

Sub. Code: 086

Roll No. _____

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

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.

SECTION-A

Select and write one 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. Blue colour of copper sulphate changes to pale green upon addition of Iron nails. Which type of reaction is this?
 - (a) Displacement reaction
 - (b) Double displacement reaction
 - (c) Precipitation reaction
 - (d) Both (b) and (c)

2. When lead nitrate is heated, a brown gas is evolved, the evolved gas is:

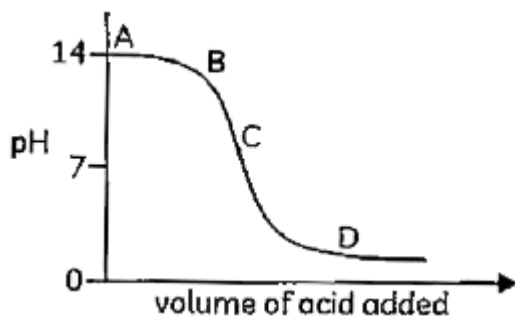
- (a) Nitric oxide (b) Nitrous oxide
(c) Nitrogen dioxide (d) Nitrogen pentoxide

3. Observe the table and indicate the correct option :

Name of the salt	Formula	Salt obtained form	
		Base	Acid
Ammonium chloride	NH_4Cl	NH_4OH	M
Copper sulphate	K	L	H_2SO_4
Sodium Chloride	NaCl	NaOH	N

- (a) K - $\text{Cu}(\text{OH})_2$; L - CuSO_4 ; M - HCl ; N - HCl (b) K - CuSO_4 ; L - $\text{Cu}(\text{OH})_2$; M - HCl ; N - HCl
(c) K - HCl ; L - HCl ; M - CuSO_4 ; N - $\text{Cu}(\text{OH})_2$ (d) K - CuSO_4 ; L - HCl ; M - $\text{Cu}(\text{OH})_2$; N - HCl

4. The graph below depicts dilution of an acid. The pH of a solution changes on dilution.



Which letter indicates the area of the graph with more dilution?

- (a) A (b) B (c) C (d) D

5. A copper sulphate solution is added to a test tube containing a cleaned iron nail. The correct description regarding the deposition of copper on the iron nail would be that it starts depositing:

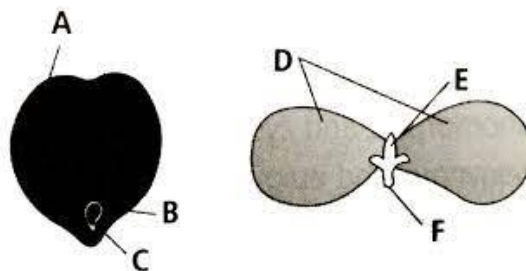
- (a) at the top of the nail (b) from the head of the nail
(c) in the middle of the nail (d) anywhere on the nail

6. Silver articles become black on prolonged exposure to air. This is due to the formation of :
 (a) Ag_3N (b) Ag_2O (c) Ag_2S (d) Ag_2S and Ag_3N
7. Galvanisation is a method of protecting iron from rusting by coating with a thin layer of :
 (a) Gallium (b) Aluminum (c) Zinc (d) Silver
8. Correct sequence of anaerobic respiration in our muscles cell is
 (a) Glucose \rightarrow Pyruvate \rightarrow Ethanol + CO_2 + Energy
 (b) Glucose \rightarrow Pyruvate \rightarrow Lactic acid + CO_2 + Energy
 (c) Glucose \rightarrow Pyruvate \rightarrow H_2O + CO_2 + Energy
 (d) Glucose \rightarrow Pyruvate \rightarrow Lactic acid + Energy
9. Observe the figure carefully. What does the parts X, Y, Z represents? Choose the correct option.

- (a) X - Adrenal gland; Y-Pituitary gland; Z - Hypothalamus
 (b) X-Thyroid gland; Y - Pituitary gland; Z - Pancreas
 (c) X - Thyroid gland; Y - Adrenal gland; Z - Pancreas
 (d) X-Thyroid gland; Y - Pituitary gland; Z- Hypothalamus



10. Observe the figure carefully and choose the correct labelling from the options provided in the box.



D	E	F
(a) Radicle	Plumule	Cotyledon
(b) Plumule	Cotyledon	Radicle
(c) Seed coat	Radicle	Plumule
(d) Cotyledon	Plumule	Radicle

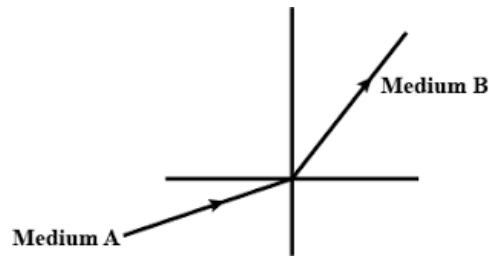
11. A cross between a tall plant (TT) and a short pea plant (tt) resulted in progeny that were all tall plants because:
 a. tallness is the dominant trait
 b. shortness is the dominant trait
 c. tallness is the recessive trait
 d. height of pea plant is not governed by gene 'T' or 't'

12. 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

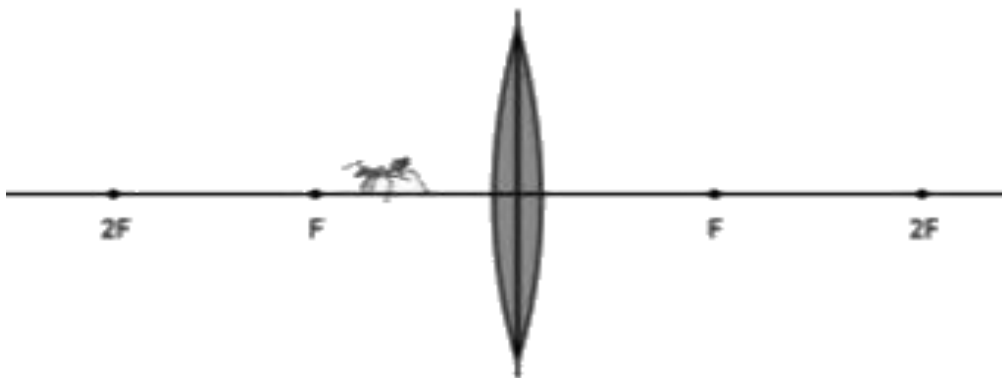
- (a) (i) and (ii) (b) (i) and (iii) (c) (ii) and (iii) (d) (i), (ii) and (iii)

13. A light ray enters from medium A to medium B as shown in figure. The refractive index of medium B relative to A will be :



- (a) greater than unity
- (b) less than unity
- (c) equal to unity
- (d) zero

14. An ant is in front of a convex lens as shown below. Which of the following image is correct?



- (a) (b) (c) (d)

15. Which of the following limits the number of trophic levels in a food chain ?

- (a) decrease in energy at higher trophic levels
- (b) deficient food supply
- (c) polluted air
- (d) water

16. In the given food chain, suppose the amount of energy at fourth trophic level is 5kj, what will be the energy available at the producer level ?

Grass → Grasshopper → Frog → Snake → Hawk
(a) 5 kJ (b) 50 kJ (c) 500 kJ (d) 5000 kJ

Question No. 17 to 20 consist of two statements - Assertion (A) and Reason (R).

Answer these questions selecting the appropriate option given below:

- (a) Both A and R are true and R is the correct explanation of A
(b) Both A and R are true and R is not the correct explanation of A
(c) A is true but R is false
(d) A is false but R is true

17. **Assertion (A):** A reduction occurs when a substance loses oxygen or gain hydrogen atom.
Reason (R): in a reaction of hydrogen with chlorine, hydrogen serve as a reducing agent.
18. **Assertion (A):** Decomposers act as cleaning agents of environment.
Reason (R): The decomposers recycle waste material in hydrosphere.
19. **Assertion (A):** A current-carrying wire deflects a magnetic needle placed near it.
Reason (R): A magnetic field exists around a current carrying wire.
20. **Assertion (A):** Sexual reproduction involves two parents of different sexes (a male and a female), which produce male and female gametes respectively.
Reason (R): The male and female gametes fuse to form a zygote in sexual reproduction, which develops into a new individual.

SECTION-B

Question No. 21 to 26 are very short answer questions.

21. The smell and taste of food containing fats and oils changes after sometimes. Why does this happen? Name the process.
22. Does genetic combination of mother play a significant role in determining the sex of a new born ? Give reason to justify your answer.
23. What are the components of the transport system in human beings? What are the functions of these components?

Or

What are the necessary conditions for autotrophic nutrition? What are its by products?

24. An object is placed at a distance of 30 cm in front of a convex mirror of focal length 15 cm. Write four characteristics of the image formed by the mirror.
25. (a) Why is tungsten used for making bulb filaments of incandescent lamps?
(b) Name any two electric devices based on heating effect of electric current.

Or

What is heating effect of current? List two electrical appliances which work on this effect.

26. Compare the advantages of cloth bags over polythene bags.

SECTION-C

Question No. 27 to 33 are short answer questions.

27. Define alloys. List the properties of alloys that makes them useful over pure metals. Explain this fact with suitable examples.
28. (a) Name two metals which react with dil. HNO_3 to evolve H_2 gas.
(b) Why oxides of high reactive metals cannot be reduced by carbon?
(c) What is formed when sodium absorbs moisture from air? Give equation also.

Or

- (a) Why the sulphide and carbonate ores are converted into oxides?
- (b) From amongst the metals sodium, calcium, aluminum, copper and magnesium, name the metal :
(i) Which reacts with water only on boiling, and
(ii) another which does not react even with steam.
29. (a) Name the part of brain which controls
(i) voluntary action (ii) involuntary action
(b) What is the significance of the peripheral nervous system ? Name the components of this nervous system and distinguish between the origin of the two.
30. A cross was carried out between a pure bred tall pea plant and a pure bred dwarf pea plant and F_1 progeny was obtained. Later, the F_1 progeny was selfed to obtain F_2 progeny. Answer the following questions:
(a) What is the phenotype of the F_1 progeny and why?
(b) Give the phenotypic ratio of the F_2 progeny.
(c) Why is the F_2 progeny different from the F_1 progeny?
31. List two possible ways in which a concave mirror can produce a magnified image of an object placed in front of it. State the difference: if any between these two images.

32. Draw a labelled circuit diagram showing three resistors R1, R2 and R3 connected in series with a battery (E), a rheostat (Rh), a plug key (K) and an ammeter (A) using standard circuit symbols. Use this circuit to show the same current flows through every part of the circuit. List two precautions you would observe While performing the experiment:
33. Give reason for the following:
- (i) There is either a convergence or a divergence of magnetic field lines near the ends of a current-carrying straight solenoid.
 - (iii) The current-carrying solenoid when suspended freely rests along a particular direction.

SECTION-D

Question No. 34 to 36 are long answer questions.

34. (a) A compound 'X' undergoes addition reaction with H_2 to form a compound 'Y' having molecular mass 30 g mol^{-1} . 'X' decolourises bromine water and burns with a smoky flame. Identify 'X' and 'Y' and write chemical equations of the reactions involved.
- (c) Write the structural formulae of (i) Butanone, and (ii) Pentanoic acid,
- (d) Would you be able to check if water is hard by using a detergent? Give reason to justify your answer.

Or

- (a) Draw electron dot structure of methane molecule.
- (b) Identify the functional groups present in the following compounds:
- (i) C_2H_6O (ii) C_2H_4O
- (c) A mixture of oxygen and ethyne is burnt for welding. Why do you think a mixture of ethyne and air is not used for welding?
35. Some organisms have the capacity of reproducing by using a single parent. Such organisms have a simple body structure.
- (i) What is this method called ?
 - (ii) Name any four types of this method.
 - (iii) Give two examples of organisms using this method for reproduction.
- (b) Identify the method of reproduction used by- Spirogyra and Rhizopus.

Or

- (a) Define reflex arc. Draw a flow chart showing the sequence of events which occur during sneezing.

(b) List four plant hormones. Write one function of each.

36. The linear magnification produced by a spherical mirror is $+1/3$. Analysing this value state the (i) type of mirror and (ii) position of the object with respect to the pole of the mirror. Draw any diagram to justify your answer.

Or

The image formed by a spherical mirror is real, inverted and its magnification is -2 . If the image is at a distance of 30 cm from the mirror, where is the object placed? Find the focal length of the mirror. List two characteristics of the image formed if the object is moved 10 cm towards the mirror.

SECTION-E

Question No. 37 to 39 are case-based/data-based questions with 2 to 3 short sub-parts.

Internal choice is provided in one of these sub-parts.

37. Ethyne is an unsaturated hydrocarbon which can be represented by the general formula C_nH_{2n-2} . All the members of alkynes can be prepared by the similar methods of preparation.
- (a) Write the molecular formula of ethyne.
 - (b) Draw electron dot structure of ethyne.
 - (c) A mixture of oxygen and ethyne is burnt for welding. Can you tell why a mixture of ethyne and air is not used?

Or

Give a balanced equation to show oxidation of ethyne.

38. Mendel crossed a pea plant having inflated green pod with a constricted yellow pod.
- (a) What type of a cross is it?
 - (b) What types of plants are obtained in F_1 generation?
 - (c) In F_2 generation, the phenotype ratio is 9:3:3:1. State the rule for the inheritance of traits observed by Mendel.

Or

Mendel observed a contrasting trait in relation to position of flowers. Mention that trait.

39. The current in the conductor is directly proportional to the potential difference across the conductor provided physical conditions of the conductor, i.e., temperature, length, cross-sectional area and material does not change.

$$I \propto V$$

Putting the proportionality constant (R), we get $I = V/R$ or $V = IR$, where R is a constant called resistance conductor. Substances which follow Ohm's law are called ohmic substance. For ohmic substances, the slope of I versus V graph is a constant. Substances which do not follow Ohm's law are called non-ohmic substance. For non-ohmic substances, the slope of I versus V graph is not a constant. A student wants to check experimentally how the resistance of a lamp varies with the length of the wire. Two sets of readings obtained by him, are as shown.

Voltmeter reading V volt	Ammeter reading I (A)	Resistance, R (W)
0.4	0.2	
3.2	1.0	

- (a) What is the resistances of the two lamps ?
- (b) Before the flow of current through the lamp, what is the reading on the voltmeter?
- (c) Draw a graph for an ohmic conductor.

Or

What are the factors on which electrical resistance of a conductor depends?