S C I E N C E

(DAILY PRACTICE PAPER) **[CLASS X]**

CLASS X - SCIENCE

✣ General Instruction

(1) This question paper consists of 39 questions in 3 sections. Section A is Biology; Section B is Chemistry and Section C is Physics.

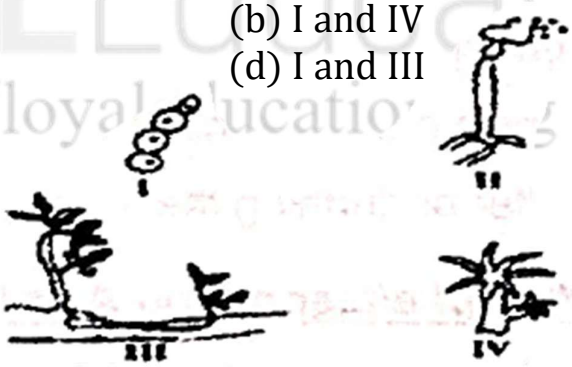
(ii) All questions are compulsory. However, an Internal choice is provided in some questions. A student is expected to attempt only one of these questions.

(iii) Q8, Q9, Q24 and Q32 are Assertion-Reason based questions. The questions consist of two statements-Assertion (A) and Reason (R). Answer these questions by selecting the appropriate option given below:

Option A - Both A and R are true, and R is the correct explanation of A.
Option B - Both A and R are true, and R is not the correct explanation of A.
Option C - A is true but R is false.
Option D - A is false but R is true.

SECTION-A (BIOLOGY)

1. During vigorous exercise, the occurrence of cramps in muscles is due to the conversion of pyruvate to:
   (a) Ethanol (b) Glucose
   (c) Lactic acid (d) Carbon dioxide
2. Two of the following four figures that illustrate budding are
   (a) I and II (b) I and IV
   (c) II and IV (d) I and III



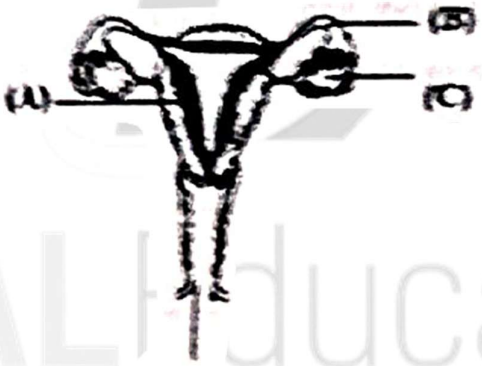
3. Match the following with the correct response.

Column A	Column B
(i) The master gland	(A) Control cell division and cell growth
(ii) Cytokinin	(B) Regulates metabolism
(iii) Insulin	(C) Reduces blood sugar
(iv) Thyroxine	(D) Pituitary gland

(a) (i)-(D), (ii)-(A), (iii) -(C), (iv) - (B)
(b) (i)-(C), (ii)(B), (iii) (D), (iv)-(A)

(c) (1)-(A), (ii) (C), (il) - (B), (iv) - (D)
(d) (1)-(B), (ii) (D), (il)-(A), (iv)-(C)

4. In a reflex arc, the sensory nerve carries messages from receptor cells to the:
   (a) Brain (b) Muscles of effector organ
   (c) Spinal cord (d) Bones
5. The gene combination of parrental pea plants producing 50% tall and 50% short plants in Ft generation will be:
   (a) TtxTt (b) TTx Tt
   (c) Ttxtt (d) TT xtt
6. The % of solar energy which is not converted in to food energy by the green plants in any terrestrial ecosystem is about
   (a) 1% (b) 10% (c) 90% (d) 99%
7. Which part of the following is a site of implantation?



   (a)D (b) A (c)C (d)S
8. Assertion (A): Amoeba takers in food using finger-like extensions of the cell surface.
   Reason (R): in all unicellular organisms, the food is taken in by the entire cell.
9. Assertion (A): Genes inherited from the parents decide the sex of a child.
   Reason (R): The X chromosome in a male child is inherited from his father.
10. (a) Name and differentiate between the two modes of pollination in flowering plants.

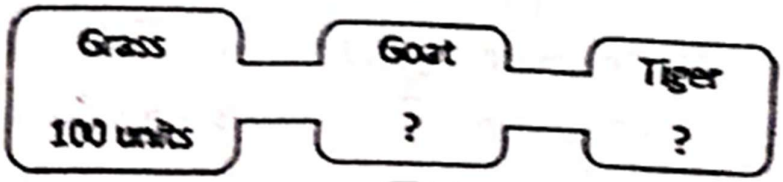
    (b) In the given picture, what would be your observation in the covered and uncovered regions of the selected leaf after performing the lodine test?

11. <u>Attempt either option A or B</u>

A. Trace the direction of flow of energy in a food chain consisting of grass, deer, tiger. Why is this flow unidirectional?

OR

B. Study the energy flow diagram carefully and answer the following questions:



(a) How much energy (in units) will pass from goat to tiger?
(b) Which law operates during the transfer of energy from grass to goat to tiger?

12. State the parts of CNS or hormones which controls the following: -
(a) Vomiting (b) Walking in a straight line
(c) Phototropism (d) Regulation of metabolism in human body

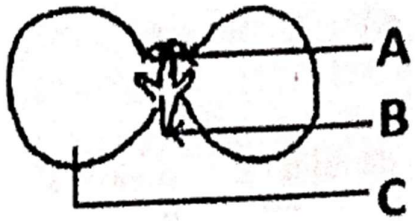
13. <u>Attempt either option A or B</u>

(A) (i) Name the artery that brings oxygenated blood to the kidney.
(ii) Name the cluster the thin-walled blood capillaries present in the Bowman's () capsule.
(iii) List two major steps involved in the formation of urine and state in brief their functions.

OR

B. (i) How do harmful chemicals get accumulated progressively at each trophic level in a food chain?
(ii) How is the movement of leaves of the sensitive plant different from the movement of a shoot towards light?

14. (a) Explain the post fertilization changes that occur in the ovules and ovary of a flower.
    (b) Given below is a diagram of a germinating seed.
    Label the parts that
    i. gives rise to future shoots.
    ii. gives rise to the future root system.
    iii. stores food.



15. <u>Case Study (internal choice in sub-part c)</u>

Read the passage carefully and answer the following questions.

A student performed an experiment to study the inheritance of two traits - seed shape and seed colour - in pea plants. He crossed round yellow seeds with wrinkled green seeds. The F_1 generation showed only round yellow seeds. When these were self- pollinated, the F_2 generation showed four combinations: round yellow, round green, wrinkled yellow, and wrinkled green seeds.

(a) Which traits are dominant?
(b) What will be the phenotypic ratio in the F_2 generation?
(c) Which law of inheritance is demonstrated in this experiment? Define that law.

OR

(c) Name and draw the cross to show the above experiment till F1 generation only.

16. <u>Attempt either option A or B.</u>

A. (a) Define the process which takes place if the egg is not fertilized by sperm.
(b) Mention one function each of the following organs in human reproductive system
I. Testis II. Oviduct III. Prostate gland IV. Placenta
(c) List two methods of contraception and explain one example from each category.

OR

B. (a) Sate one important function of the ozone layer at the atmosphere
(b) How is ozone formed?
(c) It has been observed that the ozone layer is getting depleted. Name the compound responsible for its depletion.

(d) During respiration in a organism A, one molecule of glucose produces 2 ATP molecules whereas in respiration of another organism B Same molecule of glucose produces 35 ATP molecules

I. Which organism is undergoing aerobic respiration?
II. Which type of organism. A or B cam convert glucose into alcohol?
III. Name ore organism which behaves like B
IV. Name one organism which berhawes The A

SECTION-B (CHEMISERY)

17. A dilute ferrous sulphate solution was gradually added to the beaker containing acidified permanganate solution. The light purple color of the solution fades and slowly disappears. Which of the following is the correct explanation for the dilution?
(a) $KMnO_4$ is an oxidising agent it oxidise $FeSO_4$
(b) $FeSO_4$ acts as an oxidising agent and oxidies $KMnO_4$
(c) The color disappears due to dilution no reaction is involved
(d) $KMnO_4$ is an unstable compound and decomposes in presence of $FeSO_4$ to a colourless compound

18. Four statements about the reactions of oxides with dilute hydrochloric acid and aqueous sodium hydroxide are listed :
I. Aluminium oxide reacts with both dilute HCl and aqueous sodium Bichloride.
II. Calcium oxide reacts with dilute HCl and aqueoys sodium Hydroxide
III. Zinc oxide reacts with bas dilute HD and aqueous sodium bichlroide
IV. Sulphur dioxide does not mact with either dilute HCl or aqueous NICH
Which statement are correct?
(i) I and II (ii) I and III (iii) II and IV
(iv) III and IV

19. A student acids lead and silver to two different test tubes containing an equal amount of copper sulphate solution. The student observes that the colour of the sulphate solution in the test tube with lead changes. What explains the change in the colour of the solution?

(a) A displacement reaction takes place as lead replaces copper from the solution.
(b) A combination reaction takes place as lead combines with sulphate in the solution.
(c) A decomposition reaction takes place as copper dissociates from sulphate in the solution.
(d) A double displacement reaction takes place as copper dissociates from sulphate and lead combines with sulphate in the solution.

20. Which one of the following can be used as an acid-base indicator by a Visually impaired student?
(a) Litmus (b) Turmeric (c) Vanilla essence. (d) Petunia leaves

21. The pH of the gastric juices released during digestion is
(a) less than 7. (b) more than 7 (c) equal to 7 (d) equal to 0

22. Sodium hydrogen carbonate when added to acetic acid evolves a gas. Which of the following statements are true about the gas evolved?
(i) It turns lime water milky.
(II) It extinguishes a burning splinter.
(iii) It dissolves in a solution of NaOH.
(iv) It has a pungent odour.
(a) (i) and (ii) (b) (i), (ii) and (iii)
(c) (ii), (iii) and (iv) (d) (i) and (iv)

23. Barium chloride on reacting with ammonium sulphate forms barium sulphate and ammonium chloride. Which of the following correctly represents the type of the reaction involved?
(i) Displacement reaction (ii) Precipitation reaction
(iii) Combination reaction (iv) Double displacement reaction
(a) (i) only (b) (ii) only
(c) (iv) only. (d) (ii) and (iv)

24. Assertion (A): In alkanes, alkenes and alkynes, valency of carbon is always four.
Reason (R): All hydrocarbons except alkanes contain double bonds.

25. The blue-coloured solution of the sulphate salt of a metal W is taken in a beaker. Metal powders X, Y and Z are added one after the other to the beaker. The colour changes occurring in the solutions are shown below:
WSO4(blue solution)→ →→(Metal X) →→→ Colorless solution

Colorless solution→→→→(Metal Y) →→→→ pink solution
pink solution →→→→(Metal Z) →→→→Green solution

State what colour change, if any will occur if metal X is again added to the green solution in the beaker. Explain why.

A. During extraction of metals, electrolytic refining is used to obtain pure metals.

(a) Which materials will be used as anode and cathode for refining of silver metal by this process?

(b) Suggest a suitable electrolyte also.

(c) In this electrolytic cell, where do we get pure silver after passing electric current?

(d) Silver on corrosion turns into another coloured substance. Identify this substance and its colour.

OR

26. A teacher asks her students to identify a metal M. She gives them the Following clues to help them to identify the metal:

(i) Its oxide reacts with both HCl and NaOH.

(ii) It doesn't react with cold or hot water but reacts with steam.

(iii) It can be extracted by the electrolysis of its ore.

(a) Identify the metal M.

(b) Write the chemical equations for its reactions with HCl and NaOH.

(c) What would happen if metal M is reacted with iron oxide?

(d) What could be the pH range of aqueous solution of the gas X ?

27. On heating blue coloured powder of copper (II) nitrate in a boiling tube, copper oxide (black), oxygen gas and a brown gas X is formed.

(a) Write a balanced chemical equation of the reaction.

(b) Identify the brown gas X evolved.

(c) Identify the type of reaction.

(d) What could be the pH range of aqueous solution of the gas X?

28. **Case Study (internal choice in sub-part b)**

Sara's mother owns a bakery where different varieties of cakes are baked. They also prepare different kinds of breads in their bakery. For baking cakes and breads, she uses baking powder. However, Sara has also seen her mother using baking soda in her kitchen sometimes for cooking certain food items like crispy pakoras. Sara was curious about the two different things being used for cooking and asked her mother to explain the difference between the two

Based on the above information, answer the following questions

(a) How is baking soda different from baking powder?

(b) Write the reaction when baking soda gets heated at high temperature?

OR

(b) Which gas causes rising of cakes while baking? How can it be tested?

(c) If Sara's mother used baking soda instead of baking powder, how will it affect the taste of the cake and why?

29. **Attempt either option A or B.**

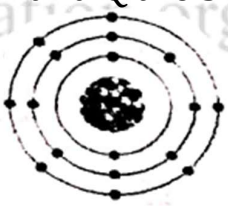
A. (i) A compound X is formed by the reaction of a carboxylic acid $C_2H_4O_2$ and an alcohol in presence of a few drops of H_2SO_4. The alcohol on oxidation with alkaline $KMnO_4$ followed by acidification gives the same carboxylic acid as used in this reaction. Give the names and structures of:
(a) carboxylic acid, (b) alcohol and
(c) the compound X.
Also write the reaction.

(II) Name the functional groups present in the following compounds:
(a) $CH_3COCH_2CH_2CH_2CH_3$ (b) $CH_3CH_2CH_2CH_2CHO$

OR

B. The electronic structures of atoms P and Q are shown below:

P



Q

Based on the information given above, answer the following questions:

(a) If P and Q combine to form a compound, what type of bond is formed between them?

(b) Give the chemical formula of the compound formed.

(c) The compound so formed is dissolved in water. What is the nature of the resultant solution? Justify your answer.

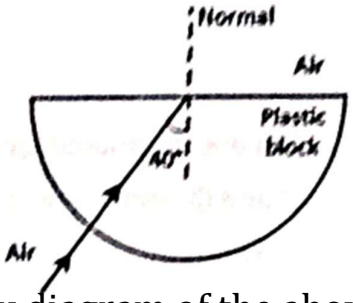
(d) Write the chemical equation for the reaction between 'P' and

ethanol.

(e) Show the bond formation in the electron dot structure of the elemental form of Q.

SECTION - C (PHYSICS)

30. How will the image formed by a convex lens be affected, if the upper half of the lens is wrapped with a black paper?
    (a) The size of the image will be reduced to half.
    (b) The image of the upper half of the object will not be formed.
    (c) The brightness of the image will reduce.
    (d) The lower half of the inverted image will not be formed.
31. Neha's parents are suffering from a vision defect. Her mother needs a lens of power +2D for correcting her near vision and her father needs a lens of +5D for correcting his far sightedness. Which of the following will be the ratio of the focal lengths of lenses required by her mother and father to correct these defects?
    (a) 2:1 (b) 1:5 (c) 1:2 (d) 5:2
32. Assertion (A): The deflection of a compass needle placed near a current carrying wire decreases when the magnitude of an electric current in the wire is increased.
    Reason (R): Strength of the magnetic field at a point due to a current Carrying conductor increases on increasing the current in the conductor.
33. Aditya sitting at the back bench in a class is not able to see what is written on the black board. He, however, sees it clearly when sitting on the front bench at an approximate distance of 1.5 m from the blackboard.
    Draw ray diagrams to show the image formation when he is seated at back bench: -
    (i) without wearing any corrective lens
    (ii) wearing a corrective lens of suitable power
34. Attempt either option A or B.
    A. (a) In the given figure, a light ray travels from air into the semi-circular plastic block. Give a reason why the ray does not refract at the semi-circular boundary of the plastic block.



(b) Complete the ray diagram of the above scenario when the light ray comes out of the plastic block from the top flat end.

OR

B. (a) How will the focal length of a mirror change when 'u' (object distance) is changed by moving the object towards or away from the mirror?

(b) A concave mirror produces a real image 6 cm tall of an object 2 cm tall placed at 10 cm from the mirror. Calculate the position of the image.

35. 1 (a) We wish to obtain an equal size inverted image of a candle flame on a screen kept at a distance of 4 m from the candle flame.

(1) Name the type of lens that should be used.

(II) Find the focal length of the lens.

(III) Draw a labelled diagram to show the image formation in this case.

(b) The image formed by a lens for all the positions of an object placed in front of it is always erect and diminished, what is the nature of the lens?

36. (a) Rakesh wanted to study V-I relationship for a nichrome wire. Draw the circuit diagram which Rakesh has employed in his experimental study.

(b) Name and state the law which can be verified by Rakesh's experimental setup.

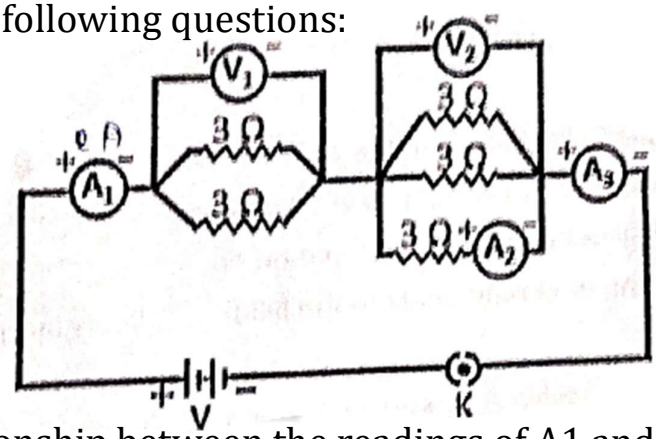
(c) Write one property of nichrome wire and state any one application of nichrome in the design of an electrical appliance such as electric iron / heater.

37. (a) Name any two phenomena that are observed when white light passes through a prism.

(b) Draw a labelled diagram to represent the above situation.

(c) A child observed a beautiful spectrum of colours when sunlight coming through the glass prism is allowed to fall on the wall. Name the colour of the spectrum which is scattered the (i) most (ii) least by the fine particles present in air.

38. <u>Case Study (Internal choice in sub-part c)</u>
Jyoti has five identical resistors of 30 each, three ammeters, two voltmeters, a plug key, connecting wires and a voltage source. She constructed a circuit as shown below. If the reading of the ammeter A1 is 2 A, answer the following questions:

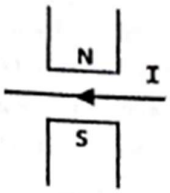


(a) What is the relationship between the readings of A1 and A3 ? Give reason for your answer.
(b) Differentiate between an ammeter and a voltmeter on the basis of its connection in the circuit diagram.
(c) Determine the reading of the voltmeter V1.

OR

(c) Find the total resistance of the circuit.

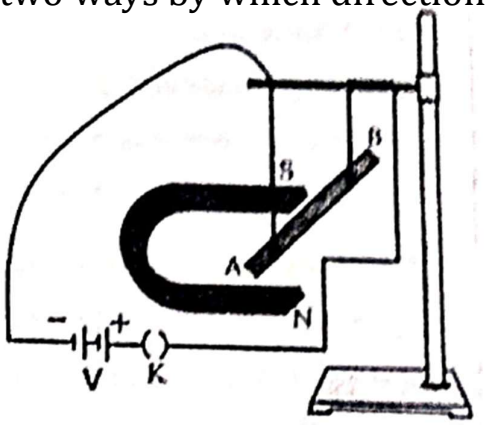
39. <u>Attempt either option A or B.</u>
A. (a) Draw a diagram to show the pattern of magnetic field produced by a current carrying solenoid.
(b) A current carrying wire is placed between north (N) and south (S) poles of a magnet as shown in the given figure. In which direction does the wire tend to move?



(c) Study the given experimental set-up carefully and answer the following questions:
(i) What happens to the rod AB placed in the magnetic field of

a U-shaped magnet then the key K is plugged in the circuit?

(ii) Write any two ways by which direction of force can be reversed.

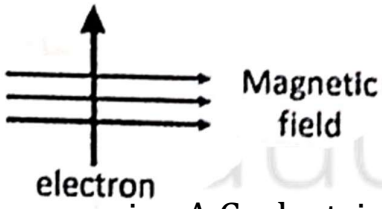


(iii) When will the magnitude of the force be highest?

OR

B. (a) State the rule used to find the force acting on a current carrying conductor placed in a magnetic field.

(b) A uniform magnetic field exists in the plane of the paper pointing from left to right as shown in the figure. Determine the direction of force on an electron if it enters at right angle to the field



(c) In our houses we receive A.C. electric power of 220 V. In electric iron or electric heater cables having three wires with insulation of three different colours - red, black and green are used to draw current from the mains.

(i) What are these wires called? Name them colour wise.

(ii) What is the potential difference between the red wire and black wire.

(iii) What is the role of the wire with green insulation in case of accidental leakage of electric current to the metallic body of an electrical appliance.

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