -	6000	12000	9000	RAMAKRISHAN
(c)rotat suies =	25000	13000	2000	GURCHARAN SINGH
(d) Total salas -	6000	12000	9000	RAMAKRISHAN
(a) foidt sales =	25000	13000	11000	GURCHARAN SINGH

(ii) Find the decrease in sales from September to October.

(a) Nat	Decrease in sales -	4000	8000	9000	RAMAKRISHAN
(a)iver	Decrease in sales =	7000	13000	2000	GURCHARAN SINGH
(b) Not	let Decrease in sales =	BASMATI 4000	PERMAL 8000	3000	RAMAKRISHAN
(U)IVEI		15000	13000	2000	GURCHARAN SINGH
(c) Net	t Decrease in sales =	4000	8000	3000	RAMAKRISHAN
(c)iver		15000	7000	9000	GURCHARAN SINGH
(1)	t Decrease in sales =	4000	8000	3000	RAMAKRISHAN
(a)Net		15000	13000	9000	GURCHARAN SINGH

If Ramakrishan sell the variety of rice (per kg) i.e. Basmati, Permal and Naura at Rs. 30, Rs. 20 & Rs. 10 respectively, While Gurcharan Singh Sell the variety of rice (per kg) i.e. Basmati, Permal and Naura at Rs. 40, Rs. 30 & Rs. 20 respectively.

- (iii) Find the Total Selling Price received by Ramakrishan in the month of September.
 - (a) Rs. 80,000 (b) Rs. 90,000 (c) Rs. 1,00,000 (d) Rs. 1,10,000

(iv) Find the Total Selling Price received by Gurcharan Singh in the month of September.

- (a) Rs. 1,10,000 (b) Rs. 2,10,000 (c) Rs. 3,00,000 (d) Rs. 3,10,000
- (v) Find the Total Selling Price received by Ramakrishan in the month of September & October.
 - (a) Rs. 4,00,000 (b) Rs. 5,00,000 (c) Rs. 5,10,000 (d) Rs. 6,10,000

[4]

An architect designs a building for a multi-national company. The floor consists of a rectangular region with semicircular ends having a perimeter of 200m as shown below:



Based on the above information answer the following:

(i) If x and y represents the length and breadth of the rectangular region, then the relation between the variables is

b)
$$2x + \pi y = 200$$

c)
$$\pi x + y = 50$$

(ii)The area of the rectangular region A expressed as a function of x is

a)
$$\frac{2}{\pi} (100 x - x^2)$$

b) $\frac{1}{\pi} (100 x - x^2)$
c) $\frac{x}{\pi} (100 - x)$
d) $\pi y^2 + \frac{2}{\pi} (100 x - x^2)$

(iii) The maximum value of area A is

a)
$$\frac{\pi}{3200} m^2$$

b) $\frac{3200}{\pi} m^2$
c) $\frac{5000}{\pi} m^2$
d) $\frac{1000}{\pi} m^2$

(iv) The CEO of the multi-national company is interested in maximizing the area of the whole floor including the semi-circular ends. For this to happen the valve of x should be

- a) 0 m
- b) 30 m
- c) 50 m
- d) 80 m

(v) The extra area generated if the area of the whole floor is maximized is :

a)
$$\frac{3000}{\pi}m^2$$

b) $\frac{5000}{\pi}m^2$
c) $\frac{7000}{\pi}m^2$

d) No change Both areas are equal

Part - B Section - III

19. Prove that: $\tan^{-1}\left(\frac{2}{3}\right) = \frac{1}{2}\tan^{-1}\left(\frac{12}{5}\right)$

20. Let A(1, 3), B(0, 0) find C(k, 0) be three points such. that $ar(\Delta ABC) = 3$ sq units. Find the value [2] of k.

OR
Find the integral value of x, if
$$\begin{vmatrix} x^2 & x & 1 \\ 0 & 2 & 1 \\ 3 & 1 & 4 \end{vmatrix} = 28$$

- 21. Find a point on the curve $y = (x 3)^2$, where the tangent is parallel to the chord joining the **[2]** points (3, 0) and (4, 1).
- 22. Find both the maximum and the minimum value of $3x^4 8x^3 + 12x^2 48x + 1$ on the interval [1, [2] 4].

[2]

Find the integral of the function $\frac{\cos x}{1+\cos x}$ 23.

OR

Evaluate the definite integral $\int_0^1 \frac{dx}{1+x^2}$

- Find the area of the smaller part of the circle $x^2 + y^2 = a^2$ cut off by the line $x = \frac{a}{\sqrt{2}}$ [2] 24.
- Verify that $y = c e^{\tan^{-1} x}$ is a solution of the differential equation 25. [2] $\left(1+x^2
 ight)rac{d^2y}{dx^2}+(2x-1)rac{dy}{dx}=0$
- If $\overrightarrow{a}, \overrightarrow{b}, \overrightarrow{c}$ be the vectors represented by the sides of a triangle, taken in order, then prove [2] 26. that $\overrightarrow{a} + \overrightarrow{b} + \overrightarrow{c} = \overrightarrow{0}$
- 27. Find dy/dx for $x^y = y^x$
- A husband and wife appear in an interview for two vacancies for the same post. The 28. [2] probability of husband's selection is $\frac{1}{7}$ and that of wife's selection is $\frac{1}{5}$. What is the probability that only one of them will be selected?

OR

If in a binomial distribution mean is 5 and variance is 4, write the number of trials.

Section - IV

Show that the Signum Function f :R ightarrow R, given by $f(x) = \left\{egin{array}{c} 1, \ if \ x > 0 \\ 0, \ if \ x = 0 \\ -1. \ if \ x < 0 \end{array}
ight.$ is neither one-[3] 29.

one nor onto.

30. If
$$y = e^{\tan^{-1}x}$$
, prove that $(1 + x^2) y_2 + (2x - 1) y_1 = 0$ [3]

31. If
$$y = (x)^{\cos x} + (\cos x)^{\sin x}$$
, find $\frac{dy}{dx}$. [3]

- If x sin(a + y) + sin a cos(a + y) = 0, then prove that $\frac{dy}{dx} = \frac{\sin^2(a+y)}{\sin a}$. Find the interval in function $f(x) = \frac{3}{2}x^4 4x^3 45x^2 + 51$ is increasing or decreasing. 32. [3]
- Evaluate: $\int \cot^5 x \, dx$ [3] 33.
- Find the area under the curve $y=\sqrt{a^2-x^2}$ between the lines x=0 and x=a 34. [3] OR

Using the method of integration, find the area of the region bounded by the lines: 2x + y = 4, 3x - 2y= 6 and x - 3y + 5 = 0.

35. The rate of growth of a population is proportional to the number present. If the population of [3] a city doubled in the past 25 years, and the present population is 100000, when will the city have a population of 500000? [Given log_e 5 = 1.609, log_e 2 = 0.6931.]

Section - V

36. The cost of 4kg onion, 3kg wheat and 2kg rice is Rs. 60. The cost of 2kg onion, 4kg wheat and [5] 6kg rice is Rs. 90. The cost of 6kg onion 2kg wheat and 3kg rice is Rs. 70. Find the cost of each item per kg by matrix method.

If
$$A = \begin{bmatrix} 2 & -3 & 5 \\ 3 & 2 & -4 \\ 1 & 1 & -2 \end{bmatrix}$$
 find A⁻¹, using A⁻¹ solve the system of equations

ь Т

9

[2]

2x - 3y + 5z = 11; 3x + 2y - 4z = -5; x + y - 2z = -3.

37. Integrate
$$\frac{(3x-1)}{(x-1)(x-2)(x-3)}$$
 w. r. to x. [5]

OR

Evaluate
$$\int_0^\pi \log(1 + \cos x) \, dx$$

38. A window is in the form of a rectangle surmounted by a semi-circular opening. The total [5] perimeter of the window is 10 meters. Find the dimensions of the window to admit the maximum light through the whole opening.

OR

Show that the altitude of the right circular cone of maximum volume that can be inscribed in a sphere of radius r is 4r/3.

Solution

Class 12 - Mathematics

Confidence Examination-I (2020-21)

Part - A Section - I

```
1. To show: f: R \to R : : f(x) = x^5 is one - one and onto.
```

Proof:

 $f(x) = x^5$ $\Rightarrow y = x^5$



Since the lines do not cut the curve in 2 equal valued points of y, therefore, the function f(x) is one - one. The range of $f(x) = (-\infty, \infty) = R(Codomain)$

∴ f(x) is onto

Hence, showed f: $R \rightarrow R$: f(x) = x^5 is one - one and onto.

OR

We have, $f(x) = x - [x] = \{x\}$ (fractinal part of x) **Injection test:** f(x) = 0 for all $x \in Z$ So, f is a many-one function.

Surjection test:

Range (f) = $[0, 1) \neq R$.

So, f is an into function.

Therefore, f is neither one-one nor onto.

2. Given that R is the equivalence relation in the set A = $\{0, 1, 2, 3, 4, 5\}$ defined as R = $\{(a, b): 2 \text{ divides } (a - b)\}$. Clearly, $[0] = \{b \in A : (0, b) \in R\}$

= {b \in A . 2 divides (0- b)} = {b \in A : 2 divides (-b)} = {0, 2, 4}

Hence equivalence class of $[0] = \{0, 2, 4\}$.

OR

It is given that $R = \{(x, y) : x \text{ is father of } y\}$ $\Rightarrow (x,x) \notin R \text{ as } x \text{ cannot be the father of himself.}$ $\Rightarrow R \text{ is not reflexive.}$ Now, if $(x,y) \in R$, then x is the father of y. \Rightarrow But y is not father of x. $\Rightarrow (y,x) \notin R$ $\Rightarrow R \text{ is not symmetric.}$ Now, let $(x,y), (y,z) \in R$ $\Rightarrow x \text{ is the father of y and y is the father of z.}$ $\Rightarrow x \text{ is not the father of z.}$ $\Rightarrow \text{ Indeed x is the grandfather of z.}$ $\Rightarrow R \text{ is not transitive.}$

Therefore, R is neither reflexive, nor symmetric, nor transitive.

3. f : Z \rightarrow Z : f(x) = x³ is one - one into

 $f(x) = x^3$

Since the function f(x) is monotonically increasing from the domain $Z \rightarrow Z$

∴ f(x) is one –one

Range of f(x) = (- ∞, ∞) \neq Z(codomain)

- ∴ f(x) is into
- \therefore f : Z \rightarrow Z : f(x) = x³ is one one into.

Hence, (A) is a skew symmetric.

4. Let us take matrices ,
$$A = \begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$$
 and $B = \begin{bmatrix} 1 & -1 \\ -1 & 1 \end{bmatrix}$, then $A \neq 0, B \neq 0$.
But, $AB = \begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix} \begin{bmatrix} 1 & -1 \\ -1 & 1 \end{bmatrix} = \begin{bmatrix} 1-1 & -1+1 \\ 1-1 & -1+1 \end{bmatrix} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix} = 0$
and, $BA = = \begin{bmatrix} 1 & -1 \\ -1 & 1 \end{bmatrix} \begin{bmatrix} 1 & 1 \\ 1 & 1 \\ 1 & 1 \end{bmatrix} = \begin{bmatrix} 1-1 & -1+1 \\ -1+1 & -1+1 \end{bmatrix} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix} = 0$
5. Here, $A = [a_{ij}]_{2\times 2} = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$(i)
 $a_{ij} = \frac{(i-2j)^2}{2}$
 $a_{11} = \frac{(1-2i(1))^2}{2} = \frac{1}{2}, a_{12} = \frac{(1-2i(2))^2}{2} = \frac{9}{2}$
 $a_{21} = \frac{(2-2i(1))^2}{2} = 0, a_{22} = \frac{(2-2i(2))^2}{2} = 2$
Using equation (i)
 $A = \begin{bmatrix} \frac{1}{2} & \frac{9}{2} \\ 0 & 2 \end{bmatrix}$
We have, $A = \begin{bmatrix} 0 & a & b \\ -a & 0 & c \\ -b & -c & 0 \end{bmatrix}$
 $\Rightarrow A' = \begin{bmatrix} 0 & -a & -b \\ a & 0 & -c \\ b & c & 0 \end{bmatrix}$
 $\Rightarrow A' = -\begin{bmatrix} 0 & a & b \\ -a & 0 & c \\ -b & -c & 0 \end{bmatrix}$

6. For the given system of equations, we have

$$D = \begin{vmatrix} 2 & 1 \\ 4 & 2 \end{vmatrix} = 0 \text{ and } D_1 = \begin{vmatrix} 3 & 1 \\ 5 & 2 \end{vmatrix} = 1 \neq 0$$

Thus, we have D = 0 and $D_1 \neq 0$. So, the given system is inconsistent.

7. Let I =
$$\int \frac{dx}{\sqrt{2x-x^2}}$$

= $\int \frac{dx}{\sqrt{1-(x-1)^2}}$
Put x - 1 = t. Then dx = dt.
Therefore, $\int \frac{dx}{\sqrt{2x-x^2}} = \int \frac{dt}{\sqrt{1-t^2}} = \sin^{-1}(t) + C$
= $\sin^{-1}(x-1) + C$
OR
 $\int \left(5x^3 + 2x^{-5} - 7x + \frac{1}{\sqrt{x}} + \frac{5}{x}\right) dx$
= $5\int x^3 dx + 2\int x^{-5} dx - 7\int x dx + \int x^{-\frac{1}{2}} dx + 5\int \frac{1}{x} dx$
= $5 \cdot \frac{x^4}{4} + 2 \cdot \frac{x^{-4}}{(-4)} - 7 \cdot \frac{x^2}{2} + \frac{x^{\frac{1}{2}}}{(\frac{1}{2})} + 5\log|x|$

$$x = \frac{5x^4}{4} - \frac{1}{2x^4} - \frac{7x^2}{2} + 2\sqrt{x}$$
 + 5log $|\mathbf{x}|$ + C, where C is constant of integration.

8. We have to find the area of the region bounded by the curves y = |x - 2|, x = 1, x = 3 and the x-axis. Required area = $\int_{-\infty}^{2} (2 - x) dx + \int_{-\infty}^{3} (x - 2) dx$



9. It is given that equation is y" + 2y' + siny = 0
We can see that the highest order derivative present in the differential is y". Thus, its order is two. It is polynomial equation in y" and y'
So, the highest power raised to y" is 1
Therefore, its degree is one.

OR

$$egin{aligned} rac{dy}{dx} &= -\sqrt{rac{1-y^2}{1-x^2}} \ \int rac{dy}{\sqrt{1-y^2}} &= \int rac{-dx}{\sqrt{1-x^2}} \ \sin^{-1}\left(y'
ight) + \sin^{-1}\left(x
ight) = c \end{aligned}$$

10. Cross product of vectors **a** and **b** is given by :-

$$\vec{\mathbf{a}} \times \vec{\mathbf{b}} = \begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ 2 & 1 & 3 \\ 3 & 5 & -2 \end{vmatrix} = -17\hat{i} + 13\hat{j} + 7\hat{k}$$
$$\therefore |\vec{\mathbf{a}} \times \vec{\mathbf{b}}| = \sqrt{289 + 169 + 49} = \sqrt{507}$$

$$\vec{a} = \hat{i} + 2\hat{j}$$
 and $\vec{b} = 2\hat{i} + \hat{j}$
 $\therefore |\vec{a}| = \sqrt{1+4} = \sqrt{5}$ and $|\vec{b}| = \sqrt{4+1} = \sqrt{5}$

So, $|\vec{a}| = |\vec{b}|$

 \rightarrow

But, given vectors are not equal as their corresponding components are not equal.

12. Given,

$$egin{aligned} |ec{a}| &= \sqrt{3}, |ec{b}| = 2 ext{ and } ec{a}.ec{b} = \sqrt{6} \ \cos heta &= rac{ec{a}.ec{b}}{|ec{a}|ec{b}|} \ &= rac{\sqrt{6}}{\sqrt{3} imes 2} \ &= rac{1}{\sqrt{2}} \ heta &= \cos^{-1} \left(rac{1}{\sqrt{2}}
ight) \ &= rac{\pi}{4} \end{aligned}$$

13. Direction ratios of line joining A and B are (1 - 2, -2 - 3, 3 + 4) i.e., -1, -5, 7.

The direction ratios of line joining B and C are

(3 -1, 8 + 2, -11- 3), i.e., 2, 10, - 14.

It is clear that direction ratios of AB and BC are proportional, hence, AB is parallel to BC. But point B is common to both AB and BC. Therefore, A, B, C are collinear points.

14. -

15. -

16. ---

Section - II

17. --

18. ---

Part - B Section - III

19. We have to show that,

$$\tan^{-1}\left(\frac{2}{3}\right) = \frac{1}{2}\tan^{-1}\left(\frac{12}{5}\right)$$
LHS = $\tan^{-1}\left(\frac{2}{3}\right)$
Dividing and multiplying by 2,

$$= \frac{1}{2}\left\{2\tan^{-1}\left(\frac{2}{3}\right)\right\}$$

$$= \frac{1}{2}\left\{\tan^{-1}\left(\frac{2\left(\frac{2}{3}\right)}{1-\left(\frac{2}{3}\right)^{2}}\right)\right\}\left\{\text{Since } 2\tan^{-1}x = \tan^{-1}\left(\frac{2x}{1-x^{2}}\right)\right\}$$

$$= \frac{1}{2}\tan^{-1}\left(\frac{\frac{4}{3}}{\frac{5}{9}}\right)$$

$$= \frac{1}{2}\tan^{-1}\left(\frac{4}{3} \times \frac{9}{5}\right)$$

$$= \frac{1}{2}\tan^{-1}\left(\frac{12}{5}\right)$$

$$\tan^{-1}\left(\frac{2}{3}\right) = \frac{1}{2}\tan^{-1}\left(\frac{12}{5}\right)$$
20. We have given that

20. We have given that,

ar(ΔABC) = 3 sq units .

$$\Leftrightarrow \frac{1}{2} \cdot \begin{vmatrix} 1 & 3 & 1 \\ 0 & 0 & 1 \\ k & 0 & 1 \end{vmatrix} = \pm 3 \Leftrightarrow \begin{vmatrix} 1 & 3 & 1 \\ 0 & 0 & 1 \\ k & 0 & 1 \end{vmatrix} = \pm 6 \Leftrightarrow (-1) \cdot \begin{vmatrix} 1 & 3 \\ k & 0 \end{vmatrix} = \pm 6 \Leftrightarrow 3k = \pm 6 \Leftrightarrow k = \pm 2$$

Hence, k = ±2

Here,

 x^2 1 x $\mathbf{2}$ |A| =0 1 3 1 4 Expanding along the first row OR

$$\begin{aligned} |A| &= x^2 \begin{vmatrix} 2 & 1 \\ 1 & 4 \end{vmatrix} - x \begin{vmatrix} 0 & 1 \\ 3 & 4 \end{vmatrix} + 1 \begin{vmatrix} 0 & 2 \\ 3 & 1 \end{vmatrix} \\ = x^2(2 \times 4 - 1 \times 1) - x(0 \times 4 - 1 \times 3) + 1(0 \times 1 - 2 \times 3) \\ = x^2(8 - 1) - x(0 - 3) + 1(0 - 6) \\ = 7x^2 + 3x - 6 \\ Also |A| &= 28 \\ \Rightarrow 7x^2 + 3x - 6 &= 28 \\ \Rightarrow 7x^2 + 3x - 6 &= 28 \\ \Rightarrow 7x^2 + 3x - 34 &= 0 \\ \Rightarrow x(7x + 17) - 2(7x + 17) &= 0 \\ \Rightarrow (x - 2)(7x + 17) = 0 \\ x &= 2, -\frac{17}{7} \\ Integer value of x is 2 \end{aligned}$$

21. We have, $y = (x - 3)^2$, which is continuous in $x_1 = 3$ and $x_2 = 4$ i.e., [3, 4]

Also,
$$y' = 2(x - 3) \cdot 1 = 2(x - 3)$$
 which exists in (3, 4)

Hence, by mean value theorem, there exists a point on the curve at which tangent drawn is parallel to the chord joining the points (3, 0) and (4, 1).

Thus,
$$f'(c) = \frac{f(4) - f(3)}{4 - 3}$$

 $\Rightarrow 2(c - 3) = \frac{(4 - 3)^2 - (3 - 3)^2}{4 - 3}$
 $\Rightarrow 2c - 6 = \frac{1 - 0}{1} \Rightarrow c = \frac{7}{2}$
For $x = \frac{7}{2}, y = (\frac{7}{2} - 3)^2 = (\frac{1}{2})^2 = \frac{1}{4}$
So, $(\frac{7}{2}, \frac{1}{4})$ is the point on the curve at which

So, $(\frac{7}{2}, \frac{1}{4})$ is the point on the curve at which tangent drawn is parallel to the chord joining the points (3, 0) and (4, 1).

22. Let $f(x) = 3x^4 - 8x^3 + 12x^2 - 48 + 1$. Then,

f(x) = $12x^3 - 24x^2 + 24x - 48$ and f''(x) = $36x^2 - 48x + 24$ The critical points of f'(x) are given by f'(x) = 0. Now, f'(x) = 0 $\Rightarrow 12x^3 - 24x^2 + 24x - 48 = 0$ $\Rightarrow x^3 - 2x^2 + 2x - 4 = 0 \Rightarrow x^2 (x - 2) + 2 (x - 2) = 0 \Rightarrow (x - 2) (x^2 + 2) = 0 \Rightarrow x = 2 [:: x^2 + 2 \neq 0]$ The values of f(x) at critical points and at the end - points of the interval are computed as follows:

f(2) = -59, f(1) = -40 and f(4) = 257.

Of these values the largest and the smallest values are f(4) = 257 and f(2) = -59.

So, the minimum and maximum values of f(x) on [1, 4] are -59 and 257 respectively.

23. $\int \frac{\cos x}{1+\cos x} dx$

$$J = \int \frac{1 + \cos x}{1 + \cos x} dx$$

= $\int \frac{1 + \cos x}{1 + \cos x} - \frac{1}{1 + \cos x} dx$
= $\int \left(1 - \frac{1}{2\cos^2 \frac{x}{2}}\right) dx$
As $2\cos^2 \frac{\theta}{2} = 1 + \cos \theta$
= $\int 1 dx - \frac{1}{2} \int \sec^2 \frac{x}{2} dx$
= $x - \frac{1}{2} \frac{\tan \frac{x}{2}}{\frac{1}{2}} + c [\because \int \sec^2 (ax + b) dx = \frac{\tan(ax + b)}{a} + c]$
= $x - \tan \frac{x}{2} + c$
OR

Let $I = \int_0^1 \frac{dx}{1+x^2}$ $I = \int_0^1 \frac{dx}{1+x^2}$ We know that

$$\int \frac{dx}{a^{2}+x^{2}} = \frac{1}{a} \tan^{-1} \frac{x}{a} + c$$
Therefore,
I = $[\tan^{-1} x]_{0}^{1}$
= $\tan^{-1}(1) - \tan^{-1}(0) = \frac{\pi}{4} - 0$
= $\frac{\pi}{4}$
 $\therefore \int_{0}^{1} \frac{dx}{1+x^{2}} = \frac{\pi}{4}$
24.

 $x^{2} + y^{2} = a^{2}$
 $x = \frac{a}{\sqrt{2}}$
= $2\int_{\frac{a}{\sqrt{2}}}^{a} \sqrt{a^{2} - x^{2}} dx$
= $2\left[\frac{x}{2}\sqrt{a^{2} - x^{2}} + \frac{a^{2}}{2}\sin^{-1}\frac{x}{a}\right]_{\frac{a}{\sqrt{2}}}^{a}$
= $2\left[(0 + \frac{\pi a^{2}}{4}) - (\frac{a^{2}}{4} + \frac{\pi a^{2}}{8})\right]$
= $2\left[\frac{\pi a^{2}}{8} - \frac{a^{2}}{4}\right]$
= $\frac{\pi a^{2}}{4} - \frac{a^{2}}{2}$ sq units.

25. We have, $y = ce^{\tan^{-1}x}$...(i) Differentiating both sides of (i) with respect to x, we get $\frac{dy}{dx} = ce^{\tan^{-1}x} \frac{1}{1+x^{2}}$...(ii) Differentiating both sides of (ii) with respect to x, we get $\frac{d^{2}y}{dx^{2}} = c \frac{(1+x^{2})e^{\tan^{-1}x} \frac{1}{1+x^{2}} - e^{\tan^{-1}x}(2x)}{(1+x^{2})^{2}}$ $\Rightarrow \frac{d^{2}y}{dx^{2}} = c \frac{e^{\tan^{-1}x} - 2xe^{\tan^{-1}x}}{(1+x^{2})^{2}}$ $\Rightarrow \frac{d^{2}y}{dx^{2}} = c \frac{(1-2x)e^{\tan^{-1}x}}{(1+x^{2})^{2}}$ $\Rightarrow (1+x^{2}) \frac{d^{2}y}{dx^{2}} = c(1-2x)\frac{e^{\tan^{-1}x}}{(1+x^{2})}$ $\Rightarrow (1+x^{2}) \frac{d^{2}y}{dx^{2}} = (1-2x)\frac{dy}{dx}$...[Using equation (ii)] $\Rightarrow (1+x^{2}) \frac{d^{2}y}{dx^{2}} + (2x-1)\frac{dy}{dx} = 0$ Hence, the given function is the solution to the given diff

Hence, the given function is the solution to the given differential equation. 26. Let ABC be a triangle such that

$$\overrightarrow{BC} = \overrightarrow{a}, \overrightarrow{CA} = \overrightarrow{b} \text{ and } \overrightarrow{AB} = \overrightarrow{c}. \text{ Then,}$$

$$\overrightarrow{a} + \overrightarrow{b} + \overrightarrow{c} = \overrightarrow{BC} + \overrightarrow{CA} + \overrightarrow{AB}$$

$$\Rightarrow \overrightarrow{a} + \overrightarrow{b} + \overrightarrow{c} = \overrightarrow{BA} + \overrightarrow{AB} [\because \overrightarrow{BC} + \overrightarrow{CA} = \overrightarrow{BA}]$$

$$\Rightarrow \overrightarrow{a} + \overrightarrow{b} + \overrightarrow{c} = \overrightarrow{BB} \text{ [By triangle law]}$$

$$\Rightarrow \overrightarrow{a} + \overrightarrow{b} + \overrightarrow{c} = \overrightarrow{0} \text{ [By definition of null vector]}$$
Therefore,

$$\vec{a} + \vec{b} + \vec{c} = \vec{0}$$

$$\vec{a} + \vec{b} + \vec{c} = \vec{0}$$

$$\vec{a} + \vec{b} + \vec{c} = \vec{0}$$

$$\vec{a} + \vec{b} + \vec{c} = \vec{0}$$
27. -----
28. We are given that,
P(husband will be selected) = $P(A) = \frac{1}{7}$
P(wife will be selected) = $P(B) = \frac{1}{5}$
P(only one of them will be selected) = $P(A)P(\vec{B}) + P(\vec{A})P(B)$

$$= \frac{1}{7}(1 - \frac{1}{5}) + \frac{1}{5}(1 - \frac{1}{7})$$

$$= \frac{4}{35} + \frac{6}{35}$$

$$= \frac{2}{7}$$
OR
Let n and p be the parameters of binomial distribution. Then, we are given that,
mean = np = 5 ... (i)
Variance = npq = 4 ... (ii)
Dividing equation (ii) by (i),
$$\frac{npq}{np} = \frac{4}{5}$$
 $q = \frac{4}{5}$
 $p = \frac{1}{5}$ [Since p + q = 1)
Put the value of p in equation (i), we get,
np = 5
 $n(\frac{1}{5}) = 5$
 $n = 25$
Number of trials = 25
$$\frac{\text{Section - IV}}{1, \text{ if } x > 0}$$

29. Signum Function f : R ightarrow R, given by $f(x) = \left\{egin{array}{c} 0, \ if \ x = 0 \ -1, \ if \ x < 0 \end{array}
ight.$

f(1) = f(2) = 1

Two distinct elements have same image.

∴ f is not one-one.

Except -1, 0, 1 no other members of co-domain of f has any pre-image its domain.

 \therefore f is not onto.

Therefore, f is neither one-one nor onto.

30. Note: y₂ represents second order derivative i.e., $\frac{d^2y}{dx^2}$ and y₁ = dy/dx

Given,

 $y=e^{ an^{-1}x}$...(i)

To prove: $(1 + x^2) y_2 + (2x - 1) y_1 = 0$

To find the above we will do the double differentiation of the given function

As,
$$\frac{d^2y}{dx^2} = \frac{d}{dx} \left(\frac{dy}{dx} \right)$$

So, lets first find dy/dx

 $rac{dy}{dx}=rac{d}{dx}e^{ an^{-1}x}$ Using chain rule we will differentiate the above expression

Let
$$t = \tan^{1} x \Rightarrow \frac{dt}{dx} = \frac{1}{1+x^{2}}$$

 $\left[\frac{d}{dx} \tan^{-1} x = \frac{1}{1+x^{2}}\right]$
And $y = e^{t}$
 $\frac{dy}{dx} = \frac{dy}{dt} \frac{dt}{dx}$
 $\frac{dy}{dx} = e^{t} \frac{1}{1+x^{2}} = \frac{e^{m^{-1}x}}{1+x^{2}} \dots$ (ii)
Again differentiating with respect to x applying product rule:
 $\frac{d^{1}y}{dx^{2}} = e^{t} \frac{1}{1-x^{2}} = \frac{e^{m^{-1}x}}{(1+x^{2})} + \frac{1}{1+x^{2}} \frac{d}{dx} e^{tn^{-1}x}$
Using chain rule we will differentiate the above expression-
 $\frac{d^{2}y}{dx^{2}} = \left(\frac{e^{m^{-1}x}}{(1+x^{2})^{2}}\right) - \frac{2\pi e^{m^{-1}x}}{(1+x^{2})^{2}}$ [using equation (ii); $\frac{d}{dx}(x^{n}) = nx^{n-1}\&c\frac{d}{dx}\tan^{-1}x = \frac{1}{1+x^{2}}$]
 $(1 + x^{2})\frac{d^{1}y}{dx^{2}} = \frac{e^{t}}{1+x^{2}} - \frac{2\pi e^{m^{-1}x}}{1+x^{2}}$
 $(1 + x^{2})\frac{d^{1}y}{dx^{2}} = \frac{d^{1}}{dx}(1 - 2x)$
Using equation (ii)
 $(1 + x^{2})\frac{d^{1}y}{dx^{2}} = \frac{d^{1}}{dx}(1 - 2x)$
Using equation (iii)
 $(1 + x^{2})\frac{d^{1}y}{dx^{2}} = \frac{d^{1}}{dx}(1 - 2x)$
 $\therefore (1 + x^{2})y_{2} + (2x - 1)y_{1} = 0$
Hence proved
31. Let $y = u + v$, where $u = (x)^{\cos x}$ and $v = (\cos x)^{\sin x}$
Now, $u = (x)^{\cos x}$
 $\Rightarrow \log u = (\cos x)\log x$
 $\Rightarrow \log u = (\cos x)\log x$
 $\Rightarrow \log u = (\cos x)\log x + (\log x) + (\log x) + (\log x) + \frac{d}{dx}(\cos x)$ [on differentiating w.r.t. x]
 $= (\cos x) \cdot \frac{1}{x} + (\log x)(\sin x)$
 $\Rightarrow \frac{dn}{dx} = (x)^{\cos x} - (\log x)(\sin x)$
 $\Rightarrow \frac{dn}{dx} = (x)^{\cos x} + \frac{\cos x}{2x} - (\log x)(\sin x)$
 $\Rightarrow \frac{dn}{dx} = (x)^{\cos x} (\frac{\sin x}{2x} + \log(\cos x) + \log(\cos x) + \frac{d}{dx}(\sin x) \text{ Ion differentiating w.r.t. x]$
 $\Rightarrow \frac{dn}{dx} = (\cos x)^{\sin x} + (\sin x) + \frac{\cos x}{\cos x} + \log(\cos x) + \cos x)$
 $\Rightarrow \frac{dn}{dx} = (\cos x)^{\sin x} \cdot (\sin x \tan x + \cos x \cdot \log(\cos x)) \dots (i)$
 $\therefore y = (u = v)$
 $\Rightarrow \frac{dy}{dx} = \frac{dx}{dx} + \frac{dx}{dx}$
 $\Rightarrow \frac{dy}{dx} = \frac{dx}{dx} + \frac{dx}{dx}$
 $\Rightarrow \frac{dy}{dx} = \frac{-\sin a\cos(a(y)}{2x} + \log(x)(\sin x)) + (\cos x)^{\sin x} \cdot (-\sin x \tan x + \cos x \cdot \log(\cos x))$
OR
Given, x sin(a + y) + sin a cos(a + y) = 0
 $\Rightarrow x = \frac{-\sin a\cos(a(y)}{\sin(y)}$

On differentiating both sides w.r.t y,we get

$$\frac{dx}{dy} = -\frac{\left[\sin(a+y)\frac{d}{dy}\left\{\sin a \cos(a+y)\right\} - \sin a \cos(a+y)\frac{d}{dy}\left\{\sin(a+y)\right\}\right]}{\sin^2(a+y)} \dots \text{[By using quotient rule of derivative]}$$

$$= \left\{\frac{\sin(a+y) \cdot \sin a \sin(a+y) + \sin a \cos(a+y) \cos(a+y)}{\sin^2(a+y)}\right\}$$

$$= \frac{\sin a}{\sin^2(a+y)} \left\{\sin^2(a+y) + \cos^2(a+y)\right\}$$

$$= \frac{\sin a}{\sin^2(a+y)} \cdot 1 \left[\because \sin^2 \theta + \cos^2 \theta = 1\right]$$

 $\therefore \frac{dy}{dx} = \frac{\sin^2(a+y)}{\sin a}$ Hence Proved. 32. We have, $f(x) = rac{3}{2}x^4 - 4x^3 - 45x^2 + 51$ \Rightarrow f'(x) = 6x³ - 12x² - 90x \Rightarrow f'(x) = 6x(x² - 2x - 15) \Rightarrow f'(x) = 6x(x² - 5x + 3x - 15) \Rightarrow f'(x) = 6x(x - 5)(x + 3) For f(x) to be increasing, we must have \Rightarrow f'(x) > 0 \Rightarrow 6x(x - 5)(x + 3)> 0 \Rightarrow x(x - 5)(x + 3) > 0 \Rightarrow -3 < x < 0 or 5 < x < ∞ \Rightarrow x \in (-3,0) \cup (5, ∞) Therefore, f(x) is increasing on interval (–3,0) \cup (5, ∞) Now, for f(x) to be decreasing, we must have f'(x) < 0 \Rightarrow 6x(x - 5)(x + 3)> 0 \Rightarrow x(x - 5)(x + 3) > 0 $\Rightarrow -\infty < x < -3 \text{ or } 0 < x < \infty$ \Rightarrow x \in (- ∞ , -3) \cup (0, 5) Therefore f(x) is decreasing on interval $(-\infty, -3) \cup (0, 5)$ 33. Let I = $\int \cot^5 x \, dx$ \Rightarrow I = $\int \cot^2 x \cot^3 x dx$ \Rightarrow I = $\int (\csc^2 x - 1) \cot^3 x dx$ \Rightarrow I = $\int \cot^3 x \csc^2 x \, dx - \int \cot^3 x \, dx$ \Rightarrow I = $\int \cot^3 x \csc^2 x \, dx - \int (\csc^2 x - 1) \cot x \, dx$ \Rightarrow I = $\int \cot^3 x \csc^2 x dx - \int (\csc^2 x \cot x) dx + \int \cot x dx$ Let $\cot x = t$, then $-\csc^2 x \, dx = dt$ $\Rightarrow I = -\int t^3 dt + \int t dt + \int \cot x \, dx$ $\Rightarrow I = -\frac{t^4}{4} + \frac{t^2}{2} + \log|\sin x| + c$ $\Rightarrow I = -\frac{\cot^4 x}{4} + \frac{\cot^2 x}{2} + \log|\sin x| + c$ Therefore, $\int \cot^5 x \, dx = -\frac{\cot^4 x}{4} + \frac{\cot^2 x}{2} + \log |\sin x| + c$ Hence the solution 34. The equation of given curve is $y=\sqrt{a^2-x^2}$ Required area = the area under the curve $y=\sqrt{a^2-x^2}$ between the lines x=0 and x=a $=\int_0^{\overline{a}} y \, dx$ $=\int_0^a \sqrt{a^2 - x^2} \, dx$ put x=a sin θ , then dx= a cos $\theta d\theta$ when x=0 , a sin $\theta = 0$, sin heta=0 $\theta = 0$ when x= a ,asin θ =a $\sin \theta$ =1 $\theta = \frac{\pi}{2}$ $\therefore I = \int_0^{\pi/2} \sqrt{a^2 - a^2 sin^2 heta}. acos heta \, d heta$ $=a^2\int_0^{\pi/2}\cos^2 heta \,d heta \ =rac{a^2}{2}\int_0^{\pi/2}2\,\cos^2 heta \,d heta$ $= {{ar a^2}\over 2} \int_0^{\pi/2} (1+cos \; 2 heta) d heta$

$$= \frac{a^2}{2} \left[\theta + \frac{\sin 2\theta}{2} \right]_0^{\pi/2}$$

= $\frac{a^2}{2} \left[\left(\frac{\pi}{2} + \frac{1}{2} sin\pi \right) - \left(0 + \frac{1}{2} sin0 \right) \right]$
= $\frac{a^2}{2} \left[\left(\frac{\pi}{2} + 0 \right) - \left(0 - 0 \right) \right]$
= $\frac{\pi a^2}{4}$ sq.units

OR

Equation of one line l_1 is 2x + y = 4, Equation of second line l_2 is 3x - 2y = 6And Equation of third line l_3 is x - 3y + 5 = 0



Here, vertices of triangle ABC are A (2, 0), B (4, 3) and C (1, 2). Now, Required area of triangle

= Area of trapezium CLMB - Area
$$\triangle ACM$$
 - Area $\triangle ABL$
= $\left| \int_{1}^{4} \frac{1}{3} (x+5) dx \right| - \left| \int_{1}^{2} (4-2x) dx \right| - \left| \int_{2}^{4} \frac{3}{2} (x-2) dx \right|$
= $\frac{1}{3} \left| \left(\frac{x^2}{2} + 5x \right)_{1}^{4} \right| - \left| \left(4x - \frac{2x^2}{2} \right)_{1}^{2} \right| - \frac{3}{2} \left| \left(\frac{x^2}{2} - 2x \right)_{2}^{4} \right|$
= $\frac{1}{3} \left[8 + 20 - \left(\frac{1}{2} + 5 \right) \right] - \{ (8-4) - (4-1) \} - \frac{3}{2} | (8-8) - (2-4) |$
= $\frac{1}{3} (28 - \frac{11}{2}) - (4-3) - \frac{3}{2} \times 2$
= $\frac{1}{3} \times \frac{45}{2} - 1 - 3$
= $\frac{15}{2} - 1 - 3 = \frac{7}{2}$ sq. units

35. Let P be the population at any time t and P_0 be the initial population. Then, we have,

$$\begin{split} \frac{dP}{dt} &\propto P \\ \Rightarrow \frac{dP}{dt} = \lambda P \\ \Rightarrow \frac{dP}{P} = \lambda dt \\ \Rightarrow \int \frac{dP}{P} = \lambda \int dt \\ \Rightarrow \log P = \lambda t + c \dots (1) \\ \text{Here, P = P_0 t when t = 0} \\ \log(P_0) &= 0 + c \\ \Rightarrow \log\left(\frac{P}{P_0}\right) = \lambda t \dots (2) \\ \text{Given P = 2P_0 when t = 25} \\ \log\left(\frac{2P_0}{P_0}\right) = 25\lambda \\ \Rightarrow \log 2 = 25\lambda \\ \Rightarrow \lambda = \frac{\log 2}{25} \\ \Rightarrow \text{Now equation (2) becomes,} \\ \log\left(\frac{P}{P_0}\right) = \left(\frac{\log 2}{25}\right) t \\ \text{let t_1 be the time to become population 500000 from 100000, so, that,} \end{split}$$

$$\begin{split} &\log\left(\frac{500000}{100000}\right) = \frac{\log 2}{25}t_1 \\ \Rightarrow t_1 = \frac{25\log 5}{\log 2} \\ \Rightarrow t_1 = \frac{25(1.609)}{(0.6931)} = 58 \\ &\text{Required time = 58 years.} \end{split}$$

Section - V

OR

36. Let cost of 1kg onion = xcost of 1kg wheat = y cost of 1kg rise = z By the question ,we have, 4x + 3y + 2z = 602x + 4y + 6z = 906x + 2y + 3z = 70 $A = \begin{bmatrix} 4 & 3 & 2 \\ 2 & 4 & 6 \\ 6 & 2 & 3 \end{bmatrix} B = \begin{bmatrix} 60 \\ 90 \\ 70 \end{bmatrix} X = \begin{bmatrix} x \\ y \\ z \end{bmatrix}$ $|A| = \begin{bmatrix} 4 & 3 & 2 \\ 2 & 4 & 6 \\ 6 & 2 & 3 \end{bmatrix} = 50 \neq 0$ $Now, A_{11} = 0, A_{12} = 30, A_{13} = -20$ $A_{21} = -5, A_{22} = 0, A_{23} = 10$ $A_{31} = 10, A_{32} = -20, A_{33} = 10$ $A_{31} = 10, A_{32} = -20, A_{33} = 10$ $\therefore adjA = \begin{bmatrix} 0 & -5 & 10 \\ 30 & 0 & -20 \\ -20 & 10 & 10 \end{bmatrix}$ $A^{-1} = rac{1}{|A|}(adjA) = rac{1}{50} \begin{bmatrix} 0 & -5 & 10 \\ 30 & 0 & -20 \\ -20 & 10 & 10 \end{bmatrix}$ $X = A^{-1}B$ $\begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 5 \\ 8 \\ 8 \end{bmatrix}$ x = 5, y = 8, z = 8 We have , $|A| = \begin{vmatrix} 2 & -3 & 5 \\ 3 & 2 & -4 \\ 1 & 1 & -2 \end{vmatrix}$ $=2[-4+4]+3[-6+4]+5[3-2]=0+3(-2)+5(1)=-6+5=-1 \neq 0$ $\therefore A^{-1}$ exists Now, A₁₁ = 0, A₁₂ = 2, A₁₃ = 1 A₂₁ = -1, A₂₂ = -9, A₂₃ = -5 $A_{31} = 2, A_{32} = 23, A_{33}$ $\begin{array}{c} \therefore adjA = \begin{bmatrix} 0 & -1 & 2 \\ 2 & -9 & 23 \\ 1 & -5 & 13 \end{bmatrix} \\ \therefore A^{-1} = \frac{1}{|A|} (adjA) \\ = \frac{1}{-1} \begin{bmatrix} 0 & -1 & 2 \\ 2 & -9 & 23 \\ 1 & -5 & 13 \end{bmatrix}$

 $= egin{bmatrix} 0 & 1 & -2 \ -2 & 9 & -23 \ -1 & 5 & -13 \end{bmatrix}$

The given system of equation can be written is Ax = B, $X = A^{-1}B$

$$\begin{bmatrix} 2 & -3 & 5 \\ 3 & 2 & -4 \\ 1 & 5 & -2 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 11 \\ -5 \\ 3 \end{bmatrix}$$
 replace column matrix of RHS by
$$\begin{bmatrix} 11 \\ -5 \\ 3 \end{bmatrix}$$
$$\begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 2 & -3 & 5 \\ 3 & 2 & -4 \\ 1 & 5 & -2 \end{bmatrix}^{-1} \begin{bmatrix} 11 \\ -5 \\ 3 \end{bmatrix}$$
$$= \begin{bmatrix} 0 & 1 & -2 \\ -2 & 9 & -23 \\ -1 & 5 & -13 \end{bmatrix} \begin{bmatrix} 11 \\ -5 \\ -3 \end{bmatrix}$$
$$\begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$$
$$x = 1$$
$$y = 2$$
$$z = 3$$
$$37. --$$
OR
$$=$$

ATOMIC ENERGY CENTRAL SCHOOL NO.4 RAWATBHATA

CLASS 12 - BIOLOGY Confidence Examination - I 2020-21)

Time Allowed: 3 hours

General Instructions:

- 1. All questions are compulsory.
- 2. The question paper has four sections: Section A, Section B, Section C and Section D. There are 33 questions in the question paper.
- 3. Section–A has 14 questions of 1 mark each and 02 case-based questions. Section–B has 9 questions of 2 marks each. Section–C has 5 questions of 3 marks each and Section–D has 3 questions of 5 marks each.
- 4. There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.
- 5. Wherever necessary, neat and properly labeled diagrams should be drawn.

Section A

1.	The human testes are located outside the abdominal cavity. (give reason)			
2.	Spermatozoa get nutrition from Sertoli cells. (True/False)			
3.	Why in a test cross, did Mendel cross a tall pea plant with a dwarf pea plant only?			
4.	Suggest any two contraceptive methods which are very effective to avoid emergency	[1]		
	pregnancy.			
5.	What do "Eco", "R" and "I" refer to in the enzyme EcoRI?	[1]		
6.	Who had proposed the chromosomal theory of inheritance?			
7.	Define multiple allelism.			
8.	How are diseases transmitted from the reservoir of infection to a healthy person?			
9.	What do you mean by palindromic sequence ?			
10.	Bottled fruit juices brought from the market are clearer as compared to those made at home.	[1]		
	(give reason)			
11.	Assertion: An organism with a lethal mutation may not even develop beyond the zygote			
	stage.			
	Reason: All types of gene mutations are lethal.			
	 a) The assertion is a true statement but the reason is false. b) Both assertion and reason are true and the reason is the correct explanation of the assertion. 			

c) Both assertion and reason are truebut the reason is not the correctexplanation of the assertion.

Maximum Marks: 70

OR

Assertion: Turner's syndrome is caused due to the absence of one X chromosomes. **Reason:** The female suffering from the turner's syndrome is sterile as ovaries are rudimentary along with other secondary sexual characters.

a) Both assertion and reason are correct
b) The assertion is incorrect but the reason is correct
c) Both assertion and reason are incorrect
d) The assertion is correct but the reason is incorrect

12. Assertion: Many visitors to the hills suffer from skin and respiratory allergy problems. [1]
 Reason: Conifer trees produce a large quantity of wind-borne pollen grains.

- a) Both Assertion and Reason are true and the Reason is the correct explanation of the Assertion
 b) Both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion
 c) Assertion is true statement but
 b) Both Assertion and Reason are false
- c) Assertion is true statement but reason is false
- 13. **Assertion:** Replication and transcription occur in the nucleus but translation occurs in the [1] cytoplasm.

Reason: mRNA is transferred from the nucleus into the cytoplasm where ribosomes and amino acids are available for protein synthesis.

- a) Both Assertion and Reason are true b) Both Assertion and Reason are true
- c) Assertion is true, but Reason is false d) Both Assertion and Reason are false

14. Assertion: There is a statutory ban amniocentesis on sex determination in India. Reason: Amniocentesis is used to determine sex of foetus for female foeticide.

a) A. Assertion is incorrect but reason is correct

J.

- b) B.Assertion is correct but reason is incorrect
- c) C.Both assertion and reason are incorrectd) D.Both assertion and reason are correct
- 15. Large quantities of sewage is generated everyday in cities and towns,which is treated in [4] Sewage Treatment plants (STPs) to make it less polluted,

Given below

is the flow diagram of one of the stages of STP. Observe the given flow diagram and answer the questions accordingly Primary effluent is passed into large aeration tank.

Effluent passed into settling tank to form the sediment.

- a. Why primary effluent is passed into large aeration tanks ?
- b. Write the technical term used for the sediment formed ?
- c.Write down the significance of the above sediments formed.

[1]

d. Explain the final step that results in the formation of biogas in the large tank before the treated effluent is released into water bodies.

e.The techno,logy of biogas production from cow dung was developed in India largely due to the efforts of _____.

16. Read the following and answer any four questions:

In angiosperm, the seed is the final product of sexual reproduction. It is described as a fertilized ovule. The seeds are formed inside the fruit. The seed consists of a seed coat, cotyledon, and the embryo axis. A mature seed is usually non - albuminous or albuminous. Integument of ovules harder as tough protective seed coat. Sometimes due to reduced water content, the general metabolic activity of the seed slows down and the seed enters a state of inactivity. In the mature plant, the fruit develops from the ovary they are called true fruit. The fruit is the result of fertilization. There are a few species in which fruit develop without fertilization banana is such an example

- i. Which of the following have non-albuminous seed?
 - a. Sunflower
 - b. Groundnut
 - c. Maize
 - d. Barley

ii. The entry of oxygen and water in the seed during germination:

- a. micropyle
- b. chalazal
- c. epicotyl
- d. hypocotyl

iii. The embryo enters the state of inactivity called:

- a. pericarp
- b. dormancy
- c. apomixis
- d. none of these

iv. The wall of the ovary develops into the wall of fruit called:

- a. scutellum
- b. pericarp
- c. plumule
- d. radicle
- v. The figure given below represent



a. true fruit b. parthenocarpic fruit [4]

- c. false fruit of apple
- d. false fruit of strawberry

Section **B**

17. In the table given below, select and enter one correct device out of the following: Oral pill, [2]Condom, Copper T, Saheli, Vasectomy, Diaphragm, Tubectomy, Cervical cap

Method of Birth Control	Device
1. Barrier	
2. IUD	
3. Surgical Technique	
4. Administering Hormones	

- 18. When a red flowered. Antirrhinum plant was crossed with a white flowered Antirrhinum [2] plant, the F_1 offspring had pink flowers. Mention (a) the genotype of F_1 plant, and (b) the reason why it did not bear the parental red or white flower colours?
- 19. Arrange them sequentially according to how they appear in the artificial[2]hybridization programme.
 - 1. Rebagging
 - 2. Selection of parents
 - 3. Bagging
 - 4. Dusting the pollen on the stigma
 - 5. Emasculation
 - 6. Collection of pollen
- 20. Explain the events which occur after the process of fertilization in plants. [2]

OR

Why is it that the generative cell of 2-celled pollen divides in a pollen tube and not of 3-celled pollen?

- 21. What do you understand by the antiparallel arrangement of DNA strands? [2]
- 22. A recombinant vector with a gene of interest inserted within the gene of α galactosidase [2] enzyme, is introduced into a bacterium. Explain the method that would help in selection of recombinant colonies from non recombinant ones.

OR

Give the technical terms for the following:

- (1) Molecular scissors
- (2) Molecular sieve
- (3) Molecular glue
- (4) Autonomous replicating circular DNA
- (5) First isolated restriction endonuclease
- (6) Extraction of DNA fragments from gel
- 23.Lactational amenorrhea is a contraceptive method. List two advantages.[2]
- 24. Write the chemical nature of biogas. Name one organism which produces biogas. [2]
- 25. How is active immunity different from passive immunity?

[2]

Section C

26. Study the pedigree chart given below, showing the inheritance pattern of blood groups in a [3] family and answer the given questions.



i. Give the possible genotypes of the individuals 1 and 2.

- ii. Which antigen will be present on the plasma membrane of RBCs of individuals 5 and 9?
- iii. Give the genotypes of the individuals 3 and 4.
- 27. Why is it essential that tRNA binds to both an amino acid and an mRNA codon during protein [3] synthesis?
- 28. Differentiate between vaccination and immunization. Describe the two types of vaccines with [3] suitable examples?
- 29. A3'.....5'B C5'.....3'D

AB and CD represent two strands of a DNA molecule. When this molecule undergoes

replication, forming a replication fork between A and C in the above.

- (i) Name the template strand for replication
- (ii) Using which strand as the template, will there be continuous synthesis of a complementary DNA strand.

(iii) Complementary to which strand will okazaki segments get synthesized, discontinuous synthesis occurs.

(iv) What are template strands and Okazaki pieces?

(v) In which direction is a new strand synthesized?

30. Name the toxin responsible for the appearance of symptoms of malaria in humans. Why do [3] these symptoms occur periodically?

OR

What are the symptoms of cancer?

Section D

31. Explain the process of fertilization of an ovum in humans. Trace the events that occur after [5] fertilisation up to the implantation of the blastocyst.

OR

Describe the post-zygotic events leading to implantation and placenta formation in humans. Mention any two functions of placenta.

32. What are the applications of Recombinant DNA technology?

[5]

[3]

i. Why must a cell be made 'competent' in biotechnology experiments? How does calcium ion help in doing so?

OR

- ii. State the role of 'biolistic gun' in biotechnology experiments.
- 33. Describe the process of secondary treatment given to municipal wastewater (sewage) before it [5] can be released into fresh water bodies. Mention another benefit provided by this process.

Explain the process of sewage water treatment before it can be discharged into natural water bodies. Why is this treatment essential?

Solution

Class 12 - Biology

Confidence Examination - I 2020-21)

Section A

- 1. A pair of testis is placed in a structure called as scrotum which is located outside the abdominal cavity. Scrotum which distends below from abdominal region to maintain low temperature. Low temperature favours the formation of sperms in the testes by the process of spermatogenesis. Testes also secrete the hormone testosterone.
- 2. True; The immature sperms or the spermatozoa embed their head into the wall of the sertoli cells. Sertoli cells nourish the young sperm cells with nutrients and blood products.
- 3. To know the genotype whether it is homozygous or heterozygous for the dominant trait.
- 4. Oral pills and IUDs. They may be administered within 72 hours of coitus.
- 5. -----
- 6. Sutton and Boveri.
- 7. When more than two alternative forms of a gene are present on the same locus it is said to exhibit multiple allelism.
- 8. The transmission of diseases can occur in two ways:
 - The direct transmission which includes contact with an infected person, droplet infection, contact with the soil and bite of an animal.
 - Indirect transmission by vectors, vehicle-borne, air-borne, fomite borne and unclean hands.

9. -----

- 10. The fruit juices available in the market (the bottled ones) are made clarified by treating them with the enzymes pectinases and proteases. So, they are clearer as compare to those made at home.
- 11. (a) The assertion is a true statement but the reason is false.

Explanation: An organism with the lethal mutation may not even develop beyond the zygote stage due to change in the gene but all kinds of mutations are not lethal. The mutation is the main source of variation essential for evolution.

OR

(a) Both assertion and reason are correct

Explanation: Turner's syndrome is caused due to the absence of one X chromosomes. The female suffering from the turner's syndrome is sterile as ovaries are rudimentary along with other secondary sexual characters.

- 12. **(a)** Both Assertion and Reason are true and the Reason is the correct explanation of the Assertion **Explanation:** Skin and respiratory allergy problems arise in hilly areas due to allergen present in these areas. Allergen induce inflammatory reaction in the body.
- 13. (a) Both Assertion and Reason are true

Explanation: Synthesis of RNA from DNA is called transcription and it occurs in the nucleus of eukaryotic cells.

DNA replication occurs in the cytoplasm of prokaryotes and in the nucleus of eukaryotes. Regardless of where DNA replication occurs, the basic process is the same.

Synthesis of protein from RNA is called translation and it occurs in the cytoplasm of eukaryotic cells. Messenger RNA (mRNA) is a molecule in cells that carries codes from the DNA in the nucleus to the sites of protein synthesis in the cytoplasm (ribosome) where they can be joined together in specific order to make a specific protein.

14. (d) D.Both assertion and reason are correct

Explanation: -----

15. -----

- 16. i. (b) groundnut
 - ii. (a) micropyle
 - iii. (b) dormancy

iv. (b) pericarp

v. (d) false fruit of strawberry

	Зесной в			
17.	Method of Birth Control	Device		
	1. Barrier -	Condom, Diaphragm, Cervical cap		
	2. IUD -	Copper T		
	3. Surgical Technique -	Vasectomy, Tubectomy		
	4. Hormonal administrations -	Oral pill, Saheli.		

18. (a) Rr (presuming parents had genotypes (RR) and (rr))(b) It shows incomplete dominance.

19. -----

20. -----

OR

Soction D

- 21. The two DNA strands run parallel to each other but in opposite direction. In one chain the direction is $5' \rightarrow 3'$ while in the other one it is $3' \rightarrow 5'$
- 22. The method is based on colour reaction (blue white selection). The α galctosidase enzyme can cleave a colourless, synthetic substrate, X-gal into a blue coloured product if the gene is inactivated by insertion of gene of interest into it, the development of blue colour will be prevented.

OR

- (1) Restriction endonucleases
- (2) Agarose gel
- (3) DNA ligase
- (4) Plasmid
- (5) Hindi II
- (6) Elution
- 23. -----24. -----

25. Active Immunity

Passive Immunity

Produced by the immune system actively Produced by the immune system passively

Antibodies are produced by immunogens Antibodies are transferred not produced

It involves antigens

It is durable

Involves antibodies

It is transient

Natural active immunity is by clinical infection

Natural passive immunity is by transfer of antibodies through the placenta

Section C

26. i. $1 - I^B i$

ii. 5 has antigen A and B 9 has no antigen iii. 3 - $I^B i$ $4 - I^A i$

- 27. tRNA is an adaptor molecule, which is meant for transferring amino acids to ribosomes for synthesis of polypeptides. tRNAs carry specific amino acids at particular points during polypeptide synthesis as per codons of mRNA, and the codons are recognized by anticodons of tRNAs. Thus, the coded information from DNA is translated by bringing amino acids in a particular sequence.
- 28. **Vaccination** is the phenomenon of injection of killed or inactivated microbe to trigger the immune system to produce antibodies against a particular disease. Vaccination is the process of administering vaccines. Diseases can be prevented by vaccination. During vaccination inactivated or weakened microbes called as vaccines are introduced into the body. They trigger the production of antibodies. When disease-carrying microbes enter our body, self-protecting proteins called antibodies fight against the invader.

Immunisation is the protection of individuals from communicable diseases by administration of a suspension of dead micro-organisms. This is the stimulation of immune system in the body to produce memory cells which further can detect disease causing pathogens and immediately eliminate them before causing the disease.

Generally vaccines are of two types:

(a) Attenuated Vaccines: They are prepared from live organisms (generally pathogen is made weak to make it non virulent).

Examples : BCG and influenza vaccine.

(b) Killed Vaccines: They are prepared by killing the pathogenic organisms by heat or UV rays. Examples: Polio and Rabies vaccines.

- 29. (i) AB and CD
 - (ii) AB strand
 - (iii) CD strand

(iv) The strands which dictates the sequence of the new strand, is the template strand. Okazaki pieces are short stretches of DNA synthesized in the $5' \rightarrow 3$ direction on discontinuous strand.

(v) In 5'
ightarrow 3 direction.

30. Haemozoin (toxin)is responsible for the appearance of symptoms of malaria.

Haemozoin is released when the RBCs rupture and release the pathogen.

Some cells of the pathogens enter fresh RBCs and reproduce asexually and repeat the cycle hence the symptoms appear periodically.

OR

The possible symptoms of cancer are as follows:

- i. Non-injury bleeding from any body surface i.e., skin, mouth or any other opening.
- ii. A lump or hard tissue in the breast.
- iii. Persistent indigestion or difficulty in swallowing.
- iv. Persistent changes in digestive or bowel habits.
- v. Progressive change in the colour of a wart or mole.
- vi. Persistent hoarseness or cough.
- vii. Excessive loss of blood in menses in women or loss of blood outside the normal date.

viii. A swollen or sore throat which does not heal easily.

- ix. Unexplained loss of weight.
- x. Unexplained low-grade fever.
- xi. Unexplained reduction or loss of appetite.

Section D

31. Fertilisation: Fertilisation occurs if the ovum and sperms are transported simultaneously to the ampullaryisthmic junction and involve the fusion of sperm with an ovum.

Secretions of the acrosome of sperm help it to enter into the cytoplasm of the ovum through zona PcMucida and the plasma membrane. It induces meiotic Division-II to form haploid ovum (ootid) and a secondary polar body. The fusion of sperm with the ovum to form diploid zygote is called fertilisation.

Implantation: Zygote undergoes cleavage to form a solid mass of 16 Cells-morula, with daughter cells called blastomeres. Morula develops into an embryo with about 64 cells and with a cavity called blastocoel and the embryo is termed as the blastocyst. It consists of an outer layer of cells-trophoblast and inner cell mass.



Figure: Events that occur after fertilisation up to the implantation of the blastocyst

The trophoblast gets attached to the endometrium-uterine wall of mother, after 7 days of fertilisation by a process called implantation leading to pregnancy- The uterine cells divide rapidly and cover blastocyst. The blastocyst gets embedded in the endometrium. Inner cell mass forms embryo.

OR

Post-zygotic events leading to implantation and placenta formation are as follows:

- i. Fertilisation is the process of fusion of a sperm with an ovum.
 - a. The motile sperms move through the cervix, enter the uterus and reach the junction of the isthmus and ampulla (ampullary-isthmic junction) of the Fallopian tube.
 - b. The ovum released from the ovary also reaches the ampullary-isthmic junction, where fertilisation takes place.
 - c. Fertilisation can only occur if the ovum and sperms are transported simultaneously to this junction. This explains why all copulations do not lead to fertilisation and pregnancy.
 - d. The sperm comes in contact with the zona pellucida of the ovum and induces changes in the membrane, which blocks the entry of the other sperms. Thus, it ensures that only one sperm can fertilise an ovum, i.e. secondary oocyte.
 - e. The diagrammatic view of the matured secondary oocyte-



ii. The placenta is an organ that connects the developing foetus to the uterine wall for supporting pregnancy. After implantation, finger-like projections appear on the trophoblast called chorionic villi, which are surrounded by the uterine tissue and maternal blood. The chorionic villi and the uterine tissue become interdigitated with each other and jointly form a structural and functional unit between foetus and maternal body, i.e. placenta.

Functions of Placenta

a. It facilitates the supply of oxygen and nutrients to the embryo.

- b. It also facilitates the removal of carbon dioxide and waste materials produced by the foetus.
- 32. Applications of Recombinant DNA Technology are as follows:
 - i. **Study of Molecular Events:** The technology is used in the study of molecular events of various development stages like cellular differentiation, morphogenesis, ageing, etc.
 - ii. Gene Maps: Recombinant DNA technology can be employed to make gene maps.
 - iii. **Development Stages:** A development stage can be stopped, delayed or quickened through manipulation of genes. Mutation of ageing genes in roundworms has shown an increase in the life of the animals by four times.
 - iv. **Antisense Therapy:** Extra-activity of genes of a particular region can be checked by introducing specific DNA fragments. The treatment is called antisense therapy.
 - v. Foods with Extra Biochemicals: With the help of *Agrobacterium tumefaciens* and viruses, genes for synthesis of various biochemicals can be introduced in plants e.g., Bananas producing vaccines.
 - vi. Study of Defective Genes: The technique can be used in the study of defective genes in the foetus stage.
 - vii. **Tailor-Made Organisms:** Useful plants, animals and microbes can be tailor-made to suit varied human needs.

viii. **Medical Diagnosis of Diseases:** Short segments of single-stranded DNA with attached fluorescent or radioactive marker are being used as probes for identification of infectious diseases like hepatitis, HIV, cystic fibrosis, muscular dystrophy, etc.

OR

- i. Since, DNA molecules are hydrophilic, they cannot pass through cell membranes. For recombinant DNA to be integrated into the vector or host genome, it is necessary for the DNA to be inserted in the cell. Therefore, making the host cells competent is necessary for biotechnology experiments. The two ways by which cells can be made competent to take up DNA are:
 - a. **Chemical action** -The host cell is treated with a specific concentration of divalent cation, i.e. calcium which increases the pore size in the cell membrane. DNA is then incubated with the treated bacterial cell at 42°C, thereby increasing the efficiency of DNA entering through pores in the cell wall.
 - b. **Heat shock treatment-** Incubating the cells with recombinant DNA on ice, followed by a brief treatment of heat at 42°C and again putting them back on ice.
- ii. Biolistic guns or gene guns are used to bombarded rDNA loaded on gold or tungsten particles with high velocity. In this way, the rDNA is delivered to the desired host cells.

33. Process of secondary treatment given to sewage water:

- i. The primary effluent is passed into large aeration tanks where it is constantly agitated mechanically and the air is pumped into it. This allows vigorous growth of useful aerobic microbes into flocs which are masses of bacteria associated with fungal filaments to form mesh-like structures.
- ii. While growing, these microbes consume the major part of the organic matter in the effluent. This significantly reduces the BOD (biochemical oxygen demand) of the effluent. BOD refers to the amount of the oxygen that would be consumed if all the organic matter in one liter of water were oxidised by bacteria.
- iii. The sewage water is treated until the BOD is reduced. The greater the BOD of wastewater, more is its polluting potential.
- iv. Once the BOD of sewage or wastewater is reduced significantly, the effluent is then passed into a settling tank where the bacterial 'flocs' are allowed to sediment. This sediment is called activated sludge.
- v. A small part of the activated sludge is pumped back into the aeration tank to serve as the inoculum.
- vi. The remaining major part of the sludge is pumped into large tanks called anaerobic sludge digesters where anaerobic bacteria digest these bacteria and fungi in the sludge.
- vii. During this digestion, bacteria produce a mixture of gases such as methane, hydrogen sulfide and carbon dioxide.
- viii. The effluent from the secondary treatment plant is generally released into natural water bodies like rivers and streams.

Another benefit provided by this process:

During this process, bacteria produce a mixture of gases such as methane, hydrogen sulfide and carbon dioxide which form biogas. It can be used as a source of energy as it is inflammable.

OR

Primary treatment of sewage involves the physical removal of large and small particles from sewage through filtration and sedimentation.

The steps involved in this process are:

- i. Floating debris is removed by sequential filtration by passing through wire mesh screens.
- ii. After this, the grit (soil and small pebbles) is removed by sedimentation in settling tanks. The sediment is called primary sludge and the supernatant forms the primary effluent.
- iii. The effluent is then taken for the secondary treatment.

The secondary treatment of sewage is also called biological treatment because, in this treatment, sewage is subjected to biodegradation. It means that it involves the participation of microorganisms. The process of secondary treatment involves the following steps:

- i. Primary effluent is passed into large aeration tanks with constant mechanical agitation and air supply. This allows vigorous growth of useful aerobic microbes into floes (masses of bacteria and fungi filaments).
- ii. These microbes consume a major part of organic matter in the effluent while growing. This reduces the BOD of the effluent.

- iii. When BOD of sewage gets reduced, it is passed into the settling tank. The bacterial floes settle in the tank and the sediment is called activated sludge. A small amount of activated sludge is pumped back into the aeration tank to serve as inoculum.
- iv. The remaining major part of the sludge is pumped into large tanks called anaerobic sludge digesters, where other kinds of bacteria, which grow anaerobically, digest the bacteria and the fungi in the sludge. During this process, bacteria produce a mixture of gases, such as methane, hydrogen sulphide and carbon dioxide, which form biogas. The effluent from secondary treatment is generally released into natural water bodies. It helps to reduce water pollution and water-borne diseases.

The gases from biogas are used as a source of energy because it is inflammable.

Atomic Energy Central School No-4, Rawatbhata

1stConfidence Test– 1 (2020-21)

Class: XII

Time allowed: 3 Hours

Subject: Computer Science (083) Maximum Marks: 70

General Instructions:

1. This question paper contains two parts A and B. Each part is compulsory and has choices.

- 3. Part-A has 2 sections:
 - a. Section I -is short answer 15 questions, to be answered in one word or one line.
 - b. Section II has two case studies questions.
- 4. Part B is Descriptive Paper.
- 5. Part- B has three sections
 - a. Section-I is short answer 9 questions of 2 marks each.
 - b. Section-II is long answer 6 questions of 3 marks each.
 - c. Section-III is very long answer question of 5 marks.
- 6. All programming questions are to be answered using Python Language only.

	PART-A								
	Section-(I)								
1.	Which of the following are valid operators in Python :	[1]							
	(i) + =								
	(ii) not								
	(iii) = /								
	(iv) &&								
	(v) ??								
	(vi) = =								
	(vii) ++								
	(viii) and								
2.	Name the python library module which need to be imported to run the following program: print (sqrt(random.randint(1,16)	[1]							
3.	Write a statement in Python to declare a dictionary whose keys are 4, 5, 6 and values are Jan,	[1]							
	Feb and Mar respectively.								
4.	Which of the following is a DDL command?	[1]							
	a) SELECT b) ALTER c) INSERT d) UPDATE								
5.	Name various bandwidth units?	[1]							
6.	Name various wireless technologies?	[1]							
7.	Write two importance of firewall?	[1]							
8.	Name two types (examples) of IPR issues?	[1]							
9.	Give example of any two cybercrimes?	[1]							
10.	Explain the role of Switch in networking?	[1]							
11.	What is identity theft?	[1]							
12.	What is URL?	[1]							
13.	How to give messages in the query output in SQL?	[1]							
14.	Write the output:	[1]							
	name="Computer Science with Python"								
	print (name[:10])								
15.	Dr. Theekkar Singh is a very experienced Orthopedist in the Lalji Nagar City. He is planning to	[1]							
	connect 5 of his clinics of the city with a personalised application for his appointment								
	organization without using mobile/web application. Which out of the following networks								
	would be suitable?								
	(i) PAN (ii) LAN (iii) MAN (iv) WAN								
	Section-II								
	Both the Case study based questions are compulsory. Attempt any 4 sub parts from each								
	question. Each question carries 1 mark								
	TNO	TNAME		START END		END			
---	--	---	--	---	---	---	--	---	----------------------------
	11096	Ahimsa	Express	Pune J	unction	L .	Ahmedab	ad Junction	
	12015	Ajmer	Shatabdi	New De	lhi		Ajmer J	unction	
	1651	Pune H	Ibj Special	Pune J	Pune JunctionHabibganjHowrah JunctionAmritsar JNew DelhiHabibganj		nj		
	13005	Amrits	ar Mail	Howrah			Amritsar Junction		
	12002	Bhopal	Shatabdi	New De			Habibga	nj	
	12417	Prayag	g Raj Express	Allaha	bad Jun	ction	New Del	hi	
	14673	Shahee	d Express	Jaynag	ar		Amritsa	r Junction	
	12314	Sealda	ah Rajdhani	New De	lhi		Sealdah		
	12498	Shan-e	e-Punjab	Amrits	ar Junc	tion	New Del	hi	
	12451	Shram	Shakti Express	s Kanpur	Centra	1	New Del	hi	
	12030	Swarna	Shatabdi	Amrits	ar Junc	tion	New Del	hi	
	Table	e : PASSI	ENGERS						
	PNR	TNO	PNAME	GENDER	AGE	TRAV	ELDATE		
	P001	13005	R N AGRAWAL	MALE	45	2018	-12-25		
	P002	12015	P TIWARY	MALE	28	2018	-11-10		
	P003	12015	S TIWARY	FEMALE	22	2018	-11-10		
	P004	12030	S K SAXENA	MALE	42	2018	-10-12		
	P005	12030	S SAXENA	FEMALE	35	2018	-10-12		
	P006	12030	P SAXENA	FEMALE	12	2018	-10-12		
	P007	13005	N S SINGH	MALE	52	2018	-05-09		
	P008	12030	J K SHARMA	MALE	65	2018	-05-09		
	P009	12030	R SHARMA	FEMALE	58	2018	-05-09		
IN	(i) T (ii) T (iii) T (iii) T (iv) T 50. (v) T sepa (vi) ((vii) (vii) = 'M (ix) S GRC	To display To display To displa To displa	y total number of y details of all Tra ay details of all Tra ay the PNR, PNAN y the maximum a ne number of train DISTINCT TRAVELDA MIN (TRAVELDA START, COUNT(*)	MALE and MALE and ains which assengers, ME, GENDE age of pass ms starts fr DATE FROM TE), MAX (1 FROM TRA DUNT (*)>1	I FEMALE Start from whose Th R and AC engers fr om each M PASSEN TRAVELD	Passer m Pune NO is 12 GE of all om pas station NGERS; ATE) FR	agers. Junction. 2030 in ord Passenge sengers in ROM PASS	der of their name rs whose AGE is a male and female	e. above e GENDER
(x) SELECT TNAME, PNAME FROM TRAINS T, PASSENGERS P									
ĺ	WHI	ERE T.TN	NO = P.TNO AND /	AGE BETW	EEN 40 A	ND 50;		have de la 11	
1.4	\/ri+~ · / ·				VI ADD OL	TTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT		000000000000000000000000000000000000000	n .

	COMPANY	
	CID NAME CITY PRODUCTNAME 111 SONY DELHI TV	
	222 NOKIA MUMBAI MOBILE	
	444 SONY MUMBAI MOBILE	
	555 BLACKBERRY MADRAS MOBILE 666 DELL DELHI LAPTOP	
	CUSTOMER	
	CUSTID NAME PRICE QTY CID	
	101 Rohan Sharma 70000 20 222 102 Deepak Kumar 50000 10 666	
	103 Mohan Kumar 30000 5 111	
	104 Sahil Bansal 35000 3 333 105 Neba Sapi 25000 7 444	
	106 Sonal Aggarwal 20000 5 333	
	107 Arjun Singh 50000 15 666	
	(i) To display those company name which are having price less than 30000.	
	(ii) To display the name of the companies in reverse alphabetical order.	
	(iii) To increase the price by 1000 for those customer whose name starts with'S'	
	(iv) To add one more column totalprice with decimal(10,2) to the table customer	
	(v) SELECT COUNT(*) ,CITY FROM COMPANY GROUP BY CITY;	
	(vi) SELECT MIN(PRICE), MAX(PRICE) FROM CUSTOMER WHERE QTY>10;	
	Part – B	
	Section-1	
18.	Rewrite the following code in Python after removing all syntax error(s). Underline each	[2]
	correction done in the code.	
	"HELLO"=String	
	for I in range(0,len(String)–1)	
	if String[I]=>"M":	
	print String[I],"*"	
	Else:	
	print String[I-1]	
19.	Find and write the output of the following Python code :	[2]
	Msg="CompuTer"	
	Msg1="	
	for i in range(0, len(Msg)):	
	if Msg[i].isupper():	
	Msg1=Msg1+Msg[i] lower()	
	$M_{ral} = M_{ral} + \frac{1}{1}$	
	Nisgi-Nisgi+	
	eise. Mag1-Mag1: Mag[i] upper/)	
	lvisg1=lvisg1+lvisg[i].upper()	
20	princ(wisg1) Find and write the system of the following Disther code :	[2]
20.	Find and write the output of the following Python code :	[2]
	def Alter(P=15,Q=10):	
	P=P*Q	
	Q=P/Q	
	print P,"#",Q	
	return Q	
	A=100	
	B=200	
	A=Alter(A,B)	
	print A,"\$",B	
	B=Alter(B)	
	print A,"\$",B	
	A=Alter(A)	
	print A,"\$",B	
21.	What possible outputs are expected to be displayed on the screen at the time of execution of	[2]

	theprogram from the following code? Also specify the minimum and maximum values that can					
	beassigned to the variable c.					
	import random					
	temp=[10,20,30,40,50,60]					
	c=rar	ndom.randint(0,4)				
	for l	in range(0, c):				
	print	t(temp[i],"#")				
	(i) 10	#20# (ii) 10#20#30#4	0#50#			
	(iii) 1	0#20#30# (iv) 50#60#	‡ • · · · · ·			
22.	Observe the Table : ST	e following table STO OCK	CK carefully and a	nswer the questions that follow :	[2]	
	SNO	NAME	PRICE			
	101	PEN	50			
	102	PENCIL	5			
	103	PENCIL	10			
	104	NOTEBOOK	50			
	105	ERASER	5			
	i) Which	attribute out of SNO		is the ideal one for being considered as the		
	Primary	Key and why?		is the ideal one for being considered as the		
	ii) Define	the term Cardinality	and Degree of a r	elation in context to database?		
23.	Explain the	various kevs: Candida	ate Kev. Alternate	Key, Primary Key, and Foreign Key?	[2]	
24.	How to use	between and like op	erator give one ex	ample of each?	[2]	
25.	Write the	expanded names for	r the following a	bbreviated terms used in Networking and	[2]	
	Communica	ations :				
	(i) XM	L (ii) SMTP(iii) VoIP(iv	ν) IoT			
26.	William Jon	es has got a file that i	is replicating itself	in order to spread to other computers using	[2]	
	computer network on its own, relying on security failures on the target computer to access it.					
	It is consuming a lot of network bandwidth also. Which of the following type category of					
	(i) Virus (ii) Worm (iii) Trojan Horse					
	Section- II					
			Section	- 11		
27.	Write a fun	ction LShift(Arr,n) in I	Python, which acc	epts a list Arr of numbers and shift left all	[3]	
	the elemen	ts (n times).				
	Samp	ple Input Data of the l	ist			
	Arr=	[10,20,30,40,12,11]	0 40 42 44 40]			
	IT N=1	L output is:Arr = [20,3 D output is:Arr = [20,4	30,40,12,11,10]			
20	Writo a fun	z output is.Arr – [50,4 ction in Python that c	0,12,11,10,20 <u>]</u>	of "Mo" or "My" words prosent in a toxt	[2]	
20.	file "STORY.	.TXT".If the "STORY.T	XT" contents are a	is follows:	[3]	
	My first bo	ok was Me andMy Fa	mily. It gave me o	hance to be Known to the world.		
	The output	of the function shoul	d be:Count of Me	/My in file: 4		
	OR					
	Write a fun	ction ACount() in Pytł	non, which should	read each character of a text file		
	STORY.TXT,	should count and dis	play the occurren	ce of alphabets A and M (ignoring the		
	case).Exam	ple:				
	If the file co	ontent is as follows:				
	Updated in		-			
		eu by official Website	5. isplay the output	25.		
		it() function should a	isplay the output	as.		
1					1	

	M or m :2			
29.	 A binary file "Book.dat" has records like [BookNo, Book_Name, Author, Price]. i. Write a user defined function CreateFile() to input data for a record and add to Book.dat . ii. Write a function CountRec(Author) in Python which accepts the Author name as parameter and count and return number of books by the given Author are stored in the binar file "Book.dat" OR 			[3]
	A binary file "STUDENT.DAT" has records like (function countrec() in Python that would read the details of those students whose percentag scoring above 75%.	admission_nun contents of the ge is above 75.	nber, Name, Percentage). Write a e file "STUDENT.DAT" and display Also display number of students	
30.	 30. A text file "Modem.Txt" has the following data written in it: 30. A text file "Modem.Txt" has the following data written in it: A modem is a modulator-demodulator, is a hardware device that converts data from a digital format, intended for communication directly between devices with specialized wiring, into on suitable for a transmission medium such as telephone lines or radio. Write a user defined function to display eachline separately and also print total number of Lines. 			
31.	 Write definition of a method/function FindOut(Names, HisName) to search for HisName string from a list Names, and display the position of its presence. 3 For example : If the Names contain ["Arun", "Raj", "Tarun", "Kanika"] and HisName contains "Tarun" 			[3]
32.	Write a function which accept a list of numbers Write main program and take input the list and and display the list after sorting by the function	s and sort this I d call function E n.	ist using bubble sort method. Sort(). Pass the list as argument	[3]
	Sect	ion- III		
33.	3. Piccadilly Design and Training Institute is setting up its center in Jodhpur with four specialised units for Design, Media, HR and Training in separate buildings. The physical distances between these units and the number of computers to be installed in these units are given as follows. You as a network expert have to answer the queries as raised by the administrator as given in (i) to (v). Shortest distances between various locations in meters :			[5]
	Design Unit to Media Unit	60		
	Design Unit to HR Unit	40		
	Design Unit to Training Unit	60		
	Media Unit to Training Unit	100	-	
	Media Unit to HR Unit	50	-	
	Training Unit to HR Unit	60		
	Number of computers installed at various locat	tions are as foll	ows :	

	Design Unit	40
	Media Unit	50
	HR Unit	110
	Training Unit	40



(i) Suggest the most suitable location to install the main server of this institution to get efficient connectivity.

(ii) Suggest by drawing the best cable layout for effective network connectivity of the building having server with all the other units.

(iii) Suggest the devices to be installed in each of these buildings for connecting computers installed within each of the units out of the following :

Modem, Switch, Gateway, Router

(iv) Suggest an efficient as well as economic wired medium to be used within each unit for connecting computer systems out of the following network cable :

Co-axial Cable, Ethernet Cable, Single Pair Telephone Cable.

(v) Suggest the most suitable places to install the repeaters in the network if they use high speed Twisted pair cables.

ATOMIC ENERGY CENTRAL SCHOOL NO.4 RAWATBHATA

CLASS 12 - हिंदी कोर

Confidence Examination -I Part-A (2020-21)

Time Allowed: 3 hours

General Instructions:

- 1. इस प्रश्न पत्र में दो खंड हैं खंड अ और खंड ब। खंड-अ में वस्तुपरक तथा खंड-ब में वर्णात्मक प्रश्न पूछे गए हैं।
- 2. खंड-अ में कुल 6 प्रश्न पूछे गए हैं, जिनमें कुछ प्रश्नों के वैकल्पिक प्रश्न भी सम्मिलित हैं। दिए गए निर्देशों का पालन करते हुए ही प्रश्नों के उत्तर दीजिए।
- 3. खंड-ब में कुल 8 प्रश्न पूछे गए हैं, जिनमें कुछ प्रश्नों के वैकल्पिक प्रश्न भी सम्मिलित हैं। दिए गए निर्देशों का पालन करते हुए ही प्रश्नों के उत्तर दीजिए।

खंड-अ वस्तुपरक प्रश्न

1. निम्नलिखित गद्यांश के आधार पर पूछे गए प्रश्नों के उत्तर दीजिए ।

आज से कोई बीस साल पहले की बात है। मेरा एक मित्र केशव और मैं दोनों जंगल-जंगल घूमने जाया करते। पहाड़-पहाड़ चढ़ा करते, नदी-नदी पार किया करते। केशव मेरे-जैसा ही पन्द्रह वर्ष का बालक था। किन्तु वह मुझे बहुत ही रहस्यपूर्ण मालूम होता। उसका रहस्य बड़ा ही अजीब था। उस रहस्य से मैं भीतर ही भीतर बहुत आतंकित रहता।

केशव ने ही बहुत-बहुत पहले मुझे बताया कि इड़ा, पिगंला और सुषुम्ना किसे कहते हैं। कुण्डलिनी चक्र से मुझे बड़ा डर लगता। उसने हठयोगियों की बहुत-सी बातें बड़े ही विस्तार के साथ वर्णन कीं।

केशव का सिर पीछे से बहुत बड़ा था। आगे की ओर लम्बा और विस्तृत था। माथा साधारण और घनी-घनी भौंहों के नीचे काली आँखें, बहुत गहरी, मानो दो कुएँ पुतली के काँच से मढ़े हुए हों। यह भी लगता कि उसकी आँखें और जमी हुई हैं। आँखों के बीच, नाक की शुरुआत पर घनी-घनी भौहों की दोनों पट्टियाँ नीचे झुककर मिल जाती थीं। कभी-कभी नाई द्वारा वह इस मिलन-स्थल पर भौहों के बाल कटवा लेता। लेकिन उनके रोएँ फिर उग आते। आँखों के नीचे फीका-पीला, लम्बा, शिथिल और उकताया हुआ थका चेहरा था।

केशव मझोले कद का बालक था जिसे खेलने-कूदने से कोई मोह नहीं था। उसका गणित विषय अच्छा था। इसीलिए केशव मेरे लिए मिडिल और मैट्रिक में जरूरी हो उठा था।

फिर भी मैं केशव के प्रति विशेष उत्साहित नहीं था। मुझे प्रतीत हुआ कि वह मेरे प्रति अधिक स्नेह रखता है। वह मेरे पिताजी के श्रद्धेय मित्र का लड़का था इसलिए उसके वहाँ मेरा काफी आना-जाना था।

केवल एक ही बात उसमें और मुझमें समान थी। वह बड़ा ही घुमक्कड़ था। मैं भी घूमने का शौकीन था। हम दोनों सुबह-शाम और छुट्टी के दिनों में तो दिन-भर दूर-दूर घूमने जाया करते।

इसके बावजूद उसका लम्बा चेहरा फीका और पीला रहता। किन्तु वह मुझसे अधिक स्वस्थ था, उसका डील ज्यादा मजबूत था। वह निस्सन्देह हट्टा-कट्टा था। फिर भी उसके चेहरे की त्वचा काफी पीली रहती। पीले लम्बे चेहरे पर घनी भौंहों के नीचे गहरी-गहरी काली चमकदार कुएँ-नुमा आँखें और सिर पर मोटे बाल और गोल अड़ियल मजबूत ठुड्डी मुझे बहुत ही रहस्य-भरी मालूम होती। केशव में बाल-सुलभ चंचलता न थी वह एक स्थिर प्रशान्त पाषाण-मूर्ति की भाँति मेरे साथ रहता।

मुझे लगता कि भूमि के गर्भ में कोई प्राचीन सरोवर है। उसके किनारे पर डरावने घाट, आतंककारी देव-मूर्तियाँ और रहस्यपूर्ण गर्भ-कक्षोंवाले पुराने मन्दिर हैं। इतिहास ने इन सबको दबा दिया। मिट्टी की तह पर तह, परतों पर परतें, चट्टानों पर चट्टानें छा गयीं। सारा दृश्य भूमि में गड़ गया, अदृश्य हो गया। और उसके स्थान पर यूकैलिप्ट्स के नये विलायती पेड़ लगा दिये गये। बंगले बना दिये गये। चमकदार कपड़े पहने हुई खूबसूरत लड़कियाँ घूमने लगीं। और उन्हीं-किन्हीं बंगलों में रहने लगा मेरा मित्र केशव जिसने शायद पिछले जन्म में या उसके भी पूर्व के जन्म में उसी भूमि-गर्भस्थ सरोवर का जल पिया होगा, वहाँ विचरण किया होगा।

Maximum Marks: 80

[10]

मनुष्य का व्यक्तित्व एक गहरा रहस्य है-इसका प्रथम भान मुझे केशव द्वारा मिला-इसलिए नहीं कि केशव मेरे सामने खुला मुक्त हृदय नहीं था। उसके जीवन में कोई ऐसी बात नहीं थी जो छिपायी जाने योग्य हो। इसके अलावा वह बालक सचमुच बहुत दयालु, धीर-गम्भीर, भीषण कष्टों को सहज ही सह लेनेवाला, अत्यन्त क्षमाशील था। किन्तु साथ ही वह शिथिल, स्थिर, अचंचल, यन्त्रवत् और सहज-स्नेही था। उसमें सबसे बड़ा दोष यह था कि उसमें बालकोचित, बाल-सुलभ गुण-दोष नहीं थे। मुझे हमेशा लगा कि उसका विवेक वृद्धता का लक्षण है। 01. प्रस्तुत गद्यांश में किसके विषय में चर्चा की गई है ? (क) रहस्य (ख) लेखक (ग) केशव (घ) योग रहस्य 02. केशव लेखक से कैसे संबंधित था ? (क) दोस्त की तरह (ख) पिता के मित्र का बेटा (ग) साथ पढ़ने वाला (घ) साथ घूमने वाला 03. केशव लेखक के साथ कैसे रहता था ? (क) शत्रु की भाँति (ख) मित्र की भांति (ग) मूर्ति की भांति (घ) पाषाण की भाँति 04. मनुष्य का व्यक्तित्व क्या है ? (क) उसकी जीवनशैली (ख) एक रहस्य (ग) उसका जीवन (घ) एक अदृश्य वस्तु 05. गद्यांश में प्रयुक्त इड़ा , पिंगला आदि क्या है ? (क) योग साधना (ख) हठयोग (ग) कोई विषय (घ) कोई रहस्यमयी किताब 06. केशव में सबसे अधिक रहस्यमयी क्या था ? (क) उसका शरीर (ख) उसका दिमाग (ग) उसका चेहरा (घ) उसकी स्थिरता 07. विवेक वृद्धता का लक्षण होने से क्या तात्पर्य है ? (क) बुद्धिमान होना (ख) क्षमाशील होना (ग) चंचलता का होना (घ) स्थिरता का होना 08. दोनों मित्रों में क्या समानता थी ? (क) घूमना (ख) पढ़ना

(ग) खेलना
(घ) योग करना
09. किसका गणित विषय अच्छा नहीं था ?
(क) केशव का
(ख) लेखक के मित्र का
(ग) लेखक का
(घ) केशव के मित्र का
10. लेखक का मित्र कैसा था ?
(क) हठयोगी
(ख) रहस्यपूर्ण
(ग) मझोले कद का
(घ) शांत

OR

तत्ववेत्ता शिक्षाविदों के अनुसार विद्या दो प्रकार की होती है। प्रथम वह, जो हमें जीवन-यापन के लिए अर्जन करना सिखाती है और द्रवितीय वह, जो हमें जीना सिखाती है। इनमें से एक का भी अभाव जीवन को निरर्थक बना देता है। बिना कमाए जीवन-निर्वाह संभव नहीं। कोई भी नहीं चाहेगा कि वह परावलंबी हो-माता-पिता, परिवार के किसी सदस्य, जाति या समाज पर। पहली विद्या से विहीन व्यक्ति का जीवन दूभर हो जाता है, वह दूसरों के लिए भार बन जाता है। साथ ही विद्या के बिना सार्थक जीवन नहीं जिया जा सकता। बहुत अर्जित कर लेनेवाले व्यक्ति का जीवन यदि सुचारु रूप से नहीं चल रहा, उसमें यदि वह जीवन-शक्ति नहीं है, जो उसके अपने जीवन को तो सत्यपथ पर अग्रसर करती ही है, साथ ही वह अपने समाज, जाति एवं राष्ट्र के लिए भी मार्गदर्शन करती है, तो उसका जीवन भी मानव-जीवन का अभिधान नहीं पा सकता। वह भारवाही गर्दभ बन जाता है या पूँछ-सींगविहीन पशु कहा जाता है। वर्तमान भारत में दूसरी विद्या का प्राय: अभावे दिखाई देता है, परंतु पहली विद्या का रूप भी विकृत ही है, क्योंकि न तो स्कूल-कॉलेजों में शिक्षा प्राप्त करके निकला छात्र जीविकार्जन के योग्य बन पाता है और न ही वह उन संस्कारों से युक्त हो पाता है, जिनसे व्यक्ति 'कु' से 'सु' बनता है; सुशिक्षित, सुसभ्य और सुसंस्कृत कहलाने का अधिकारी होता है। वर्तमान शिक्षा-पद्धति के अंतर्गत हम जो विद्या प्राप्त कर रहे हैं, उसकी विशेषताओं को सर्वथा नकारा भी नहीं जा सकता। यह शिक्षा कुछ सीमा तक हमारे दृष्टिकोण को विकसित भी करती है, हमारी मनीषा को प्रबुद्ध बनाती है तथा भावनाओं को चेतन करती है, किंतु कला, शिल्प, प्रौद्योगिकी आदि की शिक्षा नाममात्र की होने के फलस्वरूप इस देश के स्नातक के लिए जीविकार्जन टेढ़ी खीर बन जाता है और बृहस्पति बना युवक नौकरी की तलाश में अर्जियाँ लिखने में ही अपने जीवन का बहुमूल्य समय बर्बाद कर लेता है।

जीवन के सर्वागीण विकास को ध्यान में रखते हुए यदि शिक्षा के क्रमिक सोपानों पर विचार किया जाए, तो भारतीय विद्यार्थी को सर्वप्रथम इस प्रकार की शिक्षा दी जानी चाहिए, जो आवश्यक हो, दूसरी जो उपयोगी हो और तीसरी जो हमारे जीवन को परिष्कृत एवं अलंकृत करती हो। ये तीनों सीढ़ियाँ एक के बाद एक आती हैं, इनमें व्यतिक्रम नहीं होना चाहिए। इस क्रम में व्याघात आ जाने से मानव-जीवन का चारु प्रासाद खड़ा करना असंभव है। यह तो भवन की छत बनाकर नींव बनाने के सदृश है। वर्तमान भारत में शिक्षा की अवस्था देखकर ऐसा प्रतीत होता है कि प्राचीन भारतीय दार्शनिकों ने 'अन्न' से 'आनंद' की ओर बढ़ने को जो 'विद्या का सार' कहा था, वह सर्वथा समीचीन ही था।

क) बिना कमाए क्या संभव नहीं है ?

- 1. जीवन निर्वाह
- 2. विद्या अर्जन
- 3. विद्याहीन
- 4. सार्थक

ख) विद्या के कितने रूप बताये गए हैं ?

- 1. एक
- 2. दो
- 3. तीन

- 4. चार
- ग) आधुनिक शिक्षा पद्धति की विशेषता है -
- 1. जीविकोपार्जन करना
- 2. धनार्जन करना
- 3. स्वतंत्र रहना
- 4. भावनाओं को चेतन करना
- घ) विद्याहीन व्यक्ति का जीवन कैसा होता है ?
- 1. परावलम्बी
- 2. स्वाबलम्बी
- 3. आत्मनिर्भर
- 4. स्वनिर्भर
- ड) विद्याहीन मनुष्य का जीवन कैसा होता है ?
- 1. आत्मनिर्भर
- 2. भार स्वरूप
- 3. हल्का
- 4. साथक
- च) विद्या हमें किस पथ पर अग्रसर करती है ?
- 1. सत्पथ पर
- 2. हिंसा पथ पर
- 3. समाज की ओर
- 4. राष्ट्र की ओर
- छ) मनुष्य मानव जीवन का अभिधान कब नहीं पा सकता ?
- 1. जब वह विद्यावान होता है |
- 2. जब वह विद्याहीन होता है |
- 3. जब वह जीवन यापन करता है |
- 4. जब वह जीविका निर्वाह करता है |
- ज) 'परावलम्बी' शब्द में प्रयुक्त उपसर्ग है -
- 1. परा
- 2. पर
- 3. लम्बी
- 4. पराव
- झ) आधुनिक शिक्षित युवक का अधिकांश समय कैसे व्यतीत होता है ?
- 1. नौकरी की तलाश में
- 2. पढाई करते हुए
- 3. शिक्षा अर्जन हुए
- 4. जीविका निर्वाह करते हुए
- ञ) गद्यांश के लिए उचित शीर्षक होगा -
- 1. शिक्षा के सोपान
- 2. शिक्षा का आधार
- 3. शिक्षा के नियम
- 4. शिक्षा का प्रचार

2. निम्नलिखित काव्यांश के आधार पर पूछे गए प्रश्नों के उत्तर लिखिए।

सचमुच मुझे दण्ड दो कि हो जाऊँ पाताली अँधेरे की गुहाओं में विवरों में धुएँ के बादलों में बिलकुल मैं लापता!! लापता कि वहाँ भी तो तुम्हारा ही सहारा है!! इसलिए कि जो कुछ भी मेरा है या मेरा जो होता-सा लगता है, होता सा संभव है सभी वह तुम्हारे ही कारण के कार्यों का घेरा है, कार्यों का वैभव है अब तक तो ज़िन्दगी में जो कुछ था, जो कुछ है सहर्ष स्वीकारा है इसलिए कि जो कुछ भी मेरा है वह तुम्हें प्यारा है।

I. सचमुच मुझे दण्ड दो कि हो जाऊँ में कौन अलंकार है ?

- i. रुपक
- ii. मानवीकरण
- iii. अनुप्रास
- iv. विरोधाभास
- II. कवि के जीवन में होने वाली चीजों पर किसकी छाया है ?
 - i. खुद की
 - ii. प्रियतम की
 - iii. मित्र की
 - iv. गुरु की

III. लापता कि वहाँ भी तो तुम्हारा ही सहारा है में कौन अलंकार है ?

- i. यमक
- ii. अनुप्रास
- iii. अतिशयोक्ति
- iv. विरोधाभास
- IV. काव्यांश में प्रयुक्त विवर शब्द का क्या अर्थ है ?
 - i. बिल
 - ii. घर
 - iii. महल
 - iv. गुफा
- V. कवि कहाँ लापता नहीं होने की बात करता है ?
 - i. गुफाओं में
 - ii. जंगल में
 - iii. बिलों में
 - iv. धुएँ के बादलों में

OR

निम्नलिखित काव्यांश को पढ़कर पूछे गए प्रश्नों के उचित विकल्प चुनिए।

अरुण यह मधुमय देश हमारा।

जहाँ पहुँच अनजान क्षितिज को मिलता एक सहारा। सरस तामरस गर्भ विभा परं-नाच रही तरु शिखा मनोहर। छिटका जीवन हरियाली पर-मंगल कुंकुम सारा। लघु सुरधनु से पंख पसारे-शीतल मलय समीर सहारे। उड़ते खग जिस ओर मुँह किये-समझ नीड़ निज प्यारा। बरसाती आँखों के बादल-बनते जहाँ भरे करुणा जल। लहरें टकराती अनंत की-पाकर जहाँ किनारा। हेम-कुंभ ले उषा सवेरे-भरती ढुलकाती सुख मेरे। मदिर ऊँघते रहते-जब-जगकर रजनी भर तारा।

- I. काव्यांश में किस देश का वर्णन है?
 - i. भारत का
 - ii. नेपाल का
 - iii. चीन का
 - iv. जापान का
- II. 'लघु सुरधनु से पंख पसारे' पंक्ति में कौनसा अलंकार है?
 - i. अनुप्रास
 - ii. उपमा
 - iii. उत्प्रेक्षा
 - iv. रूपक
- III. भारत में बादल कौनसा जल बरसाते हैं?
 - i. करुणा का
 - ii. परोपकार का
 - iii. असत्य का
 - iv. सत्य का
- IV. 'उषा ने सूर्य-किरणों की रोली जीवन-जगत पर छिड़ककर मंगलकारी काम किया है' आशय स्पष्ट करने वाली पंक्ति है
 - i. मदिर ऊँघते रहते-जब-जगकर रजनी भर तारा।
 - ii. हेम-कुंभ ले उषा सवेरे-भरती ढुलकाती सुख मेरे।
 - iii. छिटका जीवन हरियाली पर-मंगल कुंकुम सारा।
 - iv. लहरें टकराती अनंत की-पाकर जहाँ किनारा।
- V. भारत देश की विशेषता है
 - i. यहाँ अपरिचित विदेशियों को भी सहारा मिलता है।
 - ii. यहाँ बादल बरसते हैं।
 - iii. यहाँ गर्मी पड़ती है।
 - iv. यहाँ सर्दी पड़ती है।

b)

3. कार्यालयी हिंदी और रचनात्मक लेखन निम्नलिखित में से निर्देशानुसार विकल्पों का चयन कीजिए।

[5]

a) वह जो समाचार के चित्र नहीं आने तक दर्शकों को रिपोर्टर से मिली जानकारी के आधार पर घटना से संबंधित सूचना देता है, कहलता है-

a) विजुअल एंकर-पैकेज	b) एंकर-पैकेज
c) बाइट एंकर	d) ड्राई एंकर
समीक्षक के गुण नहीं हैं?	

	a) समसामापफा फा शाता	
	c) गीतकारी	d) विशेषज्ञ
c)	जनसंचार माध्यम का लाभ नहीं है-	
	a) धर्म से लेकर सेहत तक की जानकारी मिल रही है।	b) सरकारी कामकाज पर निगरानी बढ़ी है।
	c) यह हमारे दैनिक जीवन में शामिल हो गया है।	d) इसने काल्पनिक जीवन को बढ़ावा दिया है।
d)	बीट कवर करने वाले रिपोर्टर को कहते हैं-	
	a) लेखक	b) एंकर
	c) संपादक	d) संवाददाता
e)	कैसे शब्द टी वी में सहज और उपयक्त माने जाते हैं?	
-,		
	a) આ શબ્દ ભાલાપ્રય ના ફા	D) ભા ઠન રાજ્
	c) बोलचाल के शब्द	d) जिनसं विद्वता झलके
निम्नलि	खित काव्यांश को पढ़कर पूछे गए प्रश्नों के उत्तर लिखिए-	
रक्षाबध	न का सुबह रस का पुतला	
छाया ह किन्नजी	छटा गगन का हलका-हलका	
ाषजला भार्ट के	का तरह चमक रह ह लच्छ नै बॉधती चाक्त्वी राखी।	
नाइ फ		
1. שוע	भा हे छटा गगन का हलका-हलका पाक्त न कान अलकार है। जनमा अन्तर्का	
1. ;;	उपमा अलकार प्रान्कक्रियकाश अलंकार	
11. iii	अतिशासी के अनंतार	
iv.	रुपक अलंकार	
ा का	व्यांश के भाषा पर पकाश डालिए।	
i. 10	गतिशील नहीं है	
ii.	प्रभावहीन	
iii.	सरल और सहज	
iv.	कठिन	
III. राख	वी की तुलना किससे की गई है?	
i.	बिजली की चमक से	
ii.	अटूट स्नेह से	
iii.	बादलों के गर्जन से	
iv.	चाँद की कोमलता से	
IV. कवि	वे ने भाई बहन के संबंध को किसके जैसा बताया है?	
i.	धरती और आकाश जैसा	
ii.	जल और नदी के जैसा	
iii.	चाँद और सूरज जैसा	
iv.	घटा और बिजली के जैसा	
V. प्रस्	तुत पंक्तियों के कवि कौन हैं?	
i.	रघुवीर सहाय	

4.

[5]

- ii. निदा फाज़ली
- iii. शमशेर
- iv. फ़िराक़ गोरखपुरी

5. निम्नलिखित काव्यांश को पढ़कर पूछे गए प्रश्नों के उत्तर लिखिए-

फिर मेरी दृष्टि में आदर्श समाज क्या है? ठीक है, यदि ऐसा पूछेंगे, तो मेरा उत्तर होगा कि मेरा आदर्श समाज स्वतंत्रता, समता, भ्रातृता पर आधारित होगा? क्या यह ठीक नहीं है, भ्रातृता अर्थात भाईचारे में किसी को क्या आपत्ति हो सकती है? किसी भी आदर्श समाज में इतनी गतिशीलता होनी चाहिए जिससे कोई भी वांछित परिवर्तन समाज के एक छोर से दूसरे तक संचारित हो सके। ऐसे समाज के बहुविधि हितों में सबका भाग होना चाहिए तथा सबको उनकी रक्षा के प्रति सजग रहना चाहिए। सामाजिक जीवन में अबाध संपर्क के अनेक साधन व अवसर उपलब्ध रहने चाहिए। तात्पर्य यह कि दूध-पानी के मिश्रण की तरह भाईचारे का यही वास्तविक रूप है, और इसी का दूसरा नाम लोकतंत्र है।

- I. लेखक ने किन विशेषताओं को आदर्श समाज की धुरी माना हैं?
 - i. स्वतन्त्रता
 - ii. समता
 - iii. भाईचारा
 - iv. स्वतन्त्रता, समता, भाईचारा
- II. भ्रातृता के स्वरूप को स्पष्ट कीजिए।
 - i. भाई-भाई
 - ii. एक-दूसरे का हित
 - iii. बिना स्वार्थ के सामूहिक हितभाव
 - iv. परोपकार
- III. 'अबाध संपर्क' से लेखक का क्या अभिप्राय है?
 - i. बिना बाधा के संपर्क
 - ii. बाधा रहित
 - iii. संपर्क करना
 - iv. जुड़ना
- IV. समाज में भाईचारे की भावना कैसी चाहिए?
 - i. दूध-दही
 - ii. दूध-चीनी
 - iii. दूध-पानी
 - iv. सभी
- V. स्वतन्त्रता, भाईचारे, भ्रातृता के साथ-साथ सभ्य समाज के लिए और क्या आवश्यक है?
 - i. गतिशीलता
 - ii. समानता
 - iii. मेलजोल
 - iv. साहस
- 6. निम्नलिखित प्रश्नों में निर्देशानुसार विकल्पों का चयन कीजिए:
 - a) गिरीश कौन सा काम करता है? [सिल्वर वेडिंग]
 - a) सेक्शन ऑफिसर b) मार्केटिंग मैनेजर
 - c) क्लर्क d) मास्टर
 - b) सिल्वर वेडिंग कहानी में यशोधर बाबू का तकिया-कलाम क्या है?

[10]

[5]

	a) समहाऊ इम्प्रापर	b) इन्सिस्ट					
	c) अफोर्ड	d) किशनदा					
c)	अ नेक मराठी कवियों के काव्य-संग्रह उनके घर में थे। यह कथन किसका है? [जूझ]						
	a) मास्टर सौंदलगेकर	b) दत्ता जी राव					
	c) लेखक	d) वसंत पाटील					
d)	लेखक के पिता के अनुसार खेलना और सिनेमा देखना कैसी आदतें हैं ? [जूझ]						
	a) पढ़ाई से भी अच्छी	b) बहुत जरूरी					
	c) सही	d) गलत					
e)	मोहनजोदड़ो में बस्तियों को क्या कहकर पुकारा जाता	था? [अतीत में दबे पाँव]					
	a) नीचा नगर	b) इमारत					
	c) हॉल	d) गढ़					
f)	अतीत में दबे पाँव पाठ के अनुसार मिस्र में खेती के उपकरण किस धातु / पदार्थ के बनते थे?						
	a) लोहा	b) पत्थर					
	c) लकड़ी	d) ताँबा					
g)	अतीत में दबे पाँव पाठ के अनुसार मोहनजोदड़ो शहर के मुख्य सड़क की चौड़ाई कितनी है?						
	a) तैंतीस मील	b) दस फुट					
	c) चालीस फुट	d) तैंतीस फुट					
h)	ऐनी फ्रैंक का जन्म कहाँ हुआ था?						
	a) जर्मनी	b) अमेरिका					
	c) जापान	d) ब्रिटेन					
i)	स्मृतियाँ मेरे लिए पोशाकों की तुलना में ज़्यादा मायने र	खती हैं।					
	प्रस्तुत कथन किसका है? [डायरी के पन्ने]						
	a) मार्गोट	b) ऐन फ्रैंक					
	c) मिस्टर वान दान	d) हैलो					
j)	डायरी के पन्ने पाठ में लेखिका के घर का किरायेदार क	ोन था?					
	a) मार्गोट	b) गोल्डश्मिड्ट					
	с) जॉन	d) किट्टी					
	खंड-ब वर्णा	त्मक प्रश्न					
निम्नलि	खित में से किसी एक विषय पर लगभग 150 शब्दों में रच	ानात्मक लिखिये: - २०२०	[5]				
a)	माबाइल फान बिना सब सूना विषय पर रचनात्मक लेख लिखिए।						
رم ۱۱	आता. प्रभाश का तत्त विषय पर रचनात्मक लखालाखए। भारतीय समात्त में अंधनिश्रतास तिष्या एव एक श्वान्स्वेत्र	र लिगिग ।					
्, सडक ^प	र आपके साथ हुई दुर्घटना और वहाँ खडी पलिस का अर	प्राय २५ सहयोग पाकर आपने थाने में रिपोर्ट लिखवानी चाही. किंत नहीं	[5]				
•	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3		-				

लिखी गई। विवरण सहित इसकी शिकायत करते हुए पुलिस आयुक्त को पत्र लिखिए।

7.

8.

OR

किसी पर्यटन स्थल के होटल के प्रबंधक को निर्धारित तिथियों पर होटल के दो कमरे आरक्षित करने का अनुरोध करते हुए पत्र लिखिए। पत्र में उन्हें कारण भी बताइए कि आपने वही होटल क्यों चुना।

निम्नलि	खित में से 2 प्रश्नों के उत्तर 40-50 शब्दों में दीजिये: (3+2)	[5]
a)	कहानी के दृश्य में परिवेश का विवरण या विवरणात्मक टिप्पणियों को किस तरह सम्बोधित किया जाता है?	
b)	कहानी के दृश्य का संवाद करते समय किन महत्वपूर्ण बातों का ध्यान रखना चाहिए?	
c)	कहानी लेखन में कथानक के पत्रों का संबंध स्पष्ट कीजिए।	
d)	कहानी का नाट्य- रूपांतरण करते समय किन महत्वपूर्ण बातों का ध्यान रखना चाहिए?	
निम्नलि	खित में से 2 प्रश्नों के उत्तर 40-50 शब्दों में दीजिये: (3+2)	[5]
a)	पत्रकारीय विशेषज्ञता से क्या तात्पर्य है ?	
b)	आज के छापेखाने का श्रेय किसको जाता है ?	
c)	संपादक के दो दायित्वों का उल्लेख कीजिए।	
d)	समाचार शब्द को परिभाषित कीजिए।	
निम्नलि	खित प्रश्नों में से किन्ही दो के उत्तर 50-60 शब्दों में दीजिये:	[6]
a)	कैमरे में बंद अपाहिज शीर्षक की उपयुक्तता को सिद्ध कीजिए।	
b)	सूर्योदय से पहले आकाश में क्या-क्या परिवर्तन होते हैं? उषा कविता के आधार पर बताइए।	
c)	कवितावली में उद्दृत छंदों के आधार पर स्पष्ट करें कि तुलसीदास को अपने युग की आर्थिक विषमता की अच्छी समझ है	1
निम्नलि	खित प्रश्नों में से किन्ही दो के उत्तर 30-40 शब्दों में दीजिये:	[4]
a)	कवि अपने संबोध्य (जिसको कविता संबोधित है कविता का 'तुम') को पूरी तरह भूल जाना चाहता है, इस बात को प्रभ	ावी
	तरीके से व्यक्त करने के लिए क्या युक्ति अपनाई है? रेखांकित अंशों को ध्यान में रखकर उत्तर दें।(सहर्ष स्वीकारा है)	
b)	फिराक गोरखपुरी की कविताओं के आधार पर बताइए क्या शायर भाग्यवादी है?	
c)	शोकग्रस्त माहौल में हनुमान के अवतरण को करुण रस के बीच वीर रस का आविर्भाव क्यों कहा गया है?	
निम्नलि	खित प्रश्नों में से किन्ही दो के उत्तर 50-60 शब्दों में दीजिये:	[6]
a)	भक्तिन पाठ के आधार पर पंचायत के न्याय पर टिप्पणी कीजिए।	
b)	काले मेघा पानी दे संस्मरण के लेखक ने लोक- प्रचलित विश्वासों को अंधविश्वास कहकर उनके निराकरण पर बल दिय	T
	है।- इस कथन की विवेचना कीजिए।	
c)	डॉ. भीमराव आंबेडकर के आदर्श समाज की कल्पना में भ्रातृता का महत्त्व स्पष्ट कीजिए।	
निम्नलि	खित प्रश्नों में से किन्ही दो के उत्तर 30-40 शब्दों में दीजिये:	[4]
a)	बाज़ार दर्शन निबंध की भाषा के बारे में बताइए।	
b)	पहलवान लुट्टन के सुख-चैन भरे दिनों का वर्णन अपने शब्दों में कीजिए।	
	취 मनलिa)b)c)d)ने मनलिa)b)c)ने मनलिa)b)c)ने मनलिa)b)c)ने मनलिa)b)c)ने मनलिa)b)c)ने मनलिa)b)c)ने मनलिa)b)c)ने मनलिa)b)c)ने मनलिa)b)c)ने मनलिa)b)	 निम्नलिखित में से 2 प्रश्नों के उत्तर 40-50 शब्दों में दीजिये: (3+2) a) कहानी के दृश्य में परिवेश का विवरण या विवरणात्मक टिप्पणियों को किस तरह सम्बोधित किया जाता है? b) कहानी के दृश्य में संवाद करते समय किन महत्वपूर्ण बातों का ध्यान रखना चाहिए? c) कहानी लेखन में कथानक के पत्रों का संबंध स्पष्ट कीजिए। d) कहानी का नाटय-रूपांतरण करते समय किन महत्वपूर्ण बातों का ध्यान रखना चाहिए? rोम्नलिखित में से 2 प्रश्नों के उत्तर 40-50 शब्दों में दीजिये: (3+2) a) पत्रकारीय विशेषज्ञता से क्या तात्पर्य है ? b) आज के छापेखाने का श्रेय किसको जाता है ? c) सं पादक के दो दायित्चों का उत्तरेख कीजिए। d) समाचार शब्द को परिभाषित कीजिए। fोम्नलिखित प्रश्नों में से किन्ही दो के उत्तर 50-60 शब्दों में दीजिये: a) कैसरे में बंद अपाछिज शीर्थक की उपयुक्तता को सिद्ध कीजिए। b) सूर्योदय से पहले आकाश में क्या नयर स्पष्ट करें कि तुलसीदास को अपने युग की आर्थि विषमता की अच्छी समझ है fोम्नलिखित प्रश्नों में से किन्ही दो के उत्तर 30-40 शब्दों में दीजिये: a) कवि अपने संबोध्य (जिसको कविता संबोधित है कविता का 'तुम') को पूरी तरह भूल जाना चाहता है, इस बात को प्रम तरीके से व्यक्त करने के लिए क्या युक्ति अपमाई है? रखा कविता के आधार पर बताइए। c) शोकग्रस्त माहौल में हनुमान के अवतरण को करण रस के बीच वीर रस का आविर्भाव क्यों कहा गया है? fोम्नलिखित प्रश्नों में सी किन्ही दो के उत्तर 50-60 शब्दों में दीजिये: a) कवि अपने संबोध्य (जिसको कविता संबोधित है कविता का 'तुम') को पूरी तरह भूल जाना चाहता है, इस बात को प्रम तरीके से व्यक करने के लिए क्या युक्त अपनाई है? रखाकित अंशों को ध्यान में रखकर उत्तर दें।(सर्ह स्वीकारा है) b) फिराक गोरखपुरी की कविताओं के आधार पर ब्ताइए क्या शायर भाग्यवादी है? c) शोकग्रस्त माहौल में हनुमान के अवतरण को करण रस के बीच वीर रस का आविर्भाव क्यों कहा गया है? ते सीकन्ही दो के उत्तर 50-60 शब्दों में वीजिये: a) भक्तिन पाठ के आधार पर पंचायत के न्याय पर प्रिणणी कीजिए। b) काले मेधा पानी दे संमरण के लेखक ने लोक- प्रचलिविश्वासों को अंधविश्वास कहकर उनके

c) **नमक** कहानी का प्रतिपाद्य बताइए।

Solution

Class 12 - हिंदी कोर

Confidence Examination -I Part-A (2020-21)

खंड-अ वस्तुपरक प्रश्न

1. 01. (ग) केशव

02. (ख) पिता के मित्र का बेटा

03. (घ) पाषाण की भाँति

04. (ख) एक रहस्य

05. (क) योग साधना

06. (ग) उसका चेहरा

07. (घ) स्थिरता का होना

08. (क) घूमना

09. (ग) लेखक का

10. (ख) रहस्यपूर्ण

क) 1 जीवन निर्वाह

ख) 2 दो

ग) 4 भावनाओं को चेतन करना

घ) 1 परावलम्बी

ड) 2 भार स्वरूप

च) 1 सत्पथ पर

छ) 1 जब वह विद्यावान होता है

ज) 1 पर

झ) 1 नौकरी की तलाश में

ञ) 1 शिक्षा के सोपान

2. I. (iii) अनुप्रास

II. (ii) प्रियतम की

III. (iv) विरोधाभास

IV. (i) बिल

V. (ii) जंगल में

I. (i) भारत का

II. (ii) उपमा

III. (i) करुणा का

IV. (iii) छिटका जीवन हरियाली पर - मंगल कुंकुम सारा।

V. (i) यहाँ अपरिचित विदेशियों को भी सहारा मिलता है।

3. कार्यालयी हिंदी और रचनात्मक लेखन निम्नलिखित में से निर्देशानुसार विकल्पों का चयन कीजिए।

a) (d) ड्राई एंकर

Explanation: ड्राई एंकर वह है जो समाचार के चित्र नहीं आने तक दर्शकों को रिपोर्टर से मिली जानकारी के आधार पर घटना से संबंधित सूचना देता है।

- b) (c) गीतकारी Explanation: यह समीक्षक का गुण नहीं हैं
- c) (d) इसने काल्पनिक जीवन को बढ़ावा दिया है।
 Explanation: इसने काल्पनिक जीवन को बढ़ावा दिया है। इससे पलायनवादी प्रवृत्ति बढ़ रही है।
- d) (d) संवाददाता
 Explanation: बीट की रिपोर्ट लेखन करने वाले को संवाददाता कहते हैं।
- e) (c) बोलचाल के शब्द

Explanation: टी वी में बोलचाल की भाषा के शब्द ही सहज और उपयुक्त माने गए हैं।

4. I. (ii) पुनरुक्तिप्रकाश अलंकार

II. (iii) सरल और सहज

OR

OR

- III. (i) बिजली की चमक से
- IV. (iv) घटा और बिजली के जैसा
- V. (iv) फ़िराक़ गोरखपुरी
- 5. I. (iv) स्वतंत्रता, समता, भाईचारा
 - II. (iii) बिना स्वार्थ के सामूहिक हितभाव
 - III. (i) बिना बाधा के संपर्क
 - IV. (iii) दूध-पानी

b)

- V. (i) गतिशीलता
- 6. निम्नलिखित प्रश्नों में निर्देशानुसार विकल्पों का चयन कीजिए:
 - a) (b) मार्केटिंग मैनेजर
 - Explanation: गिरीश यशोधर बाबू की पत्नी का चचेरा भाई था। वह किसी बड़ी कंपनी में मार्केटिंग मैनेजर है।
 - (a) समहाऊ इम्प्रापर Explanation: तकिया-कलाम, वह शब्द या वाक्यांश जो कोई व्यक्ति अपनी हर बात में जोड़ता है। कहानी में यशोधर बाबु का तकिया-कलाम 'समहाऊ इम्प्रापर' है। वे अपनी हर बात में इस शब्द का प्रयोग करते हैं।
 - c) (c) लेखक Explanation: उपरोक्त कथन जूझ पाठ के लेखक का है। इस कथन में वो अपने शिक्षक के विषय में कह रहा है।
 - d) **(d)** गलत

Explanation: लेखक के पिता खेलना और सिनेमा देखने जैसी आदतों को गलत मानते हैं। इसी कारण से उन्होंने लेखक की पढ़ाई भी छुड़ा दी थी।

e) (a) नीचा नगर

Explanation: पाठ के अनुसार मोहनजोदड़ो में बस्तियों को नीचा नगर कहकर पुकारा जाता था, क्योंकि ये गढ़ से छोटे टीलों पर बने हुए थे।

f) **(c)** लकड़ी

Explanation: पाठ के अनुसार मिस्र और सुमेर में लकड़ी और चकमक के उपकरण बनाए जाते थे। इन उपकरणों का प्रयोग खेती के लिए किया जाता था।

g) (d) तैंतीस फुट

Explanation: पाठ के अनुसार मोहनजोदड़ो की मुख्य सड़क जो पूरे शहर को जोड़ती है, उसकी चौड़ाई तैंतीस फुट है।

h) (a) जर्मनी

Explanation: ऐनी फ्रैंक का जन्म 1929 में जर्मनी में हुआ था, लेकिन बाद में इनके यहूदी होने के कारण इनसे नागरिकता छीन ली गई थी।

i) **(b)** ऐन फ्रैंक

Explanation: प्रस्तुत कथन पाठ की लेखिका ऐन फ्रैंक का है। उनके अनुसार स्मृतियों का महत्व किसी भी चीज से ऊपर है।

j) **(b)** गोल्डश्मिड्ट

Explanation: पाठ के अनुसार लेखिका के घर के ऊपरी मंजिल में गोल्डश्मिड्ट नाम का एक किरायेदार रहता था। वह एक तीस वर्षीय विधुर था।

खंड-ब वर्णात्मक प्रश्न

- 7. निम्नलिखित में से किसी एक विषय पर लगभग 150 शब्दों में रचनात्मक लिखिये:
 - a)

मोबाइल फोन बिना सब सूना

संचार के क्षेत्र में क्रांति लाने में विज्ञान-प्रदत्त कई उपकरणों का हाथ है, पर मोबाइल फोन की भूमिका सर्वाधिक है। मोबाइल फोन जिस तेजी से लोगों की पसंद बनकर उभरा है, उतनी तेजी से कोई अन्य संचार साधन नहीं। आज इसे अमीर-गरीब, युवा-प्रौढ़ हर एक की जेब में देखा जा सकता है। इसके प्रभाव से शायद ही कोई बचा हो। कभी विलासिता का साधन समझा जाने वाला मोबाइल फोन आज हर व्यक्ति की जरूरत बन गया है।

मोबाइल की ही देन है कि एक कॉल पर राज मिस्त्री, प्लंबर, कारपेंटर आदि उपस्थित हो जाते हैं। विद्यार्थी पुस्तकों का पीडिएफ या उपयोगी लेक्चर डाउनलोड करके समयानुसार पढ़ते-सुनते रहते हैं। इसमें लगे कैल्कुलेटर, कैलेंडर भी बड़े उपयोगी हैं, जिनका उपयोग समय-समय पर किया जा सकता है। साथ-साथ विशेष रूप से महिलाएँ एवं बुजुर्ग मोबाइल के साथ अपने को सुरक्षित महसूस करते हैं; क्योंकि कोई भी परेशानी आने पर वे तत्काल अपने परिजनों से संपर्क कर सकते हैं।

जहाँ एक ओर इसका उपयोग जरूरी है, तो दूसरी तरफ इसके उपयोग से कई नुकसान भी हैं।और ऐसा कहना अनुचित नहीं है कि हम आज के दौर में मोबाइल फोन के गुलाम बन कर रह गए हैं। विद्यार्थीगण पढ़ने की बजाय फोन पर गाने सुनने, अश्लील फ़िल्में देखने, अनावश्यक बातें करने में व्यस्त रहते हैं। इससे उनकी पढ़ाई का स्तर गिर रहा है। मोबाइल फोन पर बातें करना हमारे स्वास्थ्य पर प्रतिकूल प्रभाव डालता है। इस पर ज्यादा बातें करना बहरेपन को न्यौता देना है। आतंकवादियों के हाथों इसका उपयोग गलत उद्देश्य के लिए किया जाता है। मोबाइल फोन नि:संदेह अत्यंत उपयोगी उपकरण और विज्ञान का चमत्कार है। इसका सदुपयोग और दुरुपयोग मनुष्य के हाथ में है। b)

प्रात:काल की सैर

प्रातः काल की सैर से मन प्रफुल्लित तथा तन स्वस्थ्य रहता है। स्वस्थ व्यक्ति ही समर्थ होता है और यह सर्वमान्य सत्य है कि वही इच्छित कार्य कर सकता है। वही व्यापार, सेवा, धर्म आदि हर क्षेत्र में सफल हो सकता है। व्यक्ति तभी स्वस्थ रह सकता है जब वह व्यायाम करे। व्यायाम में खेल-कूद, नाचना, तैराकी, दौड़ना आदि होते हैं, परंतु ये तरीके हर व्यक्ति के लिए सहज नहीं होते। हर व्यक्ति की परिस्थिति व शारीरिक दशा अलग होती है। ऐसे लोगों के लिए प्रात:काल की सैर से बढ़िया विकल्प नहीं हो सकता।प्रातः काल में सैर करने से हम आज के प्रदूषित वातावरण में भी थोड़ी शुद्ध हवा ले सकते हैं।

यदि व्यक्ति नियमित रूप से प्रात:काल की सैर करे तो उसे अधिक फायदा ले सकता है।प्रातः सैर से मष्तिष्क को भी फायदा होता है। सैर के समय निरर्थक चिंताओं से दूर रहना चाहिए। प्रात:कालीन सैर के लिए उपयुक्त स्थान का होना भी जरूरी है। घूमने का स्थान खुला व साफ़-सुथरा और प्रदूषण रहित होना चाहिए। हरी घास पर नंगे पैर चलने से आँखों की रोशनी बढ़ती है, तथा शरीर में ताजगी आती है। इस बात का ध्यान रखना चाहिए कि यह नियम सर्दी में लागू नहीं होता।

अत्यधिक ठंड से नंगे पैर चलने से व्यक्ति बीमार हो सकता है। हरित क्षेत्र में सैर करनी चाहिए। इसके लिए नदियों-नहरों व खेतों के किनारे, पार्क, बाग-बगीचे आदि भी उपयोगी स्थान माने गए हैं। खुली सड़कों पर वृक्षों के नीचे घूमा जा सकता है। यदि ये सब कुछ उपलब्ध न हों तो खुली छत पर घूमकर लाभ उठाया जा सकता है। प्रात:कालीन सैर से तन-मन प्रसन्न हो सकता है। यह सस्ता व सर्वसुलभ उपाय है।

c)

भारतीय समाज में अंधविश्वास

जीवन को व्यवस्थित करने के लिए मानव ने नियमों की संकल्पना की जिन्हें 'धर्म' की संज्ञा दी गई। इन नियमों का उद्देश्य मानवजीवन को सुखी, संपन्न व व्यवस्थित बनाना था। समय बदलने के साथ-साथ कुछ नियम अप्रासंगिक हो गए और वे अंधविश्वास का रूप धारण करने लगे। आधुनिक युग में ये अंधविश्वास प्रगति में बाधक सिद्ध हो रहे हैं।

भारतीय समाज के अनेक विश्वास जीवन की गतिशीलता के साथ न चलने के कारण पंगु हो गए हैं। इन अंधविश्वासों में धर्म की रूढिबद्धता, आभूषण-प्रेम, जादू-टोने में विश्वास, देवी-देवताओं के प्रति अबौद्धक श्रद्धा आदि सामाजिक कुरीतियाँ हैं। ये कुरीतियाँ आज देश की प्रगति में बाधक सिद्ध हो रही हैं। उदाहरणस्वरूप हमारे धर्म में कर्म के अनुसार जाति-प्रथा का विधान किया गया, परंतु बाद में उसे जन्म के आधार पर मान लिया गया। आज उसकी प्रासंगिकता समाप्त हो गई है, परंतु आरक्षण, जातिगत श्रेष्ठता के भाव संघर्ष का कारण बने हुए हैं। इसी तरह मुसलमानों के आगमन से देश में छुआछूत की भावना को बढ़ावा मिला।

युद्धों में गिरफ्तार लोगों को मुसलमानों के हाथ का खाना पड़ता था, फलत: हिंदू समाज उन्हें बहिष्कृत कर देता था या उन्हें अस्पृश्य मान लिया जाता था। उनके साथ भोजन करना, उठना-बैठना आदि तक निषेध कर दिया गया। इससे समाज खोखला हुआ। इसी प्रकार भारतीय समाज का एक बड़ा वर्ग जादू-टोने में विश्वास रखता है। हालाँकि मीडिया के प्रसार व बौद्धिकता बढ़ने से जादू-टोने का जाल कम होने लगा है। फिर भी यदा-कदा नरबलि, सती–प्रथा आदि की घटनाएँ प्रकाश में आती ही रहती हैं। इसके अतिरिक्त समाज में अनेक तरह के अपशकुन अब भी प्रचलित हैं, जैसे बिल्ली द्वारा रास्ता काटा जाना, कोई काम शुरू करते समय किसी को छींक आना, पीछे से आवाज देना, चलते हुए अँधेरा होना आदि।

कई लोग इनके कारण अपने महत्वपूर्ण काम तक रोक देते हैं। हमारे समाज का सबसे बड़ा अंधविश्वास समग्र रूप में परंपराओं के प्रति अंधभक्ति है। आज भी हम अनेक अव्यावहारिक बातों से जुड़े हुए हैं। फलित ज्योतिष विद्या के नकली धनी इस प्रकार के विश्वास की आड़ में अपना पेट भरते हैं। लड़की के जन्म को अशुभ मानना, विवाह में सामर्थ्य से अधिक व्यय आदि भी इन्हीं अंधविश्वासों की उपज है। अब तो धर्मगुरुओं की एक ऐसी जमात' तैयार हो चुकी है जो आस्था के नाम पर जनता को भ्रमित कर रहे हैं। मीडिया भी इसमें पूरे मनोयोग से सहयोग कर रही है।जब अंधविश्वासों के माध्यम से भ्रमित होने से बचाने वाले ही जनता को भ्रमित कर रहे हैं। मीडिया भी इसमें पूरे मनोयोग से सहयोग कर रही है।जब अंधविश्वासों के माध्यम से भ्रमित होने से बचाने वाले ही जनता को भ्रमित करने में सहायक हों तब किया भी क्या जा सकता है? आवश्यकता इस बात की है कि धर्म के वास्तविक रूप को समझकर आचरण करें और अपनी प्रगति करें और जो भी धर्म आपके प्रगति में रुकावट लाए, वो कोई धर्म नहीं हो सकता। समाज को चाहिए कि नए जमाने के साथ कदम से कदम मिलाकर चले और अंध परंपराओं को सदा के लिए दफ़न कर दे।

8. 72/75, शास्त्री नगर, पटना

17 अप्रैल, 2019 सेवा में, पुलिस आयुक्त पटना प्रमंडल बिहार पटना। **विषय- पुलिस द्वारा किया जाने वाला असहयोग**

महोदय,

मैं आपका ध्यान पुलिस द्वारा सामान्य जनता के साथ अपनाए जाने वाले असहयोगात्मक रवैये की ओर आकर्षित करना चाहता हूँ। मैं कल दिन में लगभग 10:00 बजे गाँधी मैदान से दानापुर जा रहा था। रास्ते में मेरी गाड़ी को किसी अन्य गाड़ी ने पीछे से टक्कर मार दी, जिससे न केवल मेरी गाड़ी बुरी तरह क्षतिग्रस्त हो गई, बल्कि गाड़ी में बैठी मेरी बहन एवं उसके बच्चे को भी बहुत चोट लगी।

मेरे भाँजे के सिर में अधिक चोट लगने से काफी खून निकल रहा था। टक्कर मारने वाला अपनी गाड़ी लेकर तुरंत भाग गया। वहाँ थोड़ी दूर पर ही पुलिस की गाड़ी खड़ी थी। वे दुर्घटनास्थल पर तुरंत आ तो गए, लेकिन उन्होंने किसी भी प्रकार का सहयोग नहीं किया। न तो उन्होंने टक्कर मारने वाली गाड़ी को रोका और न ही बच्चे के उपचार के लिए अस्पताल ले जाने में मदद की। किसी तरह स्थानीय लोगों की मदद से ही मेरी बहन एवं भाँजे को अस्पताल पहुँचाया जा सका।

उन्हें अस्पताल में भर्ती करने के बाद मैंने घटना से संबंधित प्रथम सूचना रिपोर्ट संबंधित थाने में लिखवानी चाही, तो वहाँ भी रिपोर्ट दर्ज नहीं की गई। अत्यंत कोशिश करने के बाद भी जब मैं इसमें सफल नहीं हो सका, तो मैंने इसकी शिकायत आपसे करनी उचित समझी।

मेरा विनम्र निवेदन है कि पुलिस बल को जनता की सेवा करने के लिए ही गठित किया गया है और यहाँ की पुलिस अपने इसी दायित्व को भूल गई है। कृपया आप इससे संबंधित निर्देश जारी करें, ताकि आम जनता को इसका लाभ मिल सके। और पुलिस को उसका काम समझाया जाए, ताकि वे अपने पुलिस होने के कर्तव्य का पालन सही ढंग से कर सकें। मेरा यह भी निवेदन है कि मेरे साथ हुई दुर्घटना से संबंधित प्रथम सूचना रिपोर्ट संबंधित थाने को दर्ज करने का निर्देश देकर उस पर कार्यवाही की जाए।

सधन्यवाद। भवदीय राम मिश्र

OR

सेवा में, प्रबंधक महोदय, स्पार्क हेवन होटल, नैनीताल, उत्तराखंड। 17 अप्रैल, 2019

विषय -होटल में कमरे आरक्षित करवाने हेतु।

महोदय,

मैं जय प्रकाश, दिल्ली का निवासी हूँ। मैंने आपके होटल की आवभगत के विषय में बहुत प्रशंसा सुनी है। मैं और मेरा परिवार दिनांक 25 अप्रैल, 2019 से 27 अप्रैल, 2019 तक नैनीताल में पर्यटन के उद्देश्य से आ रहे हैं इसलिए मैं चाहता हूँ कि आप अप्रैल 20, 2019 से 27 अप्रैल 27 , 2019 तक की दिनांक के लिए मेरे नाम से दो कमरे आरक्षित कर दीजिए।

धन्यवाद भवदीय जय प्रकाश

दिल्ली

- 9. निम्नलिखित में से 2 प्रश्नों के उत्तर 40-50 शब्दों में दीजिये: (3+2)
 - a) यह देखना आवश्यक है कि परिस्थिति, परिवेश, पात्र, कथानक से संबंधित विवरणात्मक टिप्पणियाँ किस प्रकार की हैं। विभिन्न प्रकार के विवरणों को नाटक में स्थान देनेके अलग-अलग तरीके हैं। उदाहरण के लिए विवरणात्मक टिप्पणियाँ किस प्रकार की हैं। विभिन्न प्रकार के के अंतर्गत लिया जा सकता है या पाश्र्व संगीत के माध्यम से व्यक्त किया जा सकता है। विवरणा यदि पत्रिवेश के बारे में है तो उसे मंच सज्जा के अंतर्गत लिया जा सकता है या पाश्र्व संगीत के माध्यम से व्यक्त किया जा सकता है। विवरणा यदि पात्रों के बारे में है तो उन्हें संवादों के माध्यम से निर्धारित दृश्यों में उचित स्थान पर दिया जा सकता है। कहने का तात्पर्य यह है कि कहानी में व्यक्त महत्त्वपूर्ण सूत्रा नाटक के स्वरूप के अनुसार अपनी जगह निर्धारित कर लेते हैं।
 - b) दृश्य निर्धारित हो जाने पर यह अनुमान लगाया जा सकता है कि दृश्य की सभी आवश्यकताओं को पूरा करने वाले तथा दृश्य के क्रमिक विकास को सुनिश्चित करने के लिए पर्याप्त संवाद हैं या नहीं। यदि पर्याप्त संवाद नहीं हैं तो उन्हें लिखने का काम किया जाता है। सबसे पहली और महत्त्वपूर्ण शर्त यह है कि नए लिखे संवाद, कहानी के मूल संवादों के साथ मेल खाते हों। दूसरी महत्त्वपूर्ण बात यह कि उनके लिखे जाने का सौ प्रतिशत औचित्य हो। तीसरी बात जो ध्यान में रहे वह यह है कि संवाद छोटे, प्रभावशाली और बोलचाल की भाषा में हों। कहानी में छपे लंबे संवाद को पाठक पढ़ सकता है लेकिन मंच पर बोले गए लंबे संवाद से तारतम्य बनाए रख पाना कठिन होता है।
 - c) देशकाल, स्थान और परिवेश के बाद कथानक के पत्रों पर विचार करना चाहिए। हर पात्र का अपना स्वरूप, स्वभाव और उद्देश्य होता है। कहानी में वह विकसित भी होता है या अपना स्वरूप भी बदलता है। कहानीकार के सामने पत्रों का स्वरूप जितकारण पत्नारों का अध्ययन कहानी की एक बहुत महत्त्वपूर्ण और बुनियादी शर्त है। इसके स्पष्ट होगा उतनी ही आसानी उसे पत्रों का चरित्र-चित्रण करने और उसके संवाद लिखने में होगी। इसके अंतगर्त पात्रो के अंत संबंध पर भी विचार किया जाना चाहिए। कौन-से पात्र की किस किस परिस्थिति में क्या प्रतिक्रिया होगी, यह भी कहानीकार को पता होना चाहिए।
 - d) कहानी का नाट्य रूपांतर करते समय इन महत्वपूर्ण बातों पर ध्यान देना चाहिये
 - i. कहानी एक ही जगह पर स्थित होनी चाहिये।
 - ii. कहानी में संवाद नहीं होते और नाट्य संवाद के आधार पर आगे बढता है। इसलिये कहानी मे संवाद का समावेश करना जरूरी है।
 - iii. कहानी का नाट्य रूपांतर करने से पहले उसका कथानक बनाना बहुत जरूरी है।
 - iv. नाट्य मे हर एक पत्र का विकास, कहानी जैसे आगे बढती है, वैसे होता है इसलिये कहानी का नाट्य रूपांतर करते वक्त पात्र का विवरण करना बहुत जरूरी होता है।
 - v. एक व्यक्ति कहानी लिख सकता है, पर जब नाट्य रूपांतर कि बात आती है, तो हर एक समूह या टीम कि जरूरत होती है।
- 10. निम्नलिखित में से 2 प्रश्नों के उत्तर 40-50 शब्दों में दीजिये: (3+2)
 - a) पत्रकारीय विशेषज्ञता का अर्थ यह है कि व्यावसायिक रूप से प्रशिक्षित न होने के बावजूद उस विषय में जानकारी और अनुभव के आधार पर अपनी समझ को इस हद तक विकसित करना कि उस विषय में घटने वाली घटनाओं या मुद्दों की सहजता से व्याख्या करके पाठकों के लिए मायने स्पष्ट कर सके।
 - b) छापाखाना अथवा प्रेस की स्थापना सबसे पहले चीन में हुई थी। लेकिन वर्तमान समय में जो छापेखाने हैं उनका श्रेय चीन को नहीं जर्मनी को जाता है। इस तरह के छापेखाने का आविष्कार गुटेनबर्ग ने किया था। आधुनिक की शुरुआत ही प्रेस के आविष्कार से हुई थी। तब से लेकर अब तक में प्रेस में अनेक बदलाव आए हैं।
 - c) संपादक के दो दायित्व निम्नलिखित हैं
 - i. संवाददाताओं तथा रिपोर्टरों द्वारा प्राप्त लिखित सामग्री को शुद्ध कर प्रस्तुति के योग्य बनाना।
 - ii. समाचार-पत्र की नीति, आचार-संहिता तथा जनकल्याण का ध्यान रखना।

- d) समाचार का अंग्रेजी पर्याय (NEWS) चारो दिशाओं को सांकेतिक करता है। अपने आस-पास के समाज एवं देश-दुनिया की घटनाओं के विषय मे त्वरित एवं नवीन जानकारी, जो पक्षपात रहित एवं सत्य हो, समाचार कहलाता है।
- 11. निम्नलिखित प्रश्नों में से किन्ही दो के उत्तर 50-60 शब्दों में दीजिये:
 - a) यह शीर्षक कैमरे में बंद यानी कैमरे के सामने लाचार व बेबस अपाहिज के मनोदशा का सार्थक प्रतिनिधित्व करता है। वस्तुतः यह दूरदर्शन के कार्यक्रम संचालकों की मानसिकता पर व्यंग्य है। कार्यक्रम बनाने वाले अपने लाभ के लिए अपाहिज को भी प्रदर्शन की वस्तु बना देते हैं। वे दूसरे की पीड़ा बेचकर धन कमाते हैं। अतः यह शीर्षक सर्वथा उपयुक्त है।
 - b) उषाकाल में आकाश का रंग शंख जैसा नीला था, सुबह की नमी के कारण तथा सूर्य की लालिमा बढ़ने के बाद आकाश राख से लीपे चौके जैसा हो गयाजो अभी गीला है। सूर्य की प्रारंभिक किरणों से आकाश की लालिमा ऐसा लगी मानो काली सिल पर थोड़ा केसर डालकर उसे धो दिया गया हो या फिर काली स्लेट पर लाल खड़िया मिट्टी मल दी गई हो। सूर्योदय के बाद आकाश ऐसा प्रतीत हो रहा है जैसे नील स्वच्छ जल में किसी गोरी युवती का प्रतिबिंब झिलमिला रहा हो।
 - c) कवितावली में वर्णित छंदों से यह ज्ञात होता है कि तुलसीदास को अपने युग में व्याप्त आर्थिक विषमताओं का भली-भॉति ज्ञान था। उन्होंने समकालीन समाज का सजीव एवं यथार्थपरक चित्रण किया है,जो आज भी सत्य प्रतीत होता है। उन्होंने लिखा है कि उनके समय में लोग बेरोजगारी एवं भूखमरी की समस्या से परेशान थे। मजदूर, किसान, नौकर, भिखारी आदि सभी दुखी थे। गरीबी के कारण लोग अपनी संतान तक को बेचने के लिए तैयार थे। सभी ओर विवशता का वातावरण था।
- 12. निम्नलिखित प्रश्नों में से किन्ही दो के उत्तर 30-40 शब्दों में दीजिये:
 - a) कवि कहता है कि वह अपने प्रिय को पूरी तरह भूल जाना चाहता है। उसके वियोग के अंधकार को अपने शरीर और हृदय पर झेलते हुए वह उस अंधकार में नहा लेना चाहता है ताकि उसके प्रिय की कोई स्मृति उसके हृदय में न रहे। इस प्रकार कवि वियोग की अंधकार-अमावस्या में डूब जाना चाहता है।
 - b) शायर बिलकुल भी भाग्यवादी नहीं है। उसे अपने भाग्य पर बिलकुल भरोसा नहीं। वह तो कहता है कि मैं और मेरी किस्मत दोनों मिलकर रोते हैं। वह मुझ पर रोती है और मैं उस पर रो लेता हूँ। दोनों परस्पर विरोधी हैं। इसलिए कह सकते हैं कि शायर भाग्यवादी नहीं कर्मवादी है। भाग्य की अपेक्षा उसे अपने कर्म पर विश्वास है।
 - c) लक्ष्मण के मूर्च्छित होने पर हनुमान संजीवनी बूटी लेने हिमालय पर्वत जाते है उन्हें आने में विलंब हो जाने पर सभी बहुत चिंतित व दुखी होते हैं उसी समय हनुमान संजीवनी बूटी के साथ पूरा पर्वत लेकर आ जाते है तब मानो करुण रस के बीच वीर रस का संचार हो जाता है अर्थात लक्ष्मण की मूर्च्छा से दुखी निराश लोगों के मन में उत्साह का संचार होता है।
- 13. निम्नलिखित प्रश्नों में से किन्ही दो के उत्तर 50-60 शब्दों में दीजिये:
 - a) भक्तिन की बेटी के सन्दर्भ में पंचायत द्वारा किया गया न्याय, तर्कहीन और अंधे कानून पर आधारित है। भक्तिन के जिठौत ने संपत्ति के लालच में षडयंत्र कर भोली बच्ची को धोखे से जाल में फंसाया। पंचायत ने निर्दोष लड़की की कोई बात नहीं सुनी और एक तरफ़ा फैसला देकर उसका विवाह जबरदस्ती जिठौत के निकम्मे तीतरबाज साले से कर दिया। पंचायत के अंधे कानून से दोषियों को लाभ हुआ और निर्दोष को दंड मिला।
 - b) लेखक ने इस संस्मरण में लोक प्रचलित विश्वासों को अंधविश्वास कहा है। पाठ में इंदर सेना के कार्य को वे पाखंड मानते हैं। आम व्यक्ति इंदर सेना के कार्य को अपने-अपने तर्कों से सही मानता है, पंरतु लेखक इन्हें गलतबताता है।गरमी के मौसम में पानी की भारी कमी होती है। तब पानी को बिना मतलब फेंकना भयंकर क्षति है ऐसे ही अंधविश्वासों के कारण देश का बौद्धिक विकास नहीं हो पाता और उसकी प्रगति में अवरोध होता है।
 - c) आदर्श समाज में तीन तत्वों में से एक भ्रातृता को रखकर लेखक ने आदर्श समाज में स्त्रियों को सम्मिलित नहीं किया है, किंतु वह जिस समाज की बात कर रहा है, उस समाज की संरचना स्त्री तथा पुरुष दोनों से मिलकर निर्मित होती है। वास्तव में लेखक का आशय इस बात से है कि समाज में लोग एक दूसरे के साथ भाईचारे का व्यवहार रखें। समाज में समरसता एवं सह-अस्तित्व की भावना हो तथा लोगों के मन में एक दूसरे के प्रति श्रद्धा व सम्मान का भाव हो। इसके अभाव में आदर्श समाज की कल्पना नहीं की जा सकती।
- 14. निम्नलिखित प्रश्नों में से किन्ही दो के उत्तर 30-40 शब्दों में दीजिये:
 - a) बाजार दर्शन जैनेंद्र द्वारा लिखा गया एक सार्थक निबंध है। इसमें निबंधकार ने सहज, सरल और प्रभावी भाषा का प्रयोग किया है। शब्दावली में कुछेक अन्य भाषाओं के शब्द भी आए हैं। लेकिन ये शब्द कठिन नहीं हैं। पाठक सहजता से इन्हें ग्रहण कर लेता है। भाषा की दृष्टि से यह एक सफल और प्रभावशाली निबंध है। वाक्य छोटे-छोटे हैं जो निबंध को अधिक संप्रेषणीय बनाते हैं।
 - b) पहलवान लुट्टन के सुख-चैन के दिन तब शुरू हुए जब उसने चाँद सिंह को कुश्ती में हराकर अपना नाम रोशन किया। राजा ने उसे दरबार में रखकर उसका सम्मान किया। इससे उसकी कीर्ति दूर-दूर तक फैल गई। पौष्टिक भोजन व राजा की स्नेह-दृष्टि मिलने से उसने सभी नामी पहलवानों को जमीन सुँघा दी। अब वह दर्शनीय जीव बन गया। मेलों में वह लंबा चोगा व अस्त-व्यस्त पगड़ी पहनकर मस्त हाथी की तरह चलता था।
 - c) नमक कहानी भारत-पाक विभाजन के बाद सरहद के दोनों तरफ के विस्थापित जनों के दिलों को टटोलती एक मार्मिक कहानी है। दिलों को टटोलने की इस कोशिश में अपने-पराए, देश-प्रदेश की कई प्रचलित धारणाओं पर सवाल खड़े किए हैं। विस्थापित होकर आई सिख बीबी आज भी लाहौर को ही अपना वतन मानती हैं और सौगात के तौर पर वहाँ का नमक लाने की फ़रमाइश करती हैं। कस्टम अधिकारी नमक ले जाने की इजाज़त देते हुए देहली को अपना वतन बताता है। इसी तरह भारतीय कस्टम अधिकारी सुनील दास गुप्ता का कहना है, "मेरा वतन ढाका है'। राष्ट्र-राज्यों की नयी सीमा-रेखाएँ खींची जा चुकी है और मज़हबी आधार पर ज़मीन पर खींची गई रेखाएँ उनके अंतर्मन तक नहीं पहुँच पाई हैं।

ATOMIC ENERGY CENTRAL SCHOOL NO No. 4, RAWATBHATA Confidence Exam: 2020-21 Physical Education- XII

		Physical Educ			
M.M:70				TIME: 3 hrs.	
1. Questions 01-12 ca 2. Questions 13-16 ca 3. Questions 17-26 ca 4. Questions 27-30 ca	arry 1 marks each and a arry 2 marks each and sl arry 3 marks each and sl arry 5 marks each and sl	re Multiple Choice nall not exceed 40- nall not exceed 80- nall not exceed 150	Questions. 60 words. 100 words. -200 words.		
Q.1.In a Knockout to	urnament, if the total no	o. of teams (n) part	icipating is odd,	then the formula for calcula	ating
the no. of teams in u	upper half is				1
a. n+1/2	b. n-1/2	c. n-1 OR	d. n+1		
The Speed Play tra a. Fartlek training	aining is also known as b. Interval training	c. Pace runni	ng d. Circi	uit training	
Q.2. Defensive food	consist of				1
a. Protein b. C	Carbohydrate c. V	itamins and Miner	als d. All d	of these	
Q.3. In ashtang yoga, 1	, there areeleme	nts.			
a. Two	b. Eight	c. Ten OR	d. Six	:	
Privilege to team	/player to play in next re	ound is called			
a. Seeding	b. Fixture	c. Bye	d. 1	Fournament	
Q.4. Which of the fol	lowing is not a disorder.				1
a. ODD	b. Vision impairment	c. SPD	d. ADHI	D	
Q.5. Abnormal curve	e of Spine at front is calle	ed			1
a. Scoliosis	b. Kyphosis	c. Knock Knees	d. L	ordosis	
Q.6. The duration of	Harvard Step test is				1
a. 9 min	b. 5 min	c. 3 min	d. 6 min		
Q.7.Harvard Step tes	st was developed in whic	ch year.			1
a. 1943	b. 1941	c. 1945 OR	d. 1950		
Roughage is	food.				
a. Macronutrient	b. Micronutrie	nt c. Non-	Nutritive	d. Nutritive	
Q.8. Cardio respirato	ory system improves the				1
a. Heart Size	b. Lung Volume	c. New Capillaries	d. /	All of these	
Q.9. Adduction move	ement is .				1
a. Reduce angle of	fjoint b. Increase angle	ofjoint c. Away	from body d. to	wards bodyline	
Q.10.Who developed	d the Five factors Model	of Personality.			1
a. Brouha b	. Rosenman & Friedmar	c.Paul Costa & R	ober Mac Crae	d. None	
Q.11.The science wh	ich deals with the functi	oning of body is ca	lled		1
a. Physiology	b. Psychology	c. Biomecha	anics	d. Kinesiology	
Q.12.Name of the ps	ychologist, who categor	ized people on the	basis of body st	ructure	1
a. Watson	b. Guiltord	c.William Sheldor	m	d. None of these	

ATOMIC ENERGY CENTRAL SCHOOL NO No. 4, RAWATBHATA Confidence Exam: 2020-21 Physical Education- XII

M.M:70	TIME: 3 hrs.
 Questions 13-16 carry 2 marks each and shall not exceed 40-60 words. Questions 17-26 carry 3 marks each and shall not exceed 80-100 words. 	
3. Questions 27-30 carry 5 marks each and shall not exceed 150-200 words.	
Q.13.Wirte the Contraindication of Bhujang Asana.	2
Q.14.Discuss the symptoms of Autism.	2
Q.15.Write down all the test items of Motor Fitness test.	2
Q.16.Explain the application of any two Newton's laws in sports. OR	2
Describe the harmful effects of Dieting	
Q.17.What do mean by Planning? Explain the objectives of Planning.	3
Q.18. Write a short note Vitamins.	3
Q.19. Write the classification of Asanas.	3
OR	
Explain the benefits of Asanas.	
Q.20.Mention the benefits of Physical activities for Children with special needs.	3
Q.21. What are the reasons for less Participation of Indian women in Sports.	3
Q.22.Explain the Flexibility and Agility test items for Senior citizens.	3
Q.23.Differentiate between Sprain and Strain injury.	3
OR	
Write the aims and objectives of First Aid.	
Q.24.Explain with example about Flexion and Extension.	3
Q.25.Expain the causes of Aggression.	3
Q.26. What are Isotonic Exercises.	3
UR	
What do you understand by Biomechanics.	-
Q.27. What is Motor Development? Explain its types and Factors affecting it.	5
Q.28.Draw a league fixture of 7 teams using Cyclic method.	5
Explain the causes and types of Disorder	
\cap 29 Define Strength Explains its types and methods for improving strength	5
OR	5
What is Balanced Diet? Describe the Nutritive components of diet.	
Q.30.Explain the Physiological factors which determine the Speed and Strength.	5
