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12th Science

Board Papers - Feb 2020

1.English

2.Hindi

3.Marathi

4.Physics

5.Chemistry

6.Biology

7.Maths

BOARD QUESTION PAPER: FEBRUARY 2020

ENGLISH YUVAKBHARATI

Time: 3 Hours

Max. Marks: 80

SECTION – I

(Reading Skills, Grammar, Vocabulary, Note-making and Summary)

Q.1. (A) Read the first activity, read the extract and then do all the activities: (12) [15]

A1. True / False —

Read the following sentences and write down true sentences: (2)

- (1) Everyone gathered late at the gate of the garden.
- (2) Everyone emptied their sacks of the fruits they had collected earlier.
- (3) People walked up to their king happily.
- (4) The stream was narrow, but the current was strong.

Right on time the next day, everyone gathered at the gate of the garden. At the time king had told them, the guards opened the gates and handed out the sacks. Men, women and children started roaming around the beautiful garden. They spotted juicy apples and plump mangoes hanging from the trees. They picked these till they saw ripe pomegranates bursting with juice, grapes and colourful flowers no one had seen before. People went about picking whatever they wished for and filling their sacks with them.

But as they walked further into the garden it became wilder, more like a forest, and there they saw trees laden with apples of gold, mangoes of silver and flowers studded with gems and jewels!

Everyone emptied their sacks of the fruits they had collected earlier and flowers. They all forgot that they had said they had more than enough for their needs at home. Greed took over their minds and all they could think about was adding more and more valuables to their sacks. The fruits which they had picked earlier, and had tasted to be as sweet as nectar, now lay in heaps around the garden-forgotten and left to rot.

Then with their sacks filled right to the top, the citizens made their way to the rear gate of the garden where the king was waiting. But what was this? To their astonishment they found a raging stream stopping their way. Water gushed down from behind some rocks and rushed over pebbles and big boulders through the garden. The stream was narrow, but the current was strong. There were no boats to take the people across. Clearly, the only way was to swim. But how could they swim with such heavy sacks filled with gold and silver fruits and flowers?

The people stood by the stream for a long time scratching their heads. Then one young man did what they all knew needed to be done. He simply abandoned his sack by the stream, waded into the water, then swam across to the other side. Slowly the others followed suit. Sadly, some wailing in distress, they left their sacks filled with what they had thought was the riches of a lifetime, and dived into the stream. Then they walked up to their king – wet, unhappy and angry.

A2. Find out the reasons – (2)

Find out the reasons for the following statements:

- (i) Everyone emptied their sacks of fruits they had collected earlier _____.
- (ii) The people stood by the stream for a long time scratching their heads _____.

A3. Point out — (2)

Point out two instances from the passage showing greedy nature of people.

- (i) _____
- (ii) _____

A4. Pick out — (2)

Pick out the qualifying words from the extract for the following nouns:

- (i) mangoes (ii) apples (iii) pomegranates (iv) flowers

A5. Personal response: (2)

“Greed for money is the common tendency of people.” Explain in brief.

A6. Grammar — (2)

Rewrite the following sentences in the ways instructed:

(i) They spotted juicy apples and plump mangoes hanging from the trees.

(Rewrite using “not only... but also”.)

(ii) Everyone gathered at the gate of the garden.

(Frame a Wh-question to get the underlined part as an answer.)

(B) Grammar — (3)

Do as directed:

(1) She was serving as _____ clerk in _____ State Bank of India.

(Rewrite it using appropriate articles.)

(2) Nashik city recorded 52.7 mm rain _____ the four hours _____ 3.30 pm and 7.30 pm on Friday.

(Fill in the blanks with suitable prepositions.)

(3) Grandpa said to Meenu, “I am going for a walk. Are you willing to come with me?”

(Change it into indirect narration.)

Q.2. (A) Read the first activity, read the extract and then do all the activities: (12) [15]

A1. Choose: (2)

Choose two sentences that appropriately mention the theme of the passage:

(i) The same scale should not be used for all to measure their performance.

(ii) Private schools are good to develop individual’s interest.

(iii) The same curriculum should be given to all for better results.

(iv) Trying for all the subjects irrespective of the individual’s interest may lead to frustration.

Once upon a time, the animals decided they must do something heroic to meet the problems of a “new world”, so they organized a school. They adopted an activity curriculum consisting of running, climbing, swimming and flying. To make it easier to administer the curriculum, all the animals took all the subjects.

The duck was excellent in swimming. In fact, better than his instructor. But he made only passing grades in flying and was very poor in running. Since he was slow in running, he had to stay after school and also drop swimming in order to practise running. This was kept up until his webbed feet were badly worn and he was only average in swimming. But average was acceptable in school so nobody worried about that, except the duck.

The rabbit started at the top of the class in running but had a nervous breakdown because of so much make up work in swimming.

The squirrel was excellent in climbing until he developed frustration in the flying class where his teacher made him start from the ground up instead of the treetop down. He also developed a “Charlie horse” from overexertion and then got a C in climbing and D in running.

The eagle was a problem child and was disciplined severely. In the climbing class, he beat all the others to the top of the tree but insisted on using his own way to get there.

At the end of the year, an abnormal eel that could swim exceedingly well and also run, climb and fly a little, had the highest average and was valedictorian.

The prairie dogs stayed out of school and fought the tax levy because the administration would not add digging and burrowing to the curriculum.

A2. Complete:

Complete the following statements by giving suitable reasons:

(i) The duck was average in swimming, because _____ .

(ii) The squirrel could score only C in climbing, because _____ .

A3. Guess: (2)

Guess the result of the prairie dogs if they had been given admission in the animal school and support your guessing with the facts from the extract.

A4. Vocabulary – (2)
Fill in the blanks with appropriate words given in the box and rewrite:

valedictorian, curriculum, frustration,
administer

- (i) Varun who topped the college was declared _____ .
- (ii) The _____ of the school should involve more activity subjects.
- (iii) Poor performance in the exams develop _____ among the students.
- (iv) It's necessary to _____ the programme, so that it will be successful.

A5. Personal response — (2)
Suggest in about 50 words at least two ways to make the learning enjoyable.

A6. Grammar — (2)
Rewrite the following sentences in the ways instructed:

(i) The eagle was a problem child and was disciplined severely..
(Make it a complex sentence.)

(ii) An abnormal eel could swim exceedingly well.
(Rewrite the sentence using 'able to'.)

(B) Note-making — (3)
Read the following extract and complete the note given below:

Sudha Murthy was born on 19 August, 1950; in Shiggaon in Karnataka. She and her siblings were raised by her parents and maternal grandparents. She completed B.E. in Electrical Engineering from B.V.B. College of Engineering and Technology, standing first in her class and receiving a gold medal from the Chief Minister of Karnataka. She completed M.E. in Computer Science from the Indian Institute of science, standing first in her class and receiving a gold medal from the Indian Institute of Engineers.

Sudha Murthy became the first female engineer hired at India's largest auto manufacturer TATA Engineering and Locomotive Company (TELCO) as a Development Engineer. She later joined Walchand Group of Industries at Pune as a Senior System Analyst. In 1996, she started Infosys Foundation and has been a Visiting Professor at the P.G. centre of Bangalore University.

Sudha Murthy's work covers the healthcare, education, empowerment of women and public hygiene at the grassroot level. Her vision of a library for each school has resulted in the setting of 50,000 libraries so far. She is helping our rural areas by building 10,000 public toilets and several hundred toilets in the city of Bangalore. Infosys Foundation is a public charitable trust founded in 1996 and Sudha Murthy is one of the trustees. Through the foundation she has built 2,300 houses in the flood affected areas.

Sudha Murthy

B1. Early life and education —

(i) Birthplace : ♦ _____

(ii) Education : B.E. from B.V.B. College of Engineering,
with gold medal.

: ♦ _____

B2. Career : ♦ _____

♦ Senior System Analyst in Walchand Group
of Industries, Pune.

♦ _____

B3. Social activities : ♦ Set 50,000 libraries

♦ _____

♦ Several hundred toilets in Bangalore

♦ _____

Q.3. (A) Read the first activity, read the extract and then do all the activities: (12) [15]

A1. True or False —

State whether the following statements are true or false: (2)

- (i) Animal manure does not have any evil effect on groundwater.
- (ii) Pollution related health consequences depend on the immunity of the exposed population.
- (iii) Only mercury is to be blamed for kidney damage.
- (iv) Soil contamination is a potential health hazard.

Contaminated or polluted soil affects human health through direct contact with soil or via inhalation of soil contaminants which have vaporized. Potentially greater threats are posed by the infiltration of soil contamination into groundwater aquifers. This tends to result in the development of pollution-related diseases.

Health hazards cause due to soil contamination very greatly depending on the pollutant type and vulnerability of the exposed population. Constant exposure to chromium, lead, petroleum, many pesticides and herbicide formulations can be carcinogenic and can cause congenital disorders or other chronic health conditions. Industrial or man-made concentrations of naturally occurring substances, such as nitrate and ammonia associated with livestock manure has also been identified as health hazards in soil and groundwater.

Chronic exposures to benzene at sufficient concentration is known to be associated with higher incidences of leukemia. Mercury and cyclodines are known to induce higher incidences of kidney damage and some irreversible diseases. Organophosphates and carbonates can induce a chain of responses leading to neuromuscular blockage. Many chlorinated solvents induce liver changes, kidney changes and depression of the central nervous system. There is an entire spectrum of further health effects such as headache, nausea, fatigue, eye-irritation and skin rash for the above cited and other chemicals. At sufficient dosages as large number of soil contaminants can cause death by exposure via direct contact, inhalation or ingestion of contaminants in groundwater contaminated through soil.

A2. Explain: (2)
Explain from the given extract how soil pollution affects drinking water.

A3. Find out: (2)
Find out the reasons from the passage why we should avoid chemicals to kill insects.

A4. Vocabulary — (2)
Match the pairs of the words in column 'A' with their meanings in column 'B':

Column 'A'	Column 'B'
(i) infiltration	(a) process of eating, drinking or using
(ii) inhalation	(b) Action of increasing strength of solution
(iii) consumption	(c) passing of liquid through
(iv) concentration	(d) breathing air in

A5. Personal response: (2)
Suggest two steps to keep away from the use of chemicals in home.

A6. Grammar — (2)
Rewrite the following sentences in the ways instructed:

- (i) Potentially greater threats are posed by the infiltration of soil contamination.
(Begin with – 'The infiltration of soil contamination _____' and rewrite.)
- (ii) There is an entire spectrum of further health effects
(Rewrite, using Present Perfect Tense)

(B) Summary — (3)
Summarise the above extract with help of the points given and suggest a suitable title:
Health and groundwater problem – bad effects of chemicals – industrial and man-made concentration – pollutants related diseases.

SECTION – II

(Poetry)

Q.4. Read the given extract and then do all activities that follow:

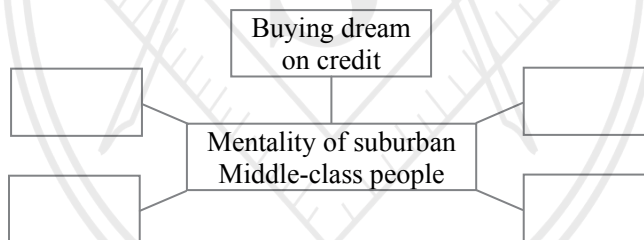
(4) [8]

I celebrate the virtues and vices
of suburban middle-class people
Who overwhelm the refrigerator
and position colourful umbrellas
near the garden that longs for a pool:
For my middle-class brother
this principle of supreme luxury:
What are you and what am I, and we
go on deciding
the real truth in this world.

The truth of that dream we buy on credit
of not going to the office on Saturday, at last,
and the merciless bosses whom the worker
manufacturers in indivisible granaries
where executioners were always born
and grow up and always multiply
We heroes and poor devils,
the feeble, the braggarts, the unfinished,
and the capable of everything impossible
as long as it's not seen or heard.

A1. Web — (2)

Complete the web diagram by giving the features of suburban middle class people and their mentality from the extract.



A2. Poetic Device — (2)

Figure of speech:

We heroes and poor devils,
the feeble, the braggarts, the unfinished,
and capable of everything impossible
as long as it's not seen or heard
Name the figure of speech in the above lines and find
out another example of the same from the extract and write it down.

A3. Personal Response: (2)

“Middle-class people are ambitious and active in our country.” Explain your views in brief.

A4. Poetic creativity — (2)

The word order in line no. 1 and 3 has been changed. It is an instance of inversion. Compose two lines of your own using inversion in blank lines.

The virtues and vices, I celebrate

The refrigerator, we overwhelm

SECTION – III

(Rapid Reading and Composition)

Q. 5. (A) Read the extract and do the activities that follow: (4) [8]

Someone was standing the doorway. An elderly woman, very fluffy, very pink. Her cheeks were pink, her dress was pink, her hair was bunched up and white. She was straight out of Agatha Christie.

“Miss Marple!” I exclaimed.

“May I come in?” asked the pink lady.

“Please come in,” said my mother. “Do sit down. Do you require a room?”

“Not today, thank you. I’m staying with Padre Dutt. He insisted on putting me up. But I may want a room for a day or two – just for old times’ sake”.

“You have stayed here before.”

“A long time ago. I’m Mrs Green, you know. The missing Mrs Green. The one for whom you put up that handsome tombstone in the cemetery. I was very touched by it. And I’m glad you didn’t add ‘Beloved wife of Henry Green’, because I did not love him any more than he loved me.”

“Then-then, you aren’t the skeleton?” stammered my mother.

“Do I look like a skeleton?”

“No!” we said together.

“But we heard you disappeared,” I said, “and when we found that skeleton –”

“You put two and two together.”

“Well, it was Miss Kellner who convinced us,” said my mother. “And you did disappear mysteriously. You were missing for years. And everyone knew Mr Green was a philanderer.”

“Couldn’t wait to get away from him,” said the pink lady. “Couldn’t stand him any more. He was a lady-killer, but not a real killer.”

“But your father came looking for you. Didn’t you get in touch with him?”

“My father and I were never very close. Mother died when I was very young, and the only relative I had was a cousin in West Africa. So that’s where I went - Sierra Leone!”

A1. True / False — (2)

State whether the following statements are true or false and rewrite:

- (i) The lady standing in the doorway was Mrs Green.
- (ii) The lady wanted to stay on that day in Green’s hotel.
- (iii) Miss Kellner convinced all that Mr Green was not a philanderer.
- (iv) There were no good relations between Mrs Green and her father.

A2. Convert into a dialogue: (2)

Convert the above extract into a dialogue form.

(B) Read the extract and do the activities that follow: (4)

Tom : Well, you see, we saw that skull, and those white grinning things – and we thought the place was haunted – at least, that’s what Ginger thought.

Dentist : (*laughing*) Great Scott! So that’s the explanation. I happen to be a dentist, and what you saw were some of my models used for fitting artificial teeth.

Ginger : Then – those rows of grinning teeth are –

Dentist : (*picking up a model fitted with artificial teeth*) Just some of my workmanship.

Tom : (*Pointing to the skull*) But – what about that? That’s the thing that scared us the most.

George : Scared you, you mean. It didn’t frighten me.

Dentist : (*going up L.C. and patting the skull*). Ah! This is just a little prize exhibit of mine that I keep for ornamental purposes. I call him Percy.

Alfie : (*still unconvinced*). But what about those awful screams we heard?

Ginger : We thought someone was being murdered.

Dentist : H’m! I’m afraid that doesn’t speak very well for my painless dentistry. Those screams came from some of my patients in the surgery.

Tom : (*laughing*). I say, what a set of chumps we’ve been! Fancy getting so scared over nothing at all!

- Ginger** : Well, I must admit old George was the only one who wasn't in a blue funk.
George : (to dentist). We're awfully sorry for causing so much row.
Dentist : Don't mention it – unless, of course, you're referring to the singing. (*Crossing R*).
Come on, I'll show you out this way.
Tom : (*Crossing R.C.*) Come on, Alfie.
Ginger : (*addressing the skull*). So long, Percy.
George : (*going up R. to dentist*). I must say you're being awfully decent about this.
Dentist : That's all right. (*looking hard at Gorge*).
By the way, aren't you George Harlow?
George : (*surprised*). Yes, that's right.
Dentist : I thought I'd seen you somewhere before. Why, I know your father well!
George : Do you, sir?
Dentist : Yes, rather. He was only speaking about you the other night. You've been
having some trouble with two back teeth, haven't you?
George : (*becoming suddenly nervous*). N – no – that is – not much.

B1. Complete —

Complete the following sentences: (2)

- (i) The white grinning things were actually _____ .
(ii) The name of the little prize exhibit was _____ .
(iii) The awful screams came from _____ .
(iv) There was only a single boy who did not get scared. He was _____ .

B2. Convert the dialogue into a story: (2)

Convert the above extract into a story form in about 50 words.

SECTION – IV

(Written Communication)

Q.6. (A) Letter Writing —

Write any ONE of the following letters: (4) [12]

- (1) Mohan / Mohini Pande, Roll No. 74, of class XII (Arts) has to attend his / her sister's wedding ceremony held at his / her hometown and needs a leave of absence for 5 days. Imagine yourself to be Mohan / Mohini and write a letter to the Principal, SPW Arts and Commerce College, Akola, requesting him to grant to leave of absence for 5 days.

OR

- (2) Your junior college is situated on a narrow but busy road causing traffic congestion and pollution. Noisy horns and constant traffic disturb the classes. Write a letter of complaint to the Chief Officer, Municipality of your town and suggest some solutions.

(B) Write on any ONE of the following items: (4)

(1) Appeal —

In the horrible flood situation, the Kerala state suffered a huge loss. Your organisation has arranged a rally to raise funds to help the flood-affected people in Kerala. Prepare an appeal for the people to contribute to the funds with the help of the following points:

- Purpose of the rally
- Time and place of the rally
- Leading personalities
- Request for donation
- Add your own points

OR

(2) News writing —

Draft a news on any ONE of the following headlines, giving dateline, intro and a continuing paragraph:

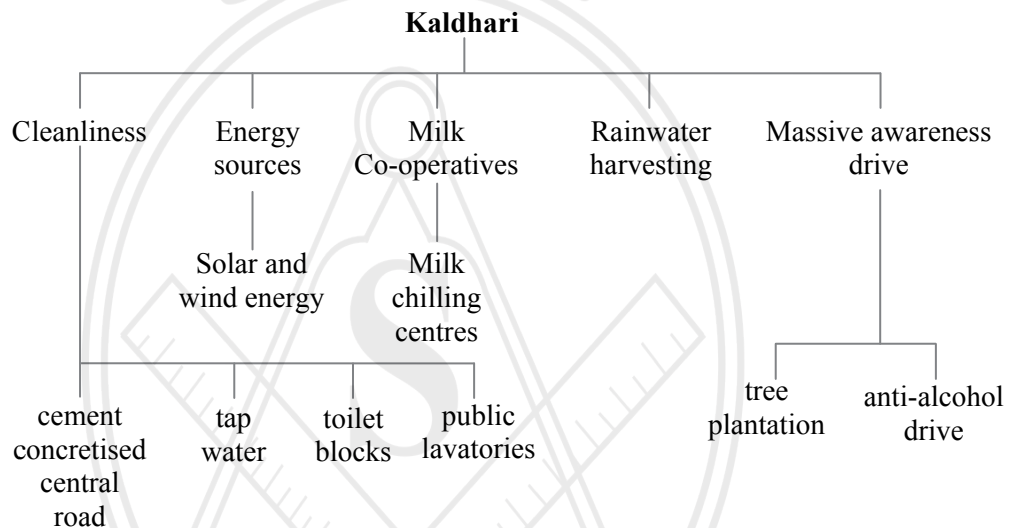
- (i) Teacher's Day celebrated in Adarsh School
(ii) Strike of Bus Drivers Paralyzes State

- (C) (1) **Counter-view** — (4)
 Read the following View Section and develop a Counter-view Section in about 120 words. Suggest a suitable title:

View Section
'Mobiles should be allowed in classrooms' ● Mobiles are good source of information ● They are easy to handle ● They provide videos to understand the topic ● Information can be easily exchanged.

OR

- (2) **Information Transfer** —
 Look at the tree diagram given below and write a short paragraph about Kaldhari in about 120 words. Suggest a suitable title:



- Q.7. (A) **Interview Questions:** [7]
 Your college has invited a dietitian on the occasion of 'World Health Day'. Imagine you are the editor of your college magazine, taking interview of the dietitian. Frame a set of 8 to 10 questions to interview him / her. (4)

- (B) **Speech Drafting:**
 Imagine your college is organising a speech competition on the topic 'Disappearing Birds'. Prepare a speech in about 100 words with the help of the following points: (3)
- (i) Role of birds
 - (ii) Causes behind their disappearance
 - (iii) Ways to call them back
 - (iv) Add your ideas.

बोर्ड कृतिपत्रिका: फरवरी २०२०

हिंदी

Time : 3 Hours

Max. Marks : 80

कृतिपत्रिका के लिए सूचनाएँ:

- (1) सूचना के अनुसार गद्य, पद्य तथा द्रुतवाचन की आकलन कृतियों में आवश्यकता के अनुसार आकृतियों में ही उत्तर लिखना अपेक्षित है।
- (2) सभी आकृतियों के लिए पेन का ही उपयोग करें।
- (3) आकृतियों में उत्तर पेन से ही लिखना आवश्यक है।
- (4) व्याकरण विभाग तथा रचना विभाग में पूछी गई कृतियों के उत्तरों के लिए आकृतियाँ आवश्यकता के अनुरूप हों।

(१) गद्य विभाग

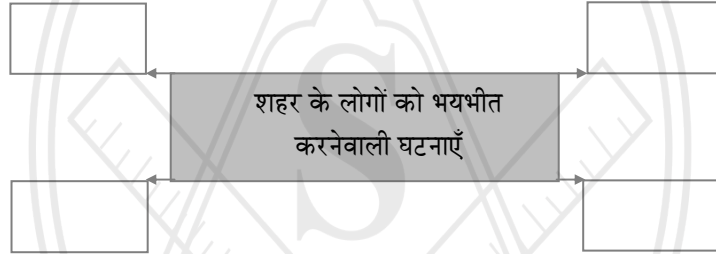
[२०]

कृति १. (अ) परिच्छेद पढ़कर निम्नलिखित कृतियाँ पूर्ण कीजिए:

(८)

(१) संजाल पूर्ण कीजिए:

(२)



आरा शहर। भादों का महीना। कृष्ण पक्ष की अँधेरी रात। ज़ोरों की बारिश। हमेशा की भाँति बिजली का गुल हो जाना। रात के गहराने और सूनपन को और सघन भयावह बनाती बारिश की तेज़ आवाज़। अंधकार में दूबा शहर तथा अपने घर में सोए-दुबके लोग! लेकिन सचदेव बाबू की आँखों में नींद नहीं। अपने आलीशान भवन के भीतर अपने शयनकक्ष में बेहद आरामदायक बिस्तर पर लेटे थे वे। पर लेटनेभर से ही तो नींद नहीं आती। नींद के लिए — जैसी निश्चिंतता और बेफ़िक्री की ज़रूरत होती है, वह तो उनसे कोसों दूर थी।

हालाँकि यह स्थिति सिर्फ़ सचदेव बाबू की ही नहीं थी। पूरे शहर पर खौफ़ का यह कहर था। आए दिन चोरी, लूट, हत्या, बलात्कार, राहजनी और अपहरण की घटनाओं ने लोगों को बेतरह भयभीत और असुरक्षित बना दिया था। कभी रातों में गुलज़ार रहनेवाला उनका यह शहर अब शाम गहराते ही शमशानी सन्नाटे में तब्दील होने लगा था। अब रातों में सड़कों और गलियों में नज़र आनेवाले लोग शहर के सामान्य और संभ्रांत नागरिक नहीं, संदिग्ध लोग होते थे। कब किसके यहाँ क्या हो जाए, सब आतंकित थे। जब इस शहर में अपना यह घर बनवा रहे थे सचदेव बाबू तो बहुत प्रसन्न थे कि महानगरों में दमघोटू, विषाक्त, अजनबीयत और छल-छद्मी वातावरण से अलग इस शांत-सहज और निश्छल-निर्दोष गँवई शहर में बस रहे हैं। लेकिन अब तो महानगर की अजनबीयत की अपेक्षा यहाँ की भयावहता ने बुरी तरह से त्रस्त और परेशान कर दिया था उन्हें। ये बरसाती रातें तो उन्हें बरबादी और तबाही का साक्षात् संकेत जान पड़ती थीं।

(२) उचित मिलान कीजिए:

(२)

(i) अँधेरी रात	<input type="text"/>	(अ) भादों
(ii) गुल हो गई	<input type="text"/>	(आ) कृष्ण पक्ष
(iii) महीना	<input type="text"/>	(इ) आरा
(ii) शहर	<input type="text"/>	(ई) बिजली

(३) निम्नलिखित शब्दों के लिए परिच्छेद में आए हुए विलोम शब्द लिखिए:

(२)

जैसे – बाहर	–	भीतर
(i) सुरक्षित		
(ii) गाँव		
(iii) अच्छी		
(iv) सुबह		

(४) महानगरीय जीवन के बारे में ६ ते ८ पंक्तियों में अपने विचार लिखिए।

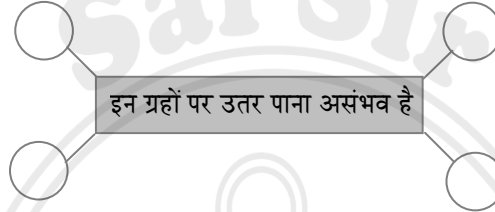
(२)

(आ) परिच्छेद पढ़कर निम्नलिखित कृतियाँ पूर्ण कीजिए:

(८)

(१) संजाल पूर्ण कीजिए:

(२)



बृहस्पति की तरह शनि का वायुमंडल भी हाइड्रोजन, हीलियम, मीथेन तथा एमोनिया गैसों से बना है। शनि की सतह के बारे में हमें कोई जानकारी नहीं है। हम केवल इसके चमकीले बाहरी वायुमंडल को ही देख सकते हैं। शनि के केंद्र भाग में ठोस गुठली होनी चाहिए, लेकिन चंद्रमा, मंगल या शुक्र की तरह शनि की सतह पर उतर पाना आदमी के लिए संभव नहीं होगा।

अभी दो दशक पहले तक शनि के दस उपग्रह खोजे गए थे। लेकिन अब शनि के उपग्रहों की संख्या सत्रह तक पहुँच गई है। धरती से भेजे गए स्वचालित अंतरिक्षयान पायोनियर तथा वायजर शनि के नजदीक पहुँचे और इन्हीं के जरिए इस ग्रह के सात नए उपग्रह खोजे गए। शनि के और भी कुछ चंद्र हो सकते हैं।

शनि का सबसे बड़ा चंद्र टाइटन, सौरमंडल का सर्वाधिक महत्त्वपूर्ण और दिलचस्प उपग्रह है। टाइटन हमारे चंद्र से भी काफी बड़ा है। इसका व्यास ५१५० किलोमीटर है। अभी कुछ साल पहले तक टाइटन को ही सौरमंडल का सबसे बड़ा उपग्रह समझा जाता था, परंतु वायजर यान की खोजबीन से पता चला है कि बृहस्पति का गैनीमीडे उपग्रह सौरमंडल का सबसे बड़ा उपग्रह है।

लेकिन टाइटन की सबसे अद्भुत चीज है इस पर मौजूद घना वायुमंडल। मुख्य रूप से नाइट्रोजन से बना टाइटन का यह वायुमंडल हमारी पृथ्वी के वायुमंडल से भी ज्यादा घना और भारी है। टाइटन के वायुमंडल में मीथेन भी पर्याप्त मात्रा में मौजूद है। इस उपग्रह की सतह पर मीथेन वायु ठोस या तरल रूप में हो सकती है।

(२) तालिका पूर्ण कीजिए:

(२)

(i) शनि का सबसे बड़ा चंद्र	
(ii) बृहस्पति का उपग्रह	
(iii) टाइटन का व्यास	
(iv) स्वचालित अंतरिक्षयान	

(३) निम्नलिखित शब्दों के लिए परिच्छेद में आए उचित शब्द लिखिए:

(२)

(i) बदल	–	
(ii) गगन	–	
(iii) शोध	–	
(iv) उपस्थित	–	

- (४) ग्रहों के बारे में ६ से ८ पंक्तियों में अपने विचार लिखिए। (२)
- (इ) निम्नलिखित प्रश्नों के ८० से १०० शब्दों में उत्तर लिखिए (कोई एक): (४)
- (१) स्वामी विवेकानंद जी के स्वदेश भक्ति के बारे में विचार स्पष्ट कीजिए।
- (२) किरोड़ीमल की कंजूस प्रवृत्ति पर प्रकाश डालिए।
- (३) 'एक कुत्ता और एक मैना' पाठ के आधार पर मैना का करुण भाव स्पष्ट कीजिए।

(२) पद्य विभाग

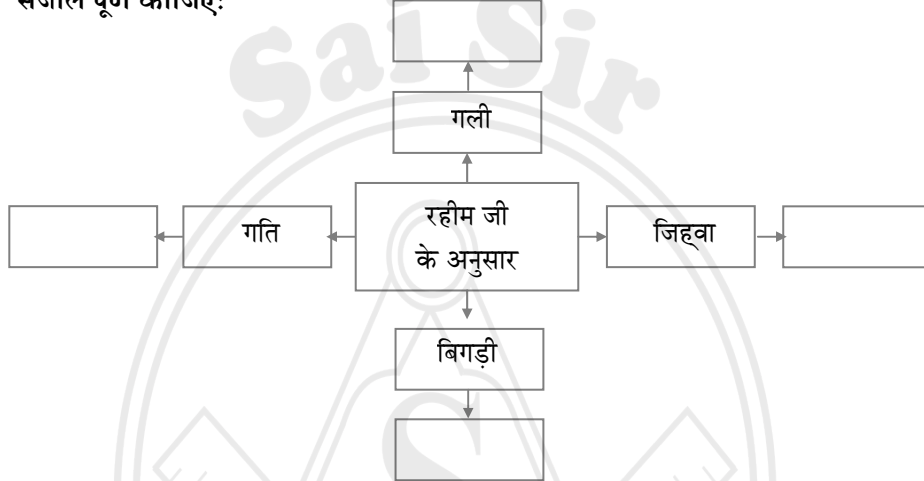
[१६]

कृति २. (अ) पद्यांश पढ़कर सूचना के अनुसार कृतियाँ पूर्ण कीजिए:

(६)

(१) संजाल पूर्ण कीजिए:

(२)



'रहिमन' गली है सांकरी, दूजों नहिं, ठहराहिं।

आपु अहै, तो हरि नहीं, हरि अहै, तो आपु नाहिं।। १ ।।

'रहिमन' जिहवा बावरी, कहिगी सरग पाताल।

आपु तो कहि भीतरि रही, जूती खात कपाल।। २ ।।

बिगरी बात बनै नहीं, लाख करौ किन कोय।

'रहिमन' फाटे दूध को, मथै न माखन होय।। ३ ।।

ज्यौं रहिम गति दीप की, कुल कपूत गति सोइ।

बरे उजियारो करै, बढे अंधेरो होइ।। ४ ।।

(२) शब्द सारिणी की सहायता से समानार्थी शब्द ढूँढ़कर लिखिए:

(२)

ह	ह	जि	हवा
ह	रि	र	ह
ह	त	ह	ह
भी	क	पू	त

- (i) कुपुत्र —
- (ii) जीभ —
- (iii) ईश्वर —
- (iv) अंदर —

(३) प्रस्तुत पद्यांश का भावार्थ अपने शब्दों में लगभग ६ से ८ पंक्तियों में लिखिए।

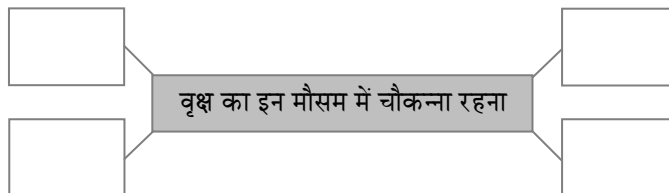
(२)

(आ) पद्यांश पढ़कर सूचना के अनुसार कृतियाँ पूर्ण कीजिए:

(६)

(१) संजाल पूर्ण कीजिए:

(२)



अबकी घर लौटा तो देखा वह नहीं था—
वही बूढ़ा चौकीदार वृक्ष
जो हमेशा मिलता था घर के दरवाजे पर तैनात।
पुराने चमड़े का बना उसका शरीर
वही सख्त जान
झुर्रियोंदार खुरदुरा तना मैलाकुचैला,
राइफिल-सी एक सूखी डाल,
एक पगड़ी फूल पत्तीदार,
पाँवों में फटापुराना जूता
चरमराता लेकिन अक्खड़ बल बूता
धूप में, बारिश में,
गर्मी में, सर्दी में,
हमेशा चौकन्ना
अपनी खाकी वर्दी में।

(२) कोष्ठक में से शब्द चुनकर पंक्तियाँ पूर्ण कीजिए: (२)

(फटापुराना, खाकी, राइफिल-सी, पगड़ी)

- (i) अपनी वर्दी में।
(ii) एक सूखी डाल।
(iii) पाँवों में जूता।
(iv) एक फूल पत्तीदार।

(३) प्रस्तुत पद्यांश का भावार्थ अपने शब्दों में लगभग ६ से ८ पंक्तियों में लिखिए। (२)

(इ) पद्यांश पढ़कर सूचना के अनुसार कृतियाँ पूर्ण कीजिए: (४)

(१) संजाल पूर्ण कीजिए: (२)



उनके ही संग-साथ से भाषा में बच्चों की
आ जाती है एक अजब कौंध
मुहावरों, मिथकों, लोकोक्तियों,
लोकगीतों, लोकगाथाओं और कथा-समयकों की।
उनके ही दम से
अतल कूप खुद जाते हैं बच्चों के मन में
आदिम स्मृतियों के।
घुल जाती हैं बच्चों के सपनों में
हिमालय-विमालय की अतल कंदराओं की
दिव्यवर्णी-दिव्यगंधी जड़ी-बूटियाँ और फूल-बूल।

(२) प्रस्तुत पद्यांश का संदेश ६ से ८ पंक्तियों में लिखिए। (२)

(३) द्रुतवाचन विभाग

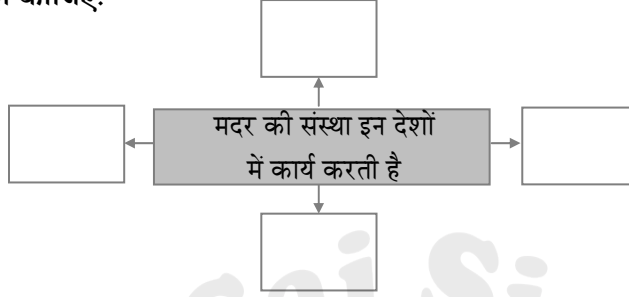
[१०]

कृति ३. (अ) परिच्छेद पढ़कर सूचना के अनुसार कृतियाँ पूर्ण कीजिए:

(६)

(१) संजाल पूर्ण कीजिए:

(२)



मानवता की सच्ची सेविका मदर टेरेसा का जन्म २६ अगस्त, १९१० को मक्दूनिया के एकोप्जे नामक स्थान पर हुआ। वे तीन भाई-बहनों में सबसे छोटी थीं तथा पिता एक सफल व्यापारी थे। १२ वर्ष की आयु में उन्होंने तय किया कि वे मिशनरी बनेंगी। १८ वर्ष की आयु में वे लोरेटो सिस्टर्स के लिए काम करने लगीं जो भारत में बहुत सक्रिय था।

२४ मई, १९३१ को उन्होंने नन के रूप में शपथ ली तथा १९४८ तक कलकत्ता के सेंट मेरी स्कूल में अध्यापन करती रहीं। कलकत्ता में स्कूल आते-जाते समय वे प्रायः झोपड़पट्टियों में बसे निर्धनों की दशा देख द्रवित हो जातीं। एक बार उन्होंने मरणासन्न रोगी को देखा, जो कष्ट के कारण अंतिम साँसें भी नहीं ले पा रहा था।

मदर ने अपने अधिकारियों से अनुमति लेकर, कलकत्ता में 'मिशनरी ऑफ चैरिटी' की स्थापना की। बेघर बच्चों के लिए स्कूल खोला, बीमार व्यक्तियों के लिए अस्पताल खोला और मरणासन्न रोगियों को भरपूर सेवा तथा स्नेह मिलने लगा। कई दूसरी लड़कियाँ भी सदस्या बन गईं। वे भी पूरे प्रेमभाव से निर्धन तथा असहायों की सेवा करतीं। अनाथ बच्चों के लिए भी एक संस्था खोली गई। मदर लोगों के घर-घर जाकर खाना, दवाएँ तथा कपड़े माँगती। कुछ समय बाद लोग स्वयं आकर चंदा देने लगे।

मदर के काम को विश्व स्तर पर सराहा गया क्योंकि केवल भारत में ही नहीं बल्कि एशिया, अफ्रीका, लैटिन अमरीका, पोलैंड व ऑस्ट्रेलिया आदि देशों में भी मदर की संस्था अपना कार्य करने लगी। १९६५ में पोप जॉन पॉल ने मदर को दूसरे देशों में अपनी सेवाएँ देने की आज्ञा दे दी।

(२) कृति पूर्ण कीजिए:

(२)

मदर टेरेसा के सेवा क्षेत्र -

- (i)
- (ii)
- (iii)
- (iv)

(३) समाज सेवा के बारे में ६ से ८ पंक्तियों में अपने विचार लिखिए।

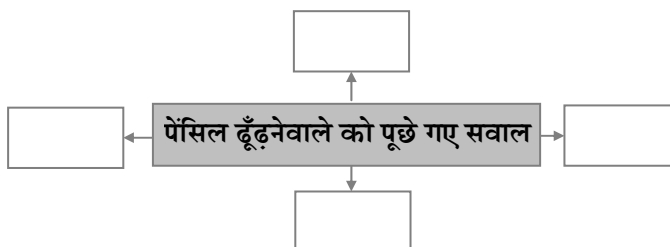
(२)

(आ) परिच्छेद पढ़कर सूचना के अनुसार कृतियाँ पूर्ण कीजिए:

(४)

(१) संजाल पूर्ण कीजिए:

(२)



आप कार्यालय अथवा कॉलेज जा रहे हैं। ठीक चलते समय सहसा आप देखते हैं कि जेब में पेंसिल नहीं है। आपने अपनी कोठरी में ढूँढ़ना आरंभ किया। बड़ी चौकसी से अपनी कोठरी का कोना – कोना छान डाला। इसी समय आपका पुत्र या भाई आकर पूछता है:

“क्या ढूँढ़ रहे हैं?”

“पेंसिल ढूँढ़ रहा हूँ?”

“जेब में नहीं है क्या?”

अब आप ही सोचिए कि जेब में पेंसिल रहने पर चारपाई के नीचे घुसकर कोई थोड़े ही पेंसिल ढूँढ़ता है। वह फिर कहता है, “मेज पर देखो।”

यदि इस बात पर भी आपको क्रोध न आए तो आप संसार में रहने योग्य नहीं है। आप कुछ बोलना ही चाहते हैं कि आपकी आँख घड़ी पर पड़ती है। आप देखते हैं कि बहुत विलंब हो गया है। ऐसे समय विवाद करना अच्छा नहीं। इसी समय पुत्र या भाई किसी काम से बाहर जाता है। आप पेंसिल के ढूँढ़ने का भगीरथ प्रयत्न कर रहे हैं। दो मिनट के पश्चात पुत्र या भाई आकर फिर पूछता है, अब भी पेंसिल नहीं मिली?”

आप इस बार भी क्रोध को दबाए रहे। फिर दूसरा प्रश्न, “कहीं कोट में तो नहीं रही? उसे तो अम्मा ने धोबी के यहाँ भेज दिया।”

“नहीं, मैंने आज, नहीं अभी, आधा घंटा पहले उससे लिखा है। बैंगनी रंग की पेंसिल थी। चार आने की थी।”

“अरे, ठीक याद आया। उसे मैं पानी में भिगोकर टीका लगाने ले गया था। अभी लाया।” यह कहकर पुत्र या भाई चला जाता है। ऐसे समय आपके मन की दशा कैसी होगी, यह आप स्वयं अनुमान कर लें।

एक बार मैंने नई पुस्तक मोल ली। दूसरे दिन घर का कोना-कोना छान डाला। रसोईघर भी न छोड़ा। घर-भर के सभी लोगों ने हलचल मचा दी। ढूँढ़ते-ढूँढ़ते कई दवातें उड़ल दीं, औषधि की शीशियाँ फोड़ दीं, जिन पत्रों का उत्तर देना रह गया था उन्हें पुरानी चिट्ठियों में और जो पुरानी थीं उन्हें नई चिट्ठियों में मिला दिया; पुस्तकों की पेटियों में कपड़े और कपड़ों की पेटियों में पुस्तकें डाल दीं। सब कुछ किया पर पुस्तक न मिली।

(२) कृति पूर्ण कीजिए:

पुस्तक ढूँढ़ने के लिए किए गए प्रयास	→ (i)	_____
	→ (ii)	_____
	→ (iii)	_____
	→ (iv)	_____

(२)

(४) व्याकरण विभाग

[१०]

कृति ४.(अ) निम्नलिखित वाक्यों में से किन्हीं दो वाक्यों का रचना के अनुसार भेद पहचानकर लिखिए:

(२)

- (१) मैंने साफ इंकार कर दिया कि मुझे आगे पढ़ना ही नहीं।
- (२) मेरे प्रति स्नेह प्रदर्शन के कई प्रकार थे।
- (३) डॉक्टर को देखकर तुरंत देह त्याग करने की इच्छा होती थी और नर्स को देखकर जनम-जनम जीने की।

(आ) निम्नलिखित वाक्यों में से किन्हीं दो वाक्यों का काल परिवर्तन करके वाक्य फिर से लिखिए:

(२)

- (१) चित्रगुप्त घबरा उठे। (पूर्ण भूतकाल)
- (२) मजदूर औजारों का थैला उठाता है। (पूर्ण वर्तमानकाल)
- (३) रसायन जोखिम उत्पन्न करते हैं। (सामान्य भविष्यत्काल)

(इ) निम्नलिखित मुहावरों में से किन्हीं दो के अर्थ लिखकर वाक्यों में प्रयोग कीजिए:

(२)

- (१) दिमाग सातवें आसमान पर होना
- (२) आनाकानी करना
- (३) हाथ-पर-हाथ धरे बैठना
- (४) पैरों पर लोटना

- (ई) निम्नलिखित शब्दों में से किसी एक शब्द का भाववाचक संज्ञा रूप लिखिए: (१)
- (१) चंचल
(२) अच्छा
- (उ) निम्नलिखित शब्दों में से किसी एक शब्द का विशेषण रूप लिखिए: (१)
- (१) राष्ट्र
(२) पहाड़
- (ऊ) निम्नलिखित वाक्यों में से किन्हीं दो वाक्यों को शुद्ध करके वाक्य फिरसे लिखिए: (२)
- (१) पशू मनुष्य के निश्चित स्नेह से परिचित रहता है।
(२) बहुत से मनुष्य सूख का अर्थ नहीं समझते।
(३) बड़े बाबू को उनकी स्थिती पर दया आ गया।

(५) रचना विभाग

[२४]

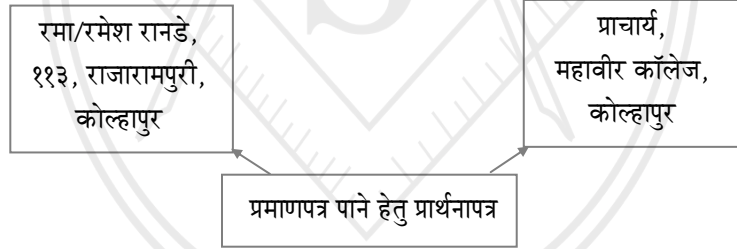
कृति ५. निम्नलिखित में से किसी एक विषय पर लगभग २५० से ३०० शब्दों में निबंध लिखिए

(१०)

- (१) भारतीय किसान
(२) वृद्धावस्था – एक अभिशाप
(३) दहेज पीड़ित स्त्री की आत्मकथा
(४) यदि इंटरनेट न होता. . .
(५) महँगाई – एक समस्या

कृति ६. (अ) निम्नलिखित जानकारी के आधार पर पत्र का प्रारूप तैयार कीजिए:

(५)



अथवा

वृत्तांत लेखन कीजिए:

अपने कनिष्ठ महाविद्यालय में मनाए गए 'वाचन प्रेरणा दिन' समारोह का वृत्तांत लिखिए।

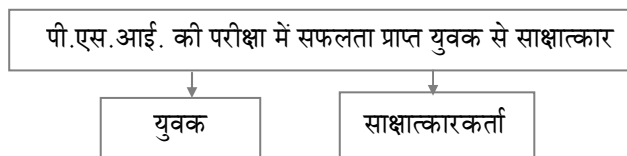
(आ) निम्नलिखित अपठित गद्यखंड ध्यान से पढ़िए और उस पर आकलन हेतु पाँच प्रश्न तैयार कीजिए:

(५)

हिंदुस्तान एक विचित्र देश है! उसकी पहचान नदी से होती है या वनस्पति से। उसके देशकाल का बोध या तो नदी कराती है या वनस्पति कराती है। विशेष रूप से काल बोध वनस्पति ही कराती है। उसके ऋतुचक्र का अवतरण सबसे पहले वनस्पति जगत पर ही होता है। हिंदुस्तान का आदमी वनस्पति को अपना प्रतिरूप मानता है। संतान को वासुदेव वृक्ष के रूप में देखता। इसलिए बिना वनस्पति के हिंदुस्तान का कोई भी अनुष्ठान संपन्न नहीं होता। मनुष्य से मनुष्य का संबंध, वनस्पति से वनस्पति का संबंध, लता और वृक्ष का संबंध है।

अथवा

पी. एस. आई. की परीक्षा में सफलता प्राप्त युवक से साक्षात्कार का नमूना तैयार कीजिए।



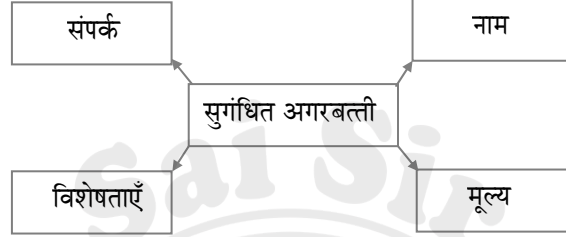
(इ) निम्नलिखित में से किन्हीं चार पारिभाषिक शब्दों के लिए हिंदी शब्द लिखिए:

(४)

- | | |
|------------------|-----------|
| (1) Notification | (2) Right |
| (3) Tax | (4) Crime |
| (5) Key-board | (6) Orbit |
| (7) Secretary | (8) Legal |

अथवा

निम्नलिखित जानकारी के आधार पर विज्ञापन का प्रारूप तैयार कीजिए:



 9664080155

बोर्ड कृतिपत्रिका: फ्रेबुवारी 2020

मराठी

Time : 3 Hours

Max. Marks : 80

कृतिपत्रिकेसाठी सूचना:

- आकलन कृती व व्याकरण यांमधील आकृत्या किंवा चौकटी पेनाने अथवा पेन्सिलीने काढाव्यात.
- स्वच्छता, नीटनेटकेपणा व लेखन नियमांनुसार लेखन यांकडे जाणीवपूर्वक लक्ष द्यावे.

विभाग १ – निबंधलेखन

कृती 1. खालीलपैकी कोणत्याही एका विषयावर सुमारे ३०० शब्दांपर्यंत निबंध लिहा.

[१०]

- लोकशाहीत प्रसारमाध्यमांचे महत्त्व
- जगातील इंधन संपले तर
- माझ्या महाविद्यालयातील स्नेहसंमेलन
- मी गंगा नदी बोलतेय

विभाग २ – गद्य

कृती 2.(अ) खालील उताऱ्याच्या आधारे सूचनेनुसार कृती करा.

[१२]

- 'भर' प्रत्यय लागलेले दोन शब्द लिहा.

(४)

(i)

(१)

(ii)

- जमेदार मानसिंग यांचे एका ओळीत वर्णन करा.

(१)

मी त्या खडकाच्या आडून हळूहळू बाहेर यायची तयारी करू लागलो. छातीभर पाण्यातून खडकाला चिकटूनच मी ढोपरभर पाण्यात आलो व तिथूनच दूर किनाऱ्यावर एक खडक हेरून ठेवला. किनाऱ्यावर आल्याबरोबर मी जीव घेऊन वाकडा तिकडा त्या खडकाकडे पळू लागलो. पुलावरून येणाऱ्या चिनी शिपायांनी ते पाहिलं व त्यांनी माझ्यावर गोळ्या मारायला सुरुवात केली. आता येणाऱ्या गोळ्या माझ्या पाठीमागून येऊन सूं सूं करीत बाजूने जात होत्या. गोळी लागेपर्यंत पळत जायचं असं मी ठरवलं होतं.

शेवटी एकदा त्या हेरलेल्या खडकाजवळ मी पोहचलो. माझा धीर आणखी चेपला! क्षणाचाही विलंब न लावता मी एका खडकामागून दुसऱ्या खडकाकडे नागमोडी रेषेत धावत जाऊ लागलो. अशाच एका खडकाजवळ आमचे जमेदार मानसिंग लपलेले होते. त्यांच्या पोळलेल्या हाताचे बँडेज तसेच होते. त्यांच्या बळकट शरीराकडे पाहून मी म्हटले, 'चलो साहब, यहाँसे भाग निकलते हैं। पीछे कॅ. जिंदलसाहब के पास जाएंगे और उनको लेकर निकल जाएंगे !' मी पाहिलं — त्यांच्या चेहऱ्यावर जावं की नाही या विचाराचे भाव दिसले. मी पुन्हा म्हटलं, 'चलो साहब, सोचने का वक्त नहीं है !' या माझ्या बोलण्यावर ते उठले व म्हणाले, 'चलो'!

- 'त्यांच्या चेहऱ्यावर जावं की नाही या विचाराचे भाव दिसले,' या वाक्यातील आशयसौंदर्य ८ ते १० ओळीत लिहा.

(२)

(ब) खालील उताऱ्याच्या आधारे सूचनेनुसार कृती करा.

(४)

मी म्हणालो, “मला जी पुस्तकं विशेषत्वाने आवडतात त्यांना मी माझ्या हृदयाच्या कप्प्यात जपून ठेवलय. सुरुवातीला डॉक्टरकी केलेले व नंतर तत्त्वज्ञानाचा गाढ अभ्यास करून पुढे नोबेल पुरस्काराचा सन्मान लाभलेले डॉ. अँलेक्स कॅरेल यांचं ‘मॅन द अननोन’ हे माझं आवडतं पुस्तक आहे. शरीर आणि मन हे दोन्ही वेगवेगळे नसून दोन्हींची सुदृढ आणि सशक्त वाढ एकत्रितपणे होणं गरजेचं आहे. या दोन्हीपैकी एकाकडे दुर्लक्ष करून चालतच नाही, हा विचार या पुस्तकात मांडला आहे. ज्यांना डॉक्टर व्हायचं आहे त्यांनी हे पुस्तक वाचायलाच हवं. त्यामुळे त्यांच्या लक्षात येईल, की मानवी शरीर हे यंत्र नसून एक अत्यंत बुद्धिमान जैवप्रणाली असून तिची उपपत्ती प्रणाली अत्यंत गुंतागुंतीची आहे. माझ्या दृष्टीनं दुसरं आदरणीय पुस्तक म्हणजे तिरुवल्लूर यांचं ‘थिरूक्कुरल’! हे पुस्तक म्हणजे एक उत्कृष्ट आयुष्य संहिता आहे. तिसरं म्हणजे ‘लाईट फ्रॉम मेनी लॅम्प्स’! लिलीयन इचलर वॉटसन यांनी लिहिलेल्या ह्या पुस्तकाने मी भारावून गेलो आहे. आपल्या जगण्याचे संदर्भ कोणते असावेत हे ह्या पुस्तकात सांगितलेलं असून गेली पन्नास वर्षे हे पुस्तक माझ्या जीवन प्रवासात एक मार्गदर्शक म्हणून उभं आहे.”

‘शरीर आणि मनाची सुदृढता’ याविषयी १२ ते १५ ओळीत तुमचे विचार लिहा.

किंवा

तुम्हांला आवडलेल्या पुस्तकांविषयी १२ ते १५ ओळीत माहिती लिहा.

(क) खालील उताऱ्याच्या आधारे सूचनेनुसार कृती करा.

(४)

(१) आधुनिक संस्कृतीच्या हवाली केलेल्या गोष्टी:

(१)

(i)

(ii)

(२) भावनिक अनुभव पारखा झाल्यामुळे लेखकाची निर्माण झालेली मनोवस्था:

(१)

(i)

(ii)

अनेक वर्षांपूर्वी केव्हातरी, न कळत, मी माझं नैसर्गिक जीवन व प्रसन्न मन या आधुनिक संस्कृतीच्या हवाली केलं. त्यातून प्रथम शरीराचा उपयोग थांबला व त्याच्याकडे दुर्लक्ष सुरू झालं. मग अधिक काम व यशप्राप्तीच्या मागे लागून मनाची सहज अवस्था सुटली. बुद्धी व विचारांच्या वाळवंटात भावनिक अनुभव पारखा झाला; प्रसन्नता गेली. पुढे मनामध्ये ‘मी व माझं’ वाढत गेलं. त्यांचं कुंपण स्वतःभोवती निर्माण झालं व विश्वाशी असलेली एकरूपता तुटली आणि आश्चर्य म्हणजे विश्वस्वरूपाशी नाळ तुटल्यावर स्वतःशी असलेला संपर्कही सुटला. माझं स्वतःशीच नातं तुटलं होतं. माझं घर हरवलं होतं. माझ्या एकसंध निरोगी जीवनाचे तुकडे तुकडे पडले होते. माझ्या आतील एक इंद्रिय, एक होकायंत्र मला या दरम्यान वारंवार इशारा देण्याचा प्रयत्न करत होतं, की काहीतरी गफलत होते आहे. पण मी त्याच्याकडे दुर्लक्ष करून रेटत गेलो. या स्वतःपासून तुटण्याचा ताण व खिन्नतेमुळे माझा हृदयरोग निर्माण झाला असावा.

(३) “स्वतःपासून तुटण्याचा ताण व खिन्नतेमुळे माझा हृदयरोग निर्माण झाला”, या वाक्यातील आशय तुमच्या शब्दांत ८ ते १० ओळीत लिहा.

(२)

विभाग ३ – पद्य

[८]

कृती ३.(अ) खालील कवितेच्या आधारे दिलेल्या सूचनेनुसार कृती करा.

(४)

(१) ‘अखंडा’तील ‘यमक’ अलंकार असलेली एक काव्यपंक्ती लिहा.

(१)

(२) स्वतः सुखी होण्याची लक्षणे

(१)

(i)

(ii)

स्त्रीपुरुषे सर्व कष्टकरी व्हावें ॥ कुटुंबा पोसावें ॥ आनंदानें ॥ ध्रु. ॥
 नित्य मुलीमुलां शाळेंत घालावें ॥ अन्नदान द्यावें ॥ विद्यार्थ्यांस ॥ २ ॥
 सार्वभौम सत्य स्वतः आचरावें ॥ सुखें वागवावें ॥ पंगु लोकां ॥ ३ ॥
 अशा वर्तनानें सर्वा सुख द्याल ॥ स्वतः सुखी व्हाल ॥ जोती म्हणे ॥ ४ ॥
 सर्वांचा निर्माक आहे एक धनी ॥ त्याचें भय मनी ॥ धरा सर्व ॥ ध्रु. ॥
 न्यायानें वस्तूचा उपभोग घ्यावा ॥ आनंद करावा ॥ भांडू नये ॥ २ ॥
 धर्म राज्य भेद मानवा नसावे ॥ सत्यानें वर्तावें ॥ ईशासाठीं ॥ ३ ॥
 सर्व सुखी व्हावे भिक्षा मी मागतों ॥ मनुजा सांगतों ॥ जोती म्हणे ॥ ४ ॥

(३) 'सत्यवर्तना' विषयी तुमचे मत ८ ते १० ओळीत लिहा. (२)

(ब) खालील कवितेच्या आधारे सूचनेनुसार कृती करा. (४)

स्वप्नात तुझ्यामागे कुणी जल्लाद धावताहे
 असं दृश्य असलं की तुला धावताच येत नाही.

माझाही असाच अनुभव —

माझ्यावर कुणी प्राणघातक शस्त्राने हल्ला करताहे
 असं स्वप्न असलं की मला आक्रोशताच येत नाही.
 तसा प्रयत्न केला तर जागच येते.

स्वप्नाचेही संदर्भ कसे रेंगाळतात आपल्याजवळ
 तू दळण्यासाठी जात्यावर बसलीस की
 तुला गाणेच येत नाही.

तसेच माझेही —

पुष्कळ बोलायचे ठरविले की बोलताच येत नाही.
 आता या विशाल औद्योगिक शहराच्या मर्यादा
 तुझ्याप्रमाणेच मलाही भासू लागल्याहेत छोट्या.
 चल,

आपण आपले एक छोटे नवे नगर वसवू
 ज्याची मानसिकता अमर्याद असेल.

प्रस्तुत कवितेतून व्यक्त झालेली 'अस्वस्थता' तुमच्या शब्दांत १२ ते १५ ओळीत लिहा.

किंवा

'आदर्श नगरां' विषयी तुमचे विचार १२ ते १५ ओळीत लिहा.

विभाग ४ – व्याकरण

[१२]

(२)

कृती ४.(अ) खाली दिलेल्या पर्यायांतून निर्दोष शब्द ओळखून चौकटीत लिहा.

(१) (य) सात्त्विक (र) सात्त्विक
 (ल) सात्वीक (व) सात्त्विक

(२) (य) क्रीडागण (र) क्रिडागण
 (ल) क्रिडागण (व) क्रीडागण

(आ) खालील वाक्प्रचारांचा अचूक अर्थ वाक्प्रचारांसमोरील चौकटीत लिहा. (२)

(१) (य) लक्ष ठेवणे (र) गप्प राहणे
 (ल) पाठमोरे होणे (व) हाक मारणे

- (i) साद घालणे -
- (ii) पाळत ठेवणे -

(इ) खालील वाक्यांतील वाक्यप्रकारांचा योग्य पर्याय ओळखून चौकटीत लिहा. (२)

- (१) एकदम खुबसूरत भाजी आहे ही!
(य) प्रश्नार्थी (र) उद्गारार्थी
(ल) नकारार्थी (व) होकारार्थी

- (२) मला पैशांचा खणखणाटही नको नि सभा-संमेलनातले हारतुरेही नकोत.
(य) नकारार्थी (र) प्रश्नार्थी
(ल) होकारार्थी (व) उद्गारार्थी

(ई) खालील वाक्यांत येणाऱ्या योग्य विरामचिन्हांचा पर्याय निवडून चौकटीत लिहा. (२)

- (१) हा काय म्हणतोय रे बाबुरावांनी वाहनचालकास विचारले

- (य) दुहेरी अवतरणचिन्ह, प्रश्नचिन्ह
(र) उद्गारचिन्ह, स्वल्पविराम
(ल) पूर्णविराम, अर्धविराम
(व) अपूर्णविराम, प्रश्नचिन्ह

- (२) बंगला रव्या रानडेचाच आहेना याची खात्री करून घेतली

- (य) दुहेरी अवतरणचिन्ह, स्वल्पविराम
(र) एकेरी अवतरणचिन्ह, पूर्णविराम
(ल) संयोगचिन्ह, अर्धविराम
(व) अपसारणचिन्ह, अपूर्णविराम

(उ) खालील पदच्यंपंक्तीतील व विधानांतील रस ओळखून चौकटीत लिहा. (२)

- (१) उदास हे वाळलेले पुन्हा बहरतील मळे.
(य) वीररस (र) रौद्ररस
(ल) बीभत्सरस (व) करुणरस

- (२) त्याचे सगळे रक्त उलथे पालथे झाले आणि एक किंकाळी फोडून तो विलक्षण वेगाने पळाला.
(य) भयानकरस (र) करुणरस
(ल) हास्यरस (व) वीररस

(ऊ) खाली दिलेल्या पर्यायांतून पारिभाषिक शब्दांसाठी योग्य तो पर्याय निवडून चौकटीत लिहा. (२)

- (य) शून्य काल (र) पात्रता
(ल) महानगर (व) रिक्त पद
(१) Zero hour -
(२) Vacant post -

विभाग ५ – विनोद : एक वाङ्मयप्रकार

[८]

(१)

कृती ५. खालील उताऱ्याच्या आधारे सूचनेनुसार कृती करा.

(१) मानवी जीवनातील विसंगती टिपणारे घटक:



(२) उपहासात्मक लेखन करणाऱ्या दोन विनोदी लेखकांची नावे लिहा.

(१)

(i)

(ii)

उपहास म्हणजे खिल्ली उडविणे किंवा टवाळी करणे असा सामान्यतः आपण अर्थ घेतो. उपहासातून विनोदनिर्मिती साधली जाते. शारीरिक व्यंगावर केलेला उपहास हीन दर्जाचा मानला जातो. विनोदी कलावंत. साहित्यिक हे मानवी जीवन व्यवहारातील विसंगती टिपतात. त्यातून विनोद निर्माण होतो, तसेच समाजातील वाईट प्रथा, रुढी, वृत्ती, प्रवृत्ती यांच्या विरोधात मनोभूमिका तयार होते.

द. मा. मिरासदार यांनी अनेक उपहास कथा लिहिल्या. त्या सामाजिक जीवनात प्रगट होणाऱ्या विसंगतींचे दर्शन घडवितात. त्यांच्या 'विनोदी कथा' अंधश्रद्धांची खिल्ली उडवितात. उदा. 'भुताचा जन्म' या कथेतील पहिलवान धडधाकट, प्रचंड ताकदवान असूनही भुताला मात्र घाबरतो.

सामाजिक विषयावर उपहासपर लेखन करणारे मुकुंद टाकसाळे यांच्या 'दहावीची (अ) पूर्वतयारी' या पाठात बोर्डाच्या दहावीच्या परीक्षेला अतिरेकी महत्त्व देताना पालकांना तारतम्य राहत नाही. बोर्डाच्या परीक्षेच्या काळात कोणकोणते अडथळे येऊ शकतात, त्यासाठी कोणती दक्षता घ्यावी म्हणून मुद्दाम वेगवेगळे अडथळे निर्माण करून, त्या वातावरणात मुलीला पेपर लिहिण्याचा सराव करण्यास भाग पाडतात. येथे पालकांच्या विक्षिप्त वागण्याचे आपणाला हसू येते.

(३) 'मानवी जीवनात विनोदाचे महत्त्व' तुमच्या शब्दांत १२ ते १५ ओळीत लिहा.

(४)

किंवा

'तुमच्या दैनंदिन जीवनातील विसंगती' याबाबतचे तुमचे अनुभव १२ ते १५ ओळीत लिहा.

(४) तुम्ही अनुभवलेला विनोदी प्रसंग ८ ते १० ओळीत लिहा.

(२)

विभाग ६ – सर्जनशील लेखन

[१०]

(६)

कृती ६.(अ) खालील कवितेचे १५ ते २० ओळीत रसग्रहण करा.

सगळ्याच झाडांच्या फळांवर

सगळ्याच झाडांच्या फळांवर नसते लिहिलेले आपले नाव
सगळ्याच गावांना जाण्याइतकी नसते आपल्या पायांची धाव
आंबट म्हणू नयेत फळे आपल्या नावाची निशाणी नसलेली
नाकारू नयेत गावे आपल्या पायांनी पालथी न घातलेली
ही एवढीशी कुडी, इवलीशी ओंजळ... त्यात मावणार किती?
पण हे गूढ अनाकलनीय मन ज्याला न मर्यादा न मिती
आपापल्या कुवतीप्रमाणे स्वतःपुरतेच शोधत राहावे उत्तर
आपल्याच अर्ध्यामुर्ध्या पाकळीतून मिळवावे निदान थेंबभर अत्तर

- वृंदा लिमये

किंवा

- (अ) खालीलपैकी कोणत्याही एका विषयावर १५ ते २० ओळीत संवादलेखन करा.
- (१) उपाहारगृहात काम करणाऱ्या कामगारांशी संवाद.
- (२) स्त्री भ्रूणहत्येविषयी स्त्रीरोगतज्ज्ञांशी संवाद.
- (३) अभ्यासाच्या नियोजनाबाबत दोन मित्र / मैत्रीणींमधील संवाद.
- (ब) (१) पुढील नामासाठी योग्य विशेषण लिहा. (१)
- बंगला -
- (क) टुमदार (ख) रंगीत
- (ग) गुलाबी (घ) पाणीदार
- (२) खालील काव्यपंक्तीतील प्रतिमा ओळखून लिहा. (१)
- काव्यपंक्ती - देहाचाच खांब करून अवघे घर तोलते !
- प्रतिमा -
- (३) खालील वाक्यातील क्रियापदाचे स्थान बदलून उठावदार वाक्यरचना करा. (१)
- वाक्य - आमच्या मैत्रीला व्यवहाराचा स्पर्श नव्हता.
-
- (४) खालील विधानातील पूर्णाभ्यस्त शब्द शोधून लिहा. (१)
- वाक्य - त्याचे काळीज पुन्हा लुटलुट उडू लागले.
- पूर्णाभ्यस्त शब्द -

विभाग ७ - उपयोजित लेखन

[२०]

(१०)

कृती ७.(अ) खालीलपैकी कोणत्याही दोन कृती दिलेल्या मुद्द्यांच्या आधारे सोडवा.

- (१) वृत्तपत्रीय लेखांचे प्रकार -
- वृत्तलेख - लोकरुची वार्ता - हलके-फुलके - गंमतीशीर लेख - व्यक्तिचित्रणात्मक लेख - प्रासंगिक लेख - दुर्घटनेतल्या परिपाकाची कथा इ.
- (२) आकाशवाणी बातमीपत्राचे स्वरूप -
- आकाशवाणी केंद्राचे नाव - वृत्तनिवेदकाचे नाव - बातम्यांचे स्वरूप - ठळक बातम्या - क्रीडा व हवामानविषयक अंदाज - ठळक बातम्यांचे विवेचन - समारोप.
- (३) दूरचित्रवाणीवरील जाहिरातीचे संहितालेखन -
- कॅमेऱ्याची भाषा - कलांचा वापर - ग्राहक केंद्रबिंदू - कमी शब्दांत - परिणामकारक - समर्पक - इ.
- (ब) खालीलपैकी कोणत्याही एका विषयावर मुलाखतपूर्व प्रश्नावली तयार करा. (५)
- (१० ते १२ प्रश्न अपेक्षित)
- (१) तंटामुक्ती समितीच्या अध्यक्षांची मुलाखत.
- (२) राज्यस्तरीय वक्तृत्व स्पर्धेत प्रथम पारितोषिक मिळविलेल्या विद्यार्थ्यांची मुलाखत.
- (३) प्लॅस्टिक निर्मूलनाबाबत कार्य करणाऱ्या कार्यकर्त्यांची मुलाखत.
- (क) खालील उताऱ्याच्या आधारे सूचनेनुसार कृती करा. (५)
- (१) संकेतस्थळ तयार करण्यासाठी लागणाऱ्या गोष्टी. (१)
- (२) संकेतस्थळावरील माहितीच्या आदानप्रदानासाठीची एक भाषा. (१)



- (३) खालील मराठी शब्दांसाठी योग्य इंग्रजी प्रतिशब्द लिहा. (१)
- (i) विशेष खुणा -
- (ii) दुवे -

संकेतस्थळांवरील माहितीच्या आदानप्रदानासाठी एका प्रमाणित भाषेची गरज होती. त्यामुळे १९९० मध्ये 'हायपर टेक्स्ट मार्कअप लॅंग्वेज' (HTML) या भाषेची प्रमाणित संहिता तयार करण्यात आली. या भाषेवर कुणाचीही मालकी नाही. या भाषेचे जुजबी ज्ञान असणाऱ्या कुणालाही स्वतःचे संकेतस्थळ स्वतःच तयार करता येते. त्यासाठी वर्ड प्रोसेसरमध्ये मजकूर देवनागरीत लिहायचा. हा मजकूर लिहिण्यासाठी 'युनिकोड' किंवा 'बराहा' वापरता येईल. त्या मजकुरात विशिष्ट ठिकाणी या भाषेच्या विशेष खुणा (tags) नोंदवायच्या. मजकूर तयार झाला, की एचटीएमएल एडिटर वापरून या विशेष खुणा नोंदवता येतात. या विशेष खुणांना 'मार्कअप' म्हणतात. या खुणा दिसत नाहीत, पण त्यांच्यामुळे मजकूर शिस्तबद्ध पद्धतीने संकेतस्थळावर दिसतो. त्यानंतर 'htm' असा त्या धारिकेला (file) विस्तार द्यायचा व धारिका सेव्ह करायची, की संकेतस्थळ तयार झाले. वर्ड प्रोसेसरमध्ये मजकूर तयार करून एचटीएमएल भाषेचे रूपांतर करणारे कन्व्हर्टर प्रोग्रॅम्सही उपलब्ध आहेत. पण आपले संकेतस्थळ आकर्षक करण्यासाठी आपणच आरेखन करून त्यानुसार खुणा नोंदवणे अधिक चांगले असते. अक्षरनिवड, मजकूर, त्याचे योग्य परिच्छेद, चित्रांच्या धारिका, हायपर टेक्स्टसाठी दुवे (links) या गोष्टी लक्षात ठेवून आपण आपले संकेतस्थळ तयार करू शकतो. पुढील टप्प्यासाठी Java.php किंवा Flash ही पॅकेज वापरता येतील.

- (४) उत्तम संकेतस्थळाची लक्षणे तुमच्या शब्दांत ८ ते १० ओळीत लिहा. (२)

 9664080155

PHYSICS

Time: 3 Hours

Total Marks: 70

General Instructions :

The question paper is divided into FOUR sections.

1. **Section A :** Q. No.1 contains Ten multiple choice type of questions carrying One mark each.
Q. No. 2 contains Eight very short answer type of questions carrying One mark each.
2. **Section B :** Q. No.3 to Q. No. 14 contain Twelve short answer type of questions carrying Two marks each.
(Attempt any Eight).
3. **Section C :** Q. No. 15 to Q. No.26 contain Twelve short answer type of questions carrying Three marks each.
(Attempt any Eight).
4. **Section D :** Q. No. 27 to Q. No. 31 contain Five long answer type of questions carrying Four marks each.
(Attempt any Three).
5. Use of log table is allowed. Use of calculator is **not** allowed.
6. Figures to the right indicate full marks.
7. For each MCQ, correct answer must be written alongwith its alphabet.
e.g., (a)..... / (b) / (c) / (d) etc.
8. **Physical Constants:**
 - i. $h = 6.63 \times 10^{-34}$ Js
 - ii. $c = 3 \times 10^8$ m/s
 - iii. $\pi = 3.142$
 - iv. $g = 9.8$ m/s²
 - v. $\epsilon_0 = 8.85 \times 10^{-12} \frac{C^2}{Nm^2}$
 - vi. $\mu_0 = 4\pi \times 10^{-7} \frac{Wb}{A-m}$

Section-A

Q.1. Select and write correct answers of the following questions :

[10]

- i. If the length of a potentiometer wire is increased by keeping constant potential difference across the wire, then _____.
(A) null point is obtained at larger distance (B) there is no change in the null point
(C) potential gradient is increased (D) null point is obtained at shorter distance
- ii. If a coil of metal wire is kept stationary in a uniform magnetic field, then _____.
(A) an e.m.f. is induced in the coil (B) a current is induced in the coil
(C) neither e.m.f. nor current is induced (D) both current and e.m.f. are induced
- iii. In rotational motion of a rigid body, all particles move with _____.
(A) same linear velocity and same angular velocity
(B) same linear velocity and different angular velocity
(C) different linear velocities and same angular velocities
(D) different linear velocities and different angular velocities
- iv. A standing wave is produced on a string fixed at one end and free at other. The length of string must be an _____.
(A) odd integral multiple of $\frac{\lambda}{4}$ (B) integral multiple of $\frac{\lambda}{2}$
(C) integral multiple of λ (D) integral multiple of $\frac{\lambda}{4}$
- v. Herapathite (iodo sulphate of quinine) is used in the production of _____.
(A) achromatic prism (B) polaroid (C) biprism (D) solar cell

- vi. A diffraction pattern is obtained by making blue light incident on a narrow slit. If blue light is replaced by red light, then the diffraction bands _____.
 (A) disappear (B) become broader (C) become narrower (D) remain same
- vii. Two droplets coalesce in a single drop. In this process _____.
 (A) energy is liberated (B) energy is absorbed
 (C) energy does not change (D) some mass is converted into energy
- viii. In hydrogen atom, electron jumps from the 3rd orbit to the 1st orbit. The change in angular momentum is _____.
 (A) 1.05×10^{-34} Js (B) 2.11×10^{-34} Js (C) 3.16×10^{-34} Js (D) 4.22×10^{-34} Js
- ix. A fixed volume of iron is drawn into a wire of length 'L'. The extension 'x' produced in the wire by a constant force 'F' is proportional to _____.
 (A) $\frac{1}{L^2}$ (B) $\frac{1}{L}$ (C) L^2 (D) L
- x. Two tuning forks have frequencies 450 Hz and 454 Hz respectively. On sounding these forks together, the time interval between two successive maximum intensities will be _____.
 (A) $\frac{1}{4}$ s (B) $\frac{1}{2}$ s (C) 1s (D) 4s

Q.2. Answer the following questions :

[8]

- i. What is attenuation in communication system?
- ii. What is isothermal process?
- iii. What does the negative sign indicate in Lenz's law?
- iv. Define uniform circular motion.
- v. At which position, the total energy of a particle executing linear S.H.M. is purely potential?
- vi. State the name of the visible series in hydrogen spectrum.
- vii. At what height the acceleration due to gravity is 25% of that at the surface of the Earth, in terms of radius of the Earth.
- viii. Capacity of a parallel capacitor with dielectric constant 5 is 40 μ F. Calculate the capacity of the same capacitor when dielectric material is removed.

Section-B

Attempt any EIGHT questions of the following :

[16]

- Q.3.** Define ;
 (a) Threshold frequency (b) Photoelectric work function
- Q.4.** Distinguish between step-up and step-down transformer.
- Q.5.** Write a short note on sky wave propagation.
- Q.6.** Obtain the relation between the magnitude of linear acceleration and angular acceleration in circular motion.
- Q.7.** Deduce Boyle's law using the expression for pressure exerted by the gas.
- Q.8.** State any two postulates of Bohr's theory of hydrogen atom.
- Q.9.** State the factors on which resolving power of microscope depends. How can it be increased?
- Q.10.** The photoelectric work function for a metal surface is 3.84×10^{-19} J. If the light of wavelength 5000 \AA is incident on the surface of the metal, will there be photoelectric emission?
- Q.11.** A parallel L-C circuit comprises of a 5H inductor and 5 μ F capacitor. Calculate the resonant frequency of the circuit.
- Q.12.** A wire length 1 m and mass 2 g is in unison with a tuning fork of frequency 300 Hz. Calculate the tension produced in the wire.
- Q.13.** Energy of 1000 J is spent to increase the angular speed of a wheel from 20 rad/s to 30 rad/s. Calculate the moment of inertia of the wheel.
- Q.14.** Energy of an electron in the second Bohr orbit is -3.4 eV. Calculate the energy of an electron in the third Bohr orbit.

Section-C

Attempt any EIGHT questions of the following :

[24]

- Q.15. State Newton's law of gravitation. Obtain the relation between universal gravitational constant and gravitational acceleration on the surface of the earth.
- Q.16. Define linear S.H.M. Obtain differential equation of linear S.H.M.
- Q.17. Explain Doppler effect in sound. State any two applications of Doppler effect.
- Q.18. State and prove the principle of parallel axes in rotational motion.
- Q.19. Explain the concept of a parallel plate capacitor. State its any 'two' applications.
- Q.20. Define :
 (a) Young's modulus (b) Bulk modulus (c) Poisson's ratio
- Q.21. Explain energy distribution spectrum of a black body radiation in terms of wavelength.
- Q.22. In a biprism experiment, light of wavelength 5200 \AA is used to obtain an interference pattern on the screen. The fringewidth changes by 1.3 mm when the screen is moved towards the biprism by 50 cm . Calculate the distance between the two virtual images of the slit.
- Q.23. A simple pendulum of length 1 m has mass 10 g and oscillates freely with amplitude of 5 cm . Calculate its potential energy at extreme position.
- Q.24. If the difference in the velocities of light in glass and water is $0.25 \times 10^8 \text{ m/s}$, calculate the velocity of light in air. Given that refractive index of glass and water with respect to air are 1.5 and $\frac{4}{3}$ respectively.
- Q.25. In a Circus, a motor-cyclist having mass of 50 kg moves in a spherical cage of radius 3 m . Calculate the least velocity with which he must pass the highest point without losing contact. Also calculate his angular speed at the highest point.
- Q.26. Two resistances X and Y in the two gaps of a meter-bridge gives a null point dividing the wire in the ratio $2:3$. If each resistance is increased by 30 \Omega , the null point divides the wire in the ratio $5:6$, calculate the value of X and Y .

Section-D

Attempt any THREE questions of the following :

[12]

- Q.27. Show that all harmonics are present in case of an air column vibrating in a pipe open at both ends.
- Q.28. What is a rectifier? With the help of a neat circuit diagram explain the working of a full wave rectifier.
- Q.29. What is capillarity? Give any two applications of capillarity. Calculate the work done in blowing a soap bubble of radius 0.1 m . (Surface tension of soap solution = $30 \frac{\text{dyne}}{\text{cm}}$)
- Q.30. State the advantages and disadvantages of a moving coil galvanometer.
 A moving coil galvanometer (M.C.G.) has 10 turns each of length 12 cm and breadth 8 cm . The coil of M.C.G. carries a current of 125 \mu A and is kept perpendicular to the uniform magnetic field of induction 10^{-2} T . The twist constant of phosphor bronze fibre is $12 \times 10^{-9} \text{ Nm/degree}$. Calculate the deflection produced.
- Q.31. Derive an expression for magnitude of magnetic dipole moment of a revolving electron.
 A circular coil of 300 turns and diameter 14 cm carries a current of 15 A . Calculate the magnitude of the magnetic dipole moment associated with the coil.

CHEMISTRY

Time: 3 Hours

Total Marks: 70

General Instructions :

The question paper is divided into **FOUR** sections.

- Section A :** Q. No.1 contains **Ten** multiple choice type of questions carrying **One** mark each.
Q. No. 2 contains **Eight** very short answer type of questions carrying **One** mark each.
- Section B :** Q. No.3 to Q. No. 14 are **Twelve** short answer type of questions carrying **Two** marks each. (Attempt any **Eight**).
- Section C :** Q. No. 15 to Q. No.26 contain **Twelve** short answer type of questions carrying **Three** marks each. (Attempt any **Eight**)
- Section D :** Q. No. 27 to Q. No. 31 are **Five** long answer type of questions carrying **Four** marks each. (Attempt any **Three**)
- Use of log table is allowed. Use of calculator is not allowed.
- Figures to the right indicate full marks.
- For **each MCQ**, correct answer must be written along with its alphabet, e.g. (a) / (b) (c) / (d) etc.
- Physical constant:
Avogadro's Number = $N_A = 6.022 \times 10^{23}$

Section-A

Q.1. Select and write correct answer of the following questions:**[10][7]**

- Identify synthetic polymer amongst the following:
(A) Linen (B) Jute (C) Silk (D) Terylene
- Which among the following hydrides is NOT a reducing agent?
(A) H_2O (B) H_2S (C) H_2Te (D) H_2Se
- During oxidation of ferrous sulphate using mixture of dil. H_2SO_4 and potassium dichromate; oxidation state of chromium changes from _____.
(A) + 6 to + 2 (B) + 6 to + 3 (C) + 6 to + 1 (D) + 6 to + 4
- Identify complex ion in which effective atomic number of the central metal ion is 35.
(Given At. Number of Co = 27, Fe = 26, Zn = 30)
(A) $[Zn(NH_3)_4]^{2+}$ (B) $[Fe(CN)_6]^{4-}$ (C) $[Fe(CN)_6]^{3-}$ (D) $[Co(NH_3)_6]^{3+}$
- Conversion of methyl chloride into methyl fluoride is known as _____.
(A) Finkelstein reaction (B) Swarts reaction
(C) Williamson's synthesis (D) Wurtz reaction
- The number of moles of methyl iodide required to prepare tetramethyl ammonium iodide from 1 mole of methyl amine is/are:
(A) 1 (B) 2 (C) 3 (D) 4
- Name the reagent which on reaction with glucose confirms the presence of five hydroxyl groups in glucose:
(A) Hydroxyl amine (B) Bromine water
(C) Dilute nitric acid (D) Acetic anhydride

- viii. Identify antibiotic drug amongst the following:
 (A) Codeine (B) Equanil
 (C) Penicillin (D) Valium
- ix. The number of atoms per unit cell of body centred cube is:
 (A) 1 (B) 2
 (C) 4 (D) 6
- x. Calculate the work done during the reactions represented by the following thermochemical equation at 300 K:

$$\text{CH}_4 + 2\text{O}_2 \rightarrow \text{CO}_2 + 2\text{H}_2\text{O}$$

$$(R = 8.314 \text{ JK}^{-1} \text{ mol}^{-1})$$
 (A) +4.988 kJ (B) -4.988 kJ
 (C) -49.88 kJ (D) +49.88 kJ

Q.2. Answer the following questions :

[8]

- i. What is the concentration of dissolved oxygen at 50°C under pressure of one atmosphere if partial pressure of oxygen at 50°C is 0.14 atm.
 (Henry's law constant for oxygen = $1.3 \times 10^{-3} \text{ mol dm}^{-3} \text{ atm}^{-1}$)
- ii. Write structural formula of the alcohol that results when acetaldehyde is reacted with CH_3MgBr in the presence of dry ether and the product is hydrolysed.
- iii. Write balanced chemical reaction for preparation of acetic anhydride using acetic acid.
- iv. Write the chemical reaction involved in the formation of ethylamine using acetaldoxime.
- v. What is electrometallurgy?
- vi. For the reaction:

$$\text{N}_2\text{O}_4 \rightarrow 2\text{NO}_2$$

$$(\Delta H^\circ = +57.24 \text{ kJ}, \Delta S^\circ = 175.8 \text{ JK}^{-1})$$
 At what temperature the reaction will be spontaneous?
- vii. The standard e.m.f. of the following cell is 0.463 V

$$\text{Cu} | \text{Cu}^{++} || \text{Ag}^+ | \text{Ag}$$
 (s) (1M) (1M) (s)
 If the standard potential of Ag electrode is 0.800 V, what is the standard potential of Cu electrode?
- viii. Write the mathematical relation between half life of zero order reaction and its rate constant.

Section-B

Attempt any EIGHT of the following questions:

[16]

- Q.3.** State and explain Hess's law of constant heat summation.
- Q.4.** Write the cell reaction and calculate E° cell of the following electrochemical cell:

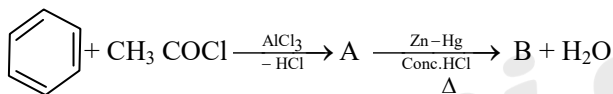
$$\text{Al} | \text{Al}^{3+} || \text{Zn}^{2+} | \text{Zn}$$
 (s) (aq.) (aq.) (s)
 (1M) (1M)
 $E^\circ_{\text{Al}} = -1.66 \text{ V}$
 $E^\circ_{\text{Zn}} = -0.76 \text{ V}$

Q.5. Distinguish between order and molecularity of a reaction.

Q.6. Write two uses of each of the following:

- a. Helium
 b. Neon

- Q.7. Write the name and chemical formula of one ore of zinc,
Define: Quaternary ammonium salt.
- Q.8. What is the action of acidified potassium dichromate on the following:
a. KI
b. H₂S
- Q.9. Define optical activity. How many optical isomers are possible for glucose?
- Q.10. Explain continuous etherification process for the preparation of diethyl ether.
- Q.11. Identify 'A' and 'B' in the following reaction:



- Q.12. Write Howorth projection formula of α -D-(+)-glucopyranose.
Define hormones.
- Q.13. Classify the following solids into different types:
(A) Silver (B) P₄
(C) Diamond (D) NaCl
- Q.14. Define:
a. Molality
b. Osmotic pressure

Section-C

Attempt any EIGHT of the following questions:

[24]

- Q.15. Define flux.
Write a note on leaching process.
- Q.16. Draw the structure of sulphurous acid.
Explain why nitrogen does not form pentahalides.
- Q.17. Write the general electronic configuration of lanthanoids. Why are most of the compounds of transition metals coloured?
- Q.18. Calculate the effective atomic number (e.a.n) of copper in $[\text{Cu}(\text{NH}_3)_4]^{2+}$. [Z of Cu = 29]
Explain ionisation isomerism in coordination compounds with a suitable example.
- Q.19. Write the chemical reactions of chlorobenzene with respect to:
a. Sulphonation
b. Acetylation
c. Nitration
- Q.20. How is ethanol prepared from the following compounds?
a. Ethanal
b. Ethene
c. Bromoethane
- Q.21. How are primary, secondary and tertiary nitroalkanes distinguished using HNO₂?
- Q.22. What are monosaccharides? Explain denaturation of proteins.
- Q.23. Define non-biodegradable polymer.
Write the preparation of terylene.
- Q.24. What are soaps? How are soaps prepared? Define antiseptic.
- Q.25. Unit cell of a metal has edge length of 288 pm and density of 7.86 g cm⁻³. Determine the type of crystal lattice. [Atomic mass of metal = 56 g mol⁻¹]
- Q.26. Define instantaneous rate of reaction. Explain pseudo first order reaction with suitable example.

Section-D

[12]

Attempt any THREE of the following questions:

Q.27. Define the terms:

- Electrochemical series
- Corrosion

Write two applications of electrochemical series.

Q.28. Explain interhalogen compounds. How is oxygen prepared from the following compounds?

- KClO_4
- PbO_2

Q.29. Explain the mechanism of aldol addition reaction. Mention two uses of carboxylic acids.

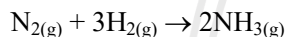
Q.30. Derive the mathematical expression between molar mass of a non-volatile solute and elevation of boiling point.

State and explain van't Hoff-Avogadro's law.

Q.31. Define:

- Reversible process
- Standard enthalpy of combustion

Calculate the enthalpy change for the reaction:



The bond enthalpies are:

Bond	$\text{N} \equiv \text{N}$	$\text{H} - \text{H}$	$\text{N} - \text{H}$
$\Delta H^\circ \text{ kJ mol}^{-1}$	946	435	389

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MATHEMATICS AND STATISTICS

Time: 3 Hours

Max. Marks: 80

General Instructions:The question paper is divided into **FOUR** sections.

1. **Section A:** Q. 1 contains **Eight** multiple choice type of questions carrying **Two** marks.
Q. 2 contains **Four** sub-questions each carrying **One** mark each.
2. **Section B:** Q. 3 to Q. 14 each carries **Two** mark. (Attempt any **Eight**)
3. **Section C:** Q. 15 to Q. 26 carries **Three** marks. (Attempt any **Eight**)
4. **Section D:** Q. 27 to Q. 34 each carries **Four** marks. (Attempt any **Five**)
5. Use of log table is allowed. Use of calculator is not allowed.
6. Figures to the right indicate full marks.
7. Use of graph paper is not necessary. Only rough sketch of graph is expected.
8. For each MCQ, correct answer must be written along with its alphabet:
e.g. (a)..... / (b) / (c) / (d) etc.
9. Start answers to each section on a new page.

SECTION- A

Q.1. Select and write the most appropriate answer from the given alternatives for each question: **[16]**

- i. In ΔABC , if $a = 2$, $b = 3$ and $\sin A = \frac{2}{3}$, then $\angle B =$ _____.
- (A) $\frac{\pi}{4}$ (B) $\frac{\pi}{2}$ (C) $\frac{\pi}{3}$ (D) $\frac{\pi}{6}$ (2)
- ii. If $\vec{a} = 3\hat{i} - \hat{j} + 4\hat{k}$, $\vec{b} = 2\hat{i} + 3\hat{j} - \hat{k}$ and $\vec{c} = -5\hat{i} + 2\hat{j} + 3\hat{k}$, then $\vec{a} \cdot (\vec{b} \times \vec{c})$ is _____.
- (A) 100 (B) 110 (C) 109 (D) 108 (2)
- iii. The cartesian equation of the line passing through the points A(4, 2, 1) and B(2, -1, 3) is _____.
- (A) $\frac{x+4}{2} = \frac{y-2}{3} = \frac{z-1}{-2}$ (B) $\frac{x-4}{-2} = \frac{y-2}{-3} = \frac{z-1}{-2}$
 (C) $\frac{x-4}{2} = \frac{y-2}{3} = \frac{z-1}{-2}$ (D) $\frac{x-4}{-2} = \frac{y-2}{3} = \frac{z-1}{-2}$ (2)
- iv. If the line $\vec{r} = (\hat{i} - 2\hat{j} + 3\hat{k}) + \lambda(2\hat{i} + \hat{j} + 2\hat{k})$ is parallel to the plane $\vec{r} \cdot (3\hat{i} - 2\hat{j} + m\hat{k}) = 10$, then value of m is _____.
- (A) -2 (B) 2 (C) ± 2 (D) 0 (2)
- v. If $f(x) = 1 - x$, for $0 < x \leq 1 = k$, for $x = 0$ is continuous at $x = 0$, then $k =$ _____.
- (A) 0 (B) -1 (C) 2 (D) 1 (2)
- vi. The function $f(x) = x^x$ is minimum at $x =$ _____.
- (A) e (B) -e (C) $\frac{1}{e}$ (D) $-\frac{1}{e}$ (2)
- vii. If $\int_0^k 4x^3 dx = 16$, then the value of k is _____.
- (A) 1 (B) 2 (C) 3 (D) 4 (2)

viii. Order and degree of differential equation $\frac{d^4 y}{dx^4} = \left[1 + \left(\frac{dy}{dx} \right)^2 \right]^3$ respectively are _____.

- (A) Order: 1, Degree: 4
 (C) Order: 6, Degree: 1

- (B) Order: 4, Degree: 1
 (D) Order: 1, Degree: 6

(2)

Q.2. Answer the following questions:

[4]

- i. Write the dual of $p \wedge \sim p \equiv F$
- ii. Find the general solution of $\tan 2x = 0$
- iii. Differentiate $\sin(x^2 + x)$ w.r.t. x
- iv. If $X \sim B(n, p)$ and $n = 10, E(X) = 5$, then find the value of p .

(1)
 (1)
 (1)
 (1)

SECTION- B

Attempt any EIGHT of the following questions:

[16]

Q.3. Using truth table verify that $\sim (p \vee q) \equiv \sim p \wedge \sim q$

(2)

Q.4. Find the matrix of co-factors for the matrix $\begin{bmatrix} 1 & 3 \\ 4 & -1 \end{bmatrix}$

(2)

Q.5. Find the angle between the lines represented by $3x^2 + 4xy - 3y^2 = 0$

(2)

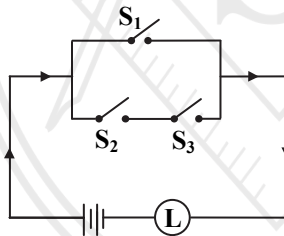
Q.6. \vec{a} and \vec{b} are non-collinear vectors. If $\vec{c} = (x - 2)\vec{a} + \vec{b}$ and $\vec{d} = (2x + 1)\vec{a} - \vec{b}$ are collinear, then find the value of x .

(2)

Q.7. If a line makes angles $90^\circ, 135^\circ, 45^\circ$ with X, Y and Z axes respectively, then find its direction cosines.

(2)

Q.8. Express the following circuit in symbolic form:



(2)

Q.9. Differentiate $\log(\sec x + \tan x)$ w.r.t. x .

(2)

Q.10. Evaluate: $\int \frac{dx}{x^2 + 4x + 8}$

(2)

Q.11. Evaluate: $\int_0^{\frac{\pi}{2}} \cos^2 x \, dx$

(2)

Q.12. Solve the differential equation $\frac{dy}{dx} = x^2 y + y$

(2)

Q.13. Find expected value of the random variable X whose probability mass function is:

(2)

$X = x$	1	2	3
$P(X = x)$	$\frac{1}{5}$	$\frac{2}{5}$	$\frac{2}{5}$

Q.14. If $y = x \log x$, then find $\frac{d^2 y}{dx^2}$.

(2)

SECTION- C

Attempt any EIGHT of the following questions:

[24]

Q.15. State the converse, inverse and contrapositive of the conditional statement:

'If a sequence is bounded, then it is convergent'.

(3)

Q.16. Show that: $\sin^{-1}\left(\frac{8}{17}\right) + \sin^{-1}\left(\frac{3}{5}\right) = \sin^{-1}\left(\frac{77}{85}\right)$.

(3)

Q.17. Show that the points A(2, 1, -1), B(0, -1, 0), C(4, 0, 4) and D(2, 0, 1) are coplanar.

(3)

Q.18. If ΔABC is right angled at B, where A(5, 6, 4), B(4, 4, 1) and C(8, 2, x), then find the value of x.

(3)

Q.19. Find the equation of the line passing through the point (3, 1, 2) and perpendicular to the lines

$$\frac{x-1}{1} = \frac{y-2}{2} = \frac{z-3}{3} \quad \text{and} \quad \frac{x}{-3} = \frac{y}{2} = \frac{z}{5}.$$

(3)

Q.20. Find the distance of the point $\hat{i} + 2\hat{j} - \hat{k}$ from the plane $\vec{r} \cdot (\hat{i} - 2\hat{j} + 4\hat{k}) = 10$

(3)

Q.21. If $e^x + e^y = e^{x+y}$, show that $\frac{dy}{dx} = -e^{y-x}$

(3)

Q.22. The surface area of a spherical balloon is increasing at the rate of $2 \text{ cm}^2/\text{sec}$. At what rate the volume of the balloon is increasing when the radius of the balloon is 6 cm?

(3)

Q.23. Find the approximate value of $e^{1.005}$; given $e = 2.7183$.

(3)

Q.24. Evaluate: $\int \frac{x^2 \cdot \tan^{-1}(x^3)}{1+x^6} dx$

(3)

Q.25. Solve the differential equation $\frac{dy}{dx} + y = e^{-x}$

(3)

Q.26. If $f(x) = kx, \quad 0 < x < 2$
 $= 0, \quad \text{otherwise,}$

is a probability density function of a random variable X, then find:

i. Value of k.

ii. $P(1 < X < 2)$

(3)

SECTION- D

Attempt any FIVE of the following questions:

[20]

Q.27. Prove that a homogeneous equation of degree two in x and y i.e. $ax^2 + 2hxy + by^2 = 0$ represents a pair of lines passing through the origin, if $h^2 - ab \geq 0$.

(4)

Q.28. Solve the following linear programming problem:

Maximise: $z = 150x + 250y$

Subject to; $4x + y \leq 40$

$$3x + 2y \leq 60$$

$$x \geq 0$$

$$y \geq 0$$

(4)

Q.29. Solve the following equations by the method of reduction:

$$x + 3y + 3z = 12$$

$$x + 4y + 4z = 15$$

$$x + 3y + 4z = 13$$

(4)

Q.30. In ΔABC , if $a + b + c = 2s$, then prove that $\sin\left(\frac{A}{2}\right) = \sqrt{\frac{(s-b)(s-c)}{bc}}$, with usual notations.

(4)

Q.31. Function $f(x)$ is continuous on its domain $[-2, 2]$, where

$$\begin{aligned} f(x) &= \frac{\sin ax}{x} + 2, \text{ for } -2 \leq x < 0 \\ &= 3x + 5, \text{ for } 0 \leq x \leq 1 \\ &= \sqrt{x^2 + 8} - b, \text{ for } 1 < x \leq 2 \end{aligned}$$

Find the value of $a + b + 2$.

(4)

Q.32. Prove that: $\int \sqrt{x^2 + a^2} \cdot dx = \frac{x}{2} \sqrt{x^2 + a^2} + \frac{a^2}{2} \log|x + \sqrt{x^2 + a^2}| + c$

(4)

Q.33. A fair coin is tossed 8 times. Find the probability that:

- i. is shows no head
- ii. it shows head at least once.

(4)

Q.34. Prove that:

$$\int_0^{2a} f(x) dx = \int_0^a f(x) dx + \int_0^a f(2a - x) dx$$

(4)



BIOLOGY

Time: 3 Hours

Max. Marks: 70

General instruction:

The question paper is divided into **four** sections.

1. **Section A:** Q. No **1** contains **Ten multiple choice** type of question carrying **one** mark each.
 - i. For each **MCQ**, correct answer must be written along with its alphabet, e.g.,
(a) / (b) / (c) / (d) etc.
 - ii. In case of **MCQ**, evaluation will be done for the **first attempt** only.
Q.No **2** contains **Eight** very **short answer** type of questions carrying **one** mark each.
2. **Section B:** Q. No **3** to **14** are **short answer** type of questions carrying **two** marks each.
3. **Section C:** Q. No **15** to **26** are **short answer** type of questions carrying **three** marks each.
4. **Section D:** Q. No **27** to **31** are **long answer** type of questions carrying **four** marks each.
5. Being the answer of each section on a new page.

Section-A

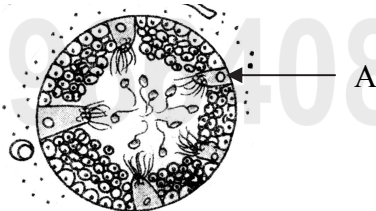
Q.1. Select the correct alternative and write the answers:

[10]
(1)

- i. Which of the following is most appropriate for thalassemia?
 - (A) decrease of either beta (β) or alpha (α) globin chain of HbA
 - (B) decrease of alpha (α) cells of pancreas
 - (C) decrease of WBC count
 - (D) decrease of blood platelets
- ii. Injury to _____ causes sudden death.

(A) cerebrum	(B) pons varolii
(C) medulla oblongata	(D) diencephalon
- iii. Name the smooth muscle of urinary bladder.

(A) cardiac muscle	(B) detrusor muscle
(C) dartos muscle	(D) gubernaculum
- iv. Identify the cell labelled 'A' in the T.S. of testis :



- | | |
|-----------------|-----------------------|
| (A) Leydig cell | (B) Basement membrane |
| (C) Sperm | (D) Sertoli cell |
- v. _____ represents connecting link between amphibians and reptiles.

(A) <i>Seymouria</i>	(B) <i>Archaeopteryx</i>
(C) <i>Ichthyostegia</i>	(D) <i>Archaeornis</i>
 - vi. How many meiotic and mitotic divisions are required for the formation of male gametophyte from pollen mother cell?

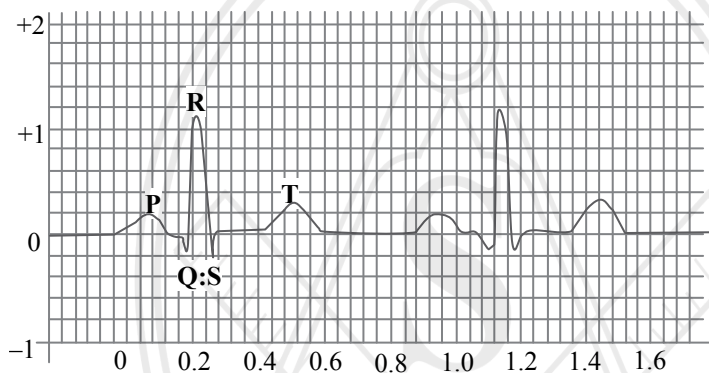
(A) 2 meiotic and 1 mitotic	(B) 1 meiotic and 1 mitotic
(C) 1 meiotic and 2 mitotic	(D) 2 meiotic and 2 mitotic

- vii. _____ is the common pathway for aerobic and anaerobic respiration.
 (A) Krebs' cycle (B) ETS
 (C) Calvin cycle (D) Glycolysis
- viii. Find the odd man out with respect to chemoautotrophs:
 (A) *Nitrosomonas* (B) *Chromatium*
 (C) *Thiobacillus* (D) *Ferrobacillus*
- ix. Genotype of blood group 'AB' in human is _____.
 (A) $I^A I^B$ (B) $I^B i$
 (C) $I^A I^A$ (D) ii
- x. Linker-DNA, connecting two successive nucleosomes, consists of _____.
 (A) 146 base pairs (B) 200 base pairs
 (C) 160 base pairs (D) 54 base pairs

Q.2. Answer the following questions :

[8]

- i. Where were the bones of jaws and teeth of *Ramapithecus* found?
- ii. In electrocardiogram , QRS complex stands for:



- iii. Laxman has low secretion of ADH resulting in _____ type of diabetes.
- iv. Name the region of retina where rods and cones are absent.
- v. Among biotic components, the micro consumers are called _____.
- vi Identify 'A' in the chart given below:

	Product	Plant
(1)	Nicotine	<i>Nicotiana tabacum</i>
(2)	Vincristin, Vinblastin	'A'

- vii. The genotypic ratio 1:2:2:4:1:2:1:2:1 is obtained in F_2 generation. What will be the phenotypic ratio?
- viii. Define the term 'recessive'

Section-B

Attempt any eight of the following questions:

[16]

- Q.3. Sketch and label angiospermic embryo sac.
- Q.4. To avoid photorespiration, which anatomical peculiarities are shown by C_4 plants?
- Q.5. Enlist the steps involved in rDNA technology.
- Q.6. Define the terms :
 i. Bio- patent ii. Bio-piracy
- Q.7. Give the flow chart of central dogma.

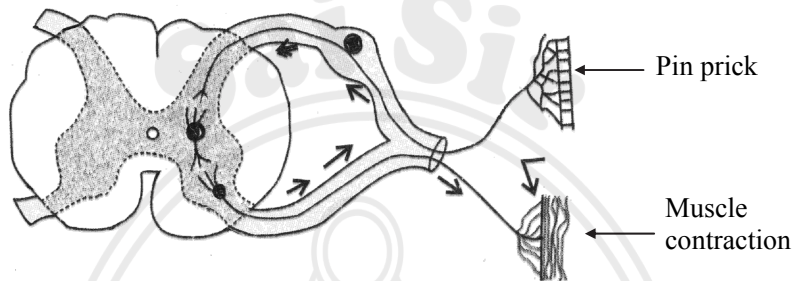
Q.8. How will you identify that, F_1 hybrid is homozygous or heterozygous? Explain it with a suitable example.

Q.9. Give any two contrasting traits studied by Mendel.

Q.10. Match the pairs and rewrite :

Column I	Column II
(1) Mechanical means	(a) Saheli
(2) Physiological device	(b) Jellies
(3) Chemical device	(c) Vasectomy
(4) Permanent Method	(d) Diaphragm

Q.11. Redraw, complete and label the diagram given below, which relates to reflex arc:

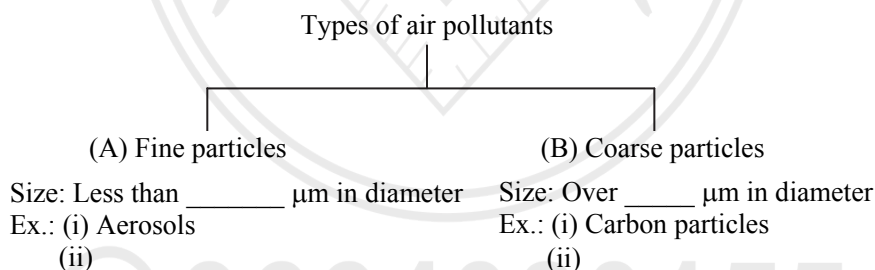


Q.12 Explain Hardy-Weinberg's principle, with the help of Punnet square.

Q.13. Complete the following chart and rewrite:

S.NO	Type	Example
1.	Vulnerable species	Clouded leopard, Musk deer
2.	_____	Great Indian Bustard, Hawaiian monk seal
3.	_____	Three banded armadillo (Brazil) Short eared rabbit (Sumatra)

Q.14. Complete the tree diagram and write examples of (A) and (B) :



Section-C

Attempt any EIGHT of the following questions :

[24]

Q.15. Give the location and one function of the following receptors :

- (i) Mechanoreceptors (ii) Statoacoustic receptors (iii) Baroreceptors

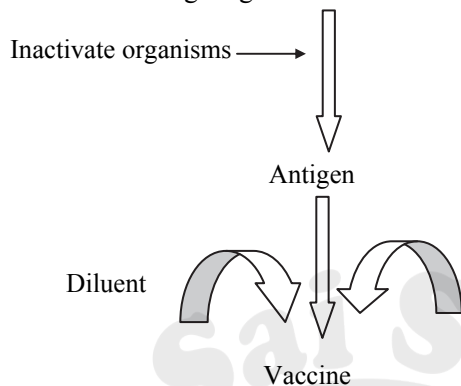
Q.16. Classify the following composition of blood plasma given below as per column 'A' and complete column 'B'. Select from the given options:

- (i) Serum albumin (ii) Bicarbonates (iii) Urea
 (iv) Sulphates of sodium (v) Fibrinogen (vi) Uric acid

	Column A	Column B
(1)	Plasma Proteins	_____, _____
(2)	Nitrogenous waste	_____, _____
(3)	Inorganic Salts	_____, _____

Q.17. Name the causative agent of malaria. State any two symptoms and two preventive measures of malaria.

Q.18. Identify '1' and '2' in the following diagram:



Write in brief about production of vaccine.

Q.19. Satish is a colorblind boy. His mother has normal vision but his maternal grandfather is colourblind. His father and maternal grandmother have normal vision. Explain the pattern of inheritance with a suitable chart.

Q.20. What are the requirements of dairy management? Give one example of each Indian and exotic breed of cow.

Q.21. Distinguish between DNA and RNA.

Q.22. What is 'green revolution'? Give any two examples each of the improved varieties of wheat and rice.

Q.23. Give microbial source of the following products in industrial production:

(i) Vitamin B₁₂

(ii) Chloromycetin

(iii) Pectinase

Q.24. State the significance of respiration.

Q.25. Explain the mechanism of anaerobic respiration.

Q.26. Describe the role of citizens in solid waste management.

Section-D

Attempt any THREE of the following questions:

[12]

Q.27. Sketch the internal structure of human heart. Label all the valves present in it. Mention the function of any one valve in the heart.

Q.28. With the help of a suitable diagrammatic representation explain HSK pathway.

Q.29. Describe the process of fertilization in human with the help of four sequential diagrams.

Q.30. What is artificial method of vegetative propagation?

(i) Cutting,

(ii) Budding.

Q.31. Describe the system associated with elimination of urine with the help of a neat, labelled diagram.