

Please check that this question paper contains 39 Questions and has 09 Printed pages.

Roll No. _____

D.A.V. INSTITUTIONS, CHHATTISGARH
PRACTICE PAPER
CLASS: X
SUBJECT: SCIENCE (086)

Time Allowed: 3 Hours

Maximum Marks: 80

General Instructions:

- (i) This question paper consists of **39 questions in 5 sections.**
- (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) **Section A** consists of **20 objective type questions carrying 1 mark each.**
- (iv) **Section B** consists of **6 Very Short questions carrying 02 marks each.** Answers to these questions should be in the range of 30 to 50 words.
- (v) **Section C** consists of **7 Short Answer type questions carrying 03 marks each.** Answers to these questions should be in the range of 50 to 80 words.
- (vi) **Section D** consists of **3 Long Answer type questions carrying 05 marks each.** Answer to these questions should be in the range of 80 to 120 words.
- (vii) **Section E** consists of **3 source-based/case-based units of assessment of 04 marks each with sub-parts.**

Section: A

(1 × 20 =20)

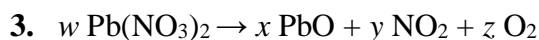
Select and write the most appropriate option out of the four options given for each of the questions 1 - 20. There is no negative mark for incorrect response.

1. In the given figure one lens is placed in each box. What is the nature of the lens?



- (a) a-Convex, b-concave (b) a-concave, b-convex (c) Both concave (d) Both convex

2. When white light enters a prism, it gets split into its constituent colours. This is due to :
- (a) different refractive index for different wavelength of each colour
 - (b) each colours has same velocity in the prism
 - (c) prism material have high density
 - (d) scattering of light



For which of the following values of w , x , y and z will the equation above be balanced?

- (a) $w=1, x=2, y=4, z=1$
- (b) $w=1, x=2, y=2, z=4$
- (c) $w=2, x=2, y=4, z=1$
- (d) $w=1, x=2, y=4, z=1$

4. Identify the oxidising and reducing agent in the given chemical reaction.



- (a) Oxidising agent : HCl and Reducing agent : MnO_2
- (b) Oxidising agent : MnO_2 and Reducing agent : HCl
- (c) Oxidising agent : MnCl_2 and Reducing agent : Cl_2
- (d) Oxidising agent : Cl_2 and Reducing agent : MnCl_2

5. Common salt, besides being used in kitchen, can also be used as raw material for making

- (i) Washing soda
- (ii) Bleaching powder
- (iii) Baking soda
- (iv) Gypsum

- (a) (i) and (ii) (b) (i) ,(ii) and (iv) (c) (i) and (iii) (d) (i) ,(iii) and (iv)

6. When dilute sulphuric acid is added to a solid 'X', a gas 'Y' is formed along with the formation of salt of the solid. What could be X and Y?

- (a) X : carbon ; Y : hydrogen
- (b) X : zinc ; Y : hydrogen
- (c) X : zinc ; Y : oxygen
- (d) X : silver ; Y : hydrogen

7. Butanone is a four carbon compound with functional group

- (a) Carboxylic acid
- (b) Aldehyde
- (c) Ketone
- (d) Alcohol

8. Name two metals both of which are very ductile as well as malleable.

(a) Gold and copper

(b) Gold and silver

(c) Silver and copper

(d) None of these

9. Tick the arrangement of metals Fe, Cu, Zn, Ag in the order of decreasing reactivity.

(a) Fe > Cu > Zn > Ag

(b) Cu > Fe > Zn > Ag

(c) Ag > Zn > Fe > Cu

(d) Zn > Fe > Cu > Ag

10. Correct sequence of anaerobic respiration in our muscles cell is

(a) Glucose → Pyruvate → Ethanol + CO₂ + Energy

(b) Glucose → Pyruvate → Lactic acid + CO₂ + Energy

(c) Glucose → Pyruvate → H₂O + CO₂ + Energy

(d) Glucose → Pyruvate → Lactic acid + Energy

11. Which of the following statements are **correct**

(i) Carnivores have shorter small intestine than herbivores

(ii) Mucus protects stomach from the action of acid

(iii) Enzyme Amylase is produced by salivary gland

(a) (i) and (ii)

(b) (i) and (iii)

(c) (ii) and (iii)

(d) (i), (ii) and (iii)

12. Growth of pollen tube towards ovule is an example of

(a) Thigmotropism

(b) Phototropism

(c) Chemotropism

(d) Hydrotropism

13. If a pea plant with wrinkled seeds and heterozygous tall plants were self-pollinated, what *will* be the phenotypes of plants of F₂ generation ?

(a) 75% plants will be tall and have wrinkled seeds and other 25% will be dwarf with wrinkled seeds

(b) 50% plants will be tall and have wrinkled seeds and other 50% will be dwarf with wrinkled seeds

(c) 50% plants will be tall and have wrinkled seeds and other 50% will be dwarf with wrinkled seeds

(d) 25% plants will be tall and have wrinkled seeds and other 75% will be dwarf with wrinkled seeds

14. Which part of a flower develops into seed?

(a) Sepal

(b) Petal

(c) Ovary

(d) Ovule

15. What will happen if deer is missing in the food chain given below?

Grass → Deer → Tiger

- (a) the population of tiger increases
- (b) the population of grass decreases
- (c) tiger will start eating grass
- (d) the population of tiger decreases and the population of grass increases

16. The decomposers in an ecosystem :

- (a) convert organic material to simpler forms
- (b) convert organic material to inorganic forms
- (c) convert inorganic materials into organic compounds
- (d) do not breakdown organic compounds

In question number 16 to 20 a statement of assertion followed by a statement of reason is given.

Choose the correct answer.

- (a) Assertion and reason both are correct and reason is correct explanation for assertion.*
- (b) Assertion and reason both are correct but reason is not correct explanation for assertion.*
- (c) Assertion is correct but reason is false.*
- (d) Both assertion and reason are false.*

17. Assertion : After white washing, a shiny white finish on walls is obtained after 2 to 3 days.

Reason : Calcium oxide reacts with carbon dioxide to form calcium hydrogen carbonate which gives shiny white finish.

18. Assertion (A) : Reproduction involves creation of DNA copy and additional cellular apparatus by the cell involved in the process.

Reason (R): DNA copying mechanism creates variations which are useful for ensuring the survival of the species.

19. Assertion (A) : The strength of the magnetic field produced at the centre of a current-carrying circular coil increases on increasing the number of turns of the circular coil.

Reason (R) : Magnetic field strength is directly proportional to the number of turns of the circular coil.

20. Assertion (A): The trophic level in a food chain should be limited.

Reason (R) : There is a loss of energy as we go from one trophic level to the next, this limits the number of trophic levels in a food chain.

Section: B

21. Give reason for the following: (2)

- (a) Only one half of the water molecule is shown in the formula of Plaster of Paris.
- (b) On strong heating blue coloured copper sulphate crystals turn white.

OR

A shiny brown coloured element 'X' on heating in air becomes black in colour. Name the element 'X' and the black coloured compound formed. Also write the balanced chemical equation.

22. How is O₂ and CO₂ transported in human being? (2)

23. What are the functions of acid in stomach? (2)

24. An optician prescribed a corrective lens of power +2 D. What is the type of the lens prescribed?

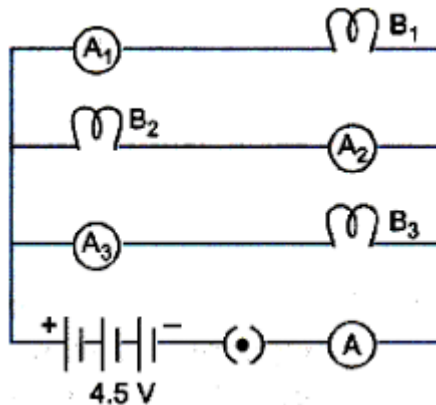
Calculate the focal length of the lens.

(2)

25. B₁, B₂ and B₃ are three identical bulbs connected as shown in the figure. When all the three bulbs glow, current of 3 A is recorded by the ammeter A.

(2)

- (a) What happens to the glow of the other two bulbs when the bulb B₁ gets fused?
- (b) What happens to the reading of A₁, A₂, A₃ and A when the bulb B₂ gets fused?



Or

A compass needle is placed near a current carrying straight conductor. State your observation for the following cases and give reasons for the same in each case.

- (a) Magnitude of electric current is increased.
- (b) The compass needle is displaced away from the conductor.

26. Human beings are most adversely affected by the biological magnification. State the reason. Why can ordinary washing of the edibles (fruits and vegetables) not reduce the effect of biological magnification? (2)

Section: C

27. A chemical compound 'X' is used in the soap and glass industry. It is prepared from brine. (3)
- (a) Write the chemical name, common name and chemical formula of 'X'.
 - (b) Write the equation involved in its preparation.
 - (c) What happens when it is treated with water containing Ca and Mg salts?
28. Differentiate between calcination and roasting with suitable example. (3)
29. Name the source gland and write one function of following hormones. (3)
- (a) Growth hormone
 - (b) Insulin
 - (c) Thyroxin
30. A woman having blood group B marries a man having blood group A and they have four offspring. Two children are having blood group O, one having blood group B and other having blood group AB. Now, answer the following :
- (i) Which blood group is dominant ?
 - (ii) Which blood group is recessive?
 - (iii) What are the genotypes of parents ?
31. With the help of labelled diagram explain the mechanism of formation of rainbow. (3)
- OR**
- Explain the reason why stars appear to twinkle and planets do not twinkle.
32. Show how would you join three resistors, each of resistance $9\ \Omega$ so that the equivalent resistance of the combination is (i) $13.5\ \Omega$ (ii) $6\ \Omega$?
33. What is a solenoid? Draw the pattern of magnetic field lines of (i) a current-carrying solenoid and (ii) a bar magnet. List two distinguishing features between the two fields.

Section: D

34. (a) Two carbon compounds X and Y have the molecular formula C_4H_8 and C_5H_{12} respectively. Which one of these is most likely to show addition reaction? Justify your answer. Also, give the chemical equation to explain the process of addition reaction in this case.
- (b) On dropping a small piece of sodium in a test tube containing carbon compound X with molecular formula C_2H_6O , a brisk effervescence is observed and a gas Y is produced. On bringing a burning splinter at the mouth of the test tube the gas evolved burns with a pop sound. Identify X and Y. Also, write the name and structure of the product formed, when you heat X with excess concentrated sulphuric acid.

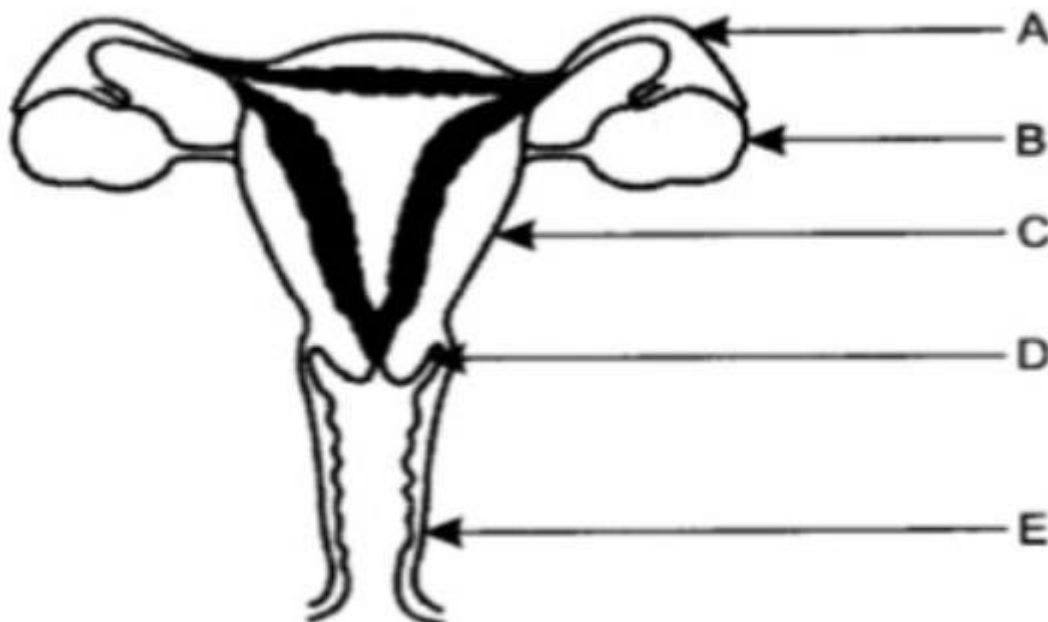
Or

- (a) (i) Which of the following will burn with a yellow flame: C_2H_5OH , C_2H_4 or C_2H_6 ?
- (ii) Write a balanced chemical equation to show the burning of ethanol in oxygen.
- (iii) Name an oxidizing agent which can convert ethanol to ethanoic acid.
- (b) When ethanol reacts with ethanoic acid in the presence of cone. H_2SO_4 a substance with fruity smell is produced. Based on this, answer the following :
- (i) State the class of compounds to which the fruity smelling compounds belong. Write the chemical equation for the reaction and write the chemical name of the product formed.
- (ii) State the role of cone. H_2SO_4 in this reaction.

35. (a) What are sexually transmitted diseases? Name an STD which damages the immune system of human body.
- (b) Regeneration is not possible in all types of animals. Why?
- (c) Define the term pollination. Differentiate between self pollination and cross pollination. What is the significance of pollination ?

Or

35. (a) Name the parts labelled as A, B, C, D and E in the given diagram. Also write one function of each part.



36. A concave lens of focal length 60cm is used to form an image of an object of length 9cm kept at a distance of 30cm from it. Use lens formula to determine the nature, position and length of the image formed. Also draw labelled ray diagram to show the image formation in the above case.

OR

It is desired to obtain an erect image of an object, using concave mirror of focal length of 12 cm.

- (i) What should be the range of distance of an object placed in front of the mirror?
- (ii) Will the image be smaller or larger than the object? Draw ray diagram to show the formation of image in this case.
- (iii) Where will the image of this object be, if it is placed 24 cm in front of the mirror? Draw ray diagram for this situation also to justify your answer. Show the positions of pole, principal focus and the centre of curvature in the above ray diagrams.

Section: E

37. Students performed an activity in the chemistry lab and recorded the observation as shown in the table.

S.N.	Solution	Colour of pH paper	pH Value (Approx.)	Nature of the substance
1.	Saliva (before meal)	Green	6.8-7.4	Slightly Acidic
2.	Saliva (after meal)	Yellow Green	5.8	Acidic
3.	Lemon Juice	Orange	2.2	Acidic
4.	Colourless aerated drink	Yellow	4	Acidic
5.	Carrot Juice	Yellow green	6	Acidic
6.	Coffee	Yellow	4.5	Acidic
7.	Tomato Juice	Yellow	4.3	Acidic
8.	Tap Water	Green	6-8.5	Varied
9.	1M NaOH	Dark Blue	14	Basic
10.	1M HCl	Red	1	Acidic

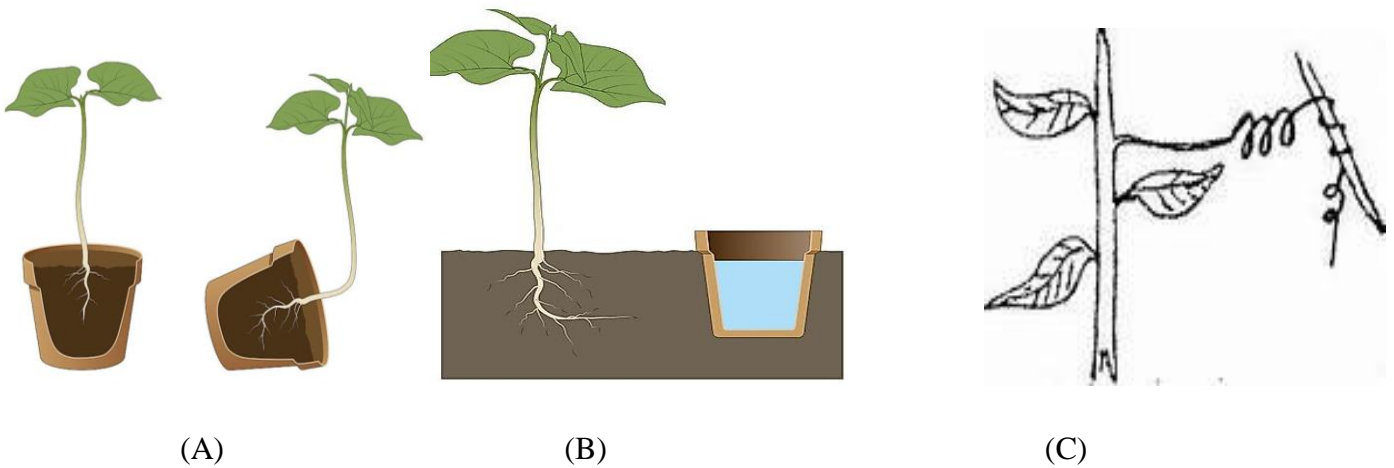
- (a) Arrange the following in the decreasing order of their H^+ ion concentration: (1)
Carrot juice, Tomato Juice, Coffee, Lemon Juice, NaOH.
- (b) What is the pH of acid rain? (1)
- (c) What is milk of magnesia? What is its use? (2)

OR

What is tooth decay? How toothpaste can prevent us from tooth decay?

38. Higher plants can't show locomotion as roots anchor the plant to the ground. However plant parts can show various types of movements in response to stimuli. There are phytohormones in plant to facilitate various movements. Mimosa plant closes its leaves when someone

touches it, leaves of some plants get closed at night, sunflower face towards the sun etc. are some examples of plant movements.



- (a) Which of the above diagram represents Hydrotropism? (1)
- (b) Name a plant hormone that inhibits growth. (1)
- (c) Explain why do plant bends towards sunlight? (2)

OR

How do auxin promote the growth of tendril around a support?

39. The rate of doing work or rate of consumption of energy is called as power. Here, the rate at which electric energy dissipated or consumed in an electric circuit is called as electric power.

And it is given by $P = VI$. The SI unit of electric power is watt.

- (a) What is the SI unit of electric energy? (1)
- (b) What is the relation between SI unit and Commercial unit of electric energy? (1)
- (c) What do you mean by overloading and short-circuit? (2)

OR

If a bulb is working at a voltage of 200 V and the current is 1 A. then what is the power of the bulb ?