

Sample Question Paper - 3



Time: 3 Hours

Maximum Marks: 80

Topic: CBSE 10 (Science)

General Instructions:

- (i) The question paper comprises four sections A, B, C and D. There are 36 questions in the question paper. All questions are compulsory.
- (ii) **Section – A** - Question no. 1 to 20 - all questions and parts thereof are of one mark each. These questions contain multiple choice questions (MCQs), very short answer questions and assertion - reason type questions. Answers to these should be given in one word or one sentence.
- (iii) **Section – B** - Question no. 21 to 26 are short answer type questions, carrying 2 marks each. Answers to these questions should be in the range of 30 to 50 words.
- (iv) **Section – C** - Question no. 27 to 33 are short answer type questions, carrying 3 marks each. Answers to these questions should be in the range of 50 to 80 words.
- (v) **Section – D** - Question no. 34 to 36 are long answer type questions carrying 5 marks each. Answers to these questions should be in the range of 80 to 120 words.

Section – A

1. 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 sodium hydroxide
 - (iv) It has a pungent odour

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

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OR

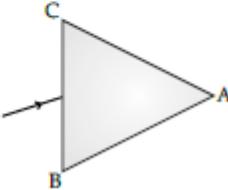
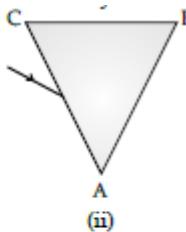
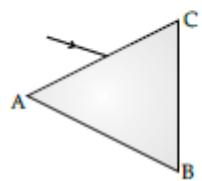
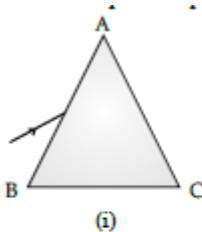
Aluminium is used for making cooking utensils. Which of the following properties of aluminium are responsible for the same ?

- | | |
|-------------------------------|-----------------------------------|
| (i) Good thermal conductivity | (ii) Good electrical conductivity |
| (iii) Ductility | (iv) High melting point |
| (a) (i) and (ii) | (b) (i) and (iii) |
| (c) (ii) and (iii) | (d) (i) and (iv) |

2. On which factor does the colour of the scattered white light depend?
3. What is genetics ?
4. What is the role of acid in our stomach?
5. Select the mismatched pair in the following and correct it.
 - (a) Bio-magnification — Accumulation of chemicals at the successive trophic levels of a food chain
 - (b) Ecosystem — Biotic components of environment
 - (c) Aquarium — A man-made ecosystem
 - (d) Parasites — Organisms which obtain food from other living organisms
6. A spherical mirror and a thin spherical lens have each a focal length of – 15 cm. The mirror and the lens are likely to be
 - (a) both concave
 - (b) both convex
 - (c) the mirror is concave and the lens is convex
 - (d) the mirror is convex, but the lens is concave
7. At noon the sun appears white as
 - (a) light is least scattered
 - (b) all the colours of the white light are scattered away
 - (c) blue colour is scattered the most
 - (d) red colour is scattered the most

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8. On which factor does the colour of the scattered white light depend?
9. A prism ABC (with BC as base) is placed in different orientations. A narrow beam of white light is incident on the prism as shown in Figure. In which of the following cases, after dispersion, the third colour from the top corresponds to the colour of the sky ?



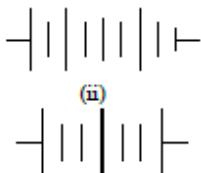
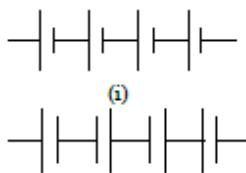
(a) (i)

(b) (ii)

(c) (iii)

(d) (iv)

10. The proper representation of series combination of cells obtaining maximum potential is



(a) (i)

(b) (ii)

(c) (iii)

(d) (iv)

OR

Which of the following represents voltage ?

(a) $\left(\frac{\text{Work done}}{\text{Current} \times \text{Time}} \right)$

(b) Work done \times Charge

(c) $\frac{\text{Work done} \times \text{Time}}{\text{Current}}$

(d) $\frac{\text{Work done} \times \text{Change}}{\text{Time}}$

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11. What is the maximum resistance which can be made using five resistors each of $1/5 \Omega$?

- (a) $1/5 \Omega$ (b) 10Ω
 (c) 5Ω (d) 1Ω

12. Choose the incorrect statement from the following regarding magnetic lines of field?

- (a) The direction of magnetic field at a point is taken to be the direction in which the north pole of a magnetic compass needle points.
 - (b) Magnetic field lines are closed curves.
 - (c) If magnetic field lines are parallel and equidistant, they represent zero field strength.
 - (d) Relative strength of magnetic field is shown by the degree of closeness of the field lines.

OR

Which of the following property of a proton can change while it moves freely in a magnetic field? (There may be more than one correct answer.)

13. 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.

OR

Organisms of a higher trophic level which feed on several types of organisms belonging to a lower trophic level constitute the _____

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Directions : For question numbers 14 and 16, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below?

14. Assertion (A) : To dilute concentrated sulphuric acid water is added to the acid slowly.

Reason (R) : A lot of heat energy will be given out in the dilution of concentrated sulphuric acid.

15. Assertion (A) : Gas bubbles are observed when sodium carbonate is added to dilute hydrochloric acid.

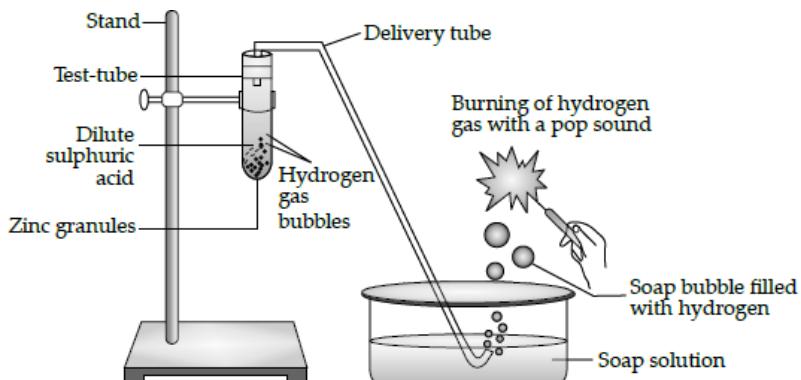
Reason (R) : Carbon dioxide is given off in the reaction.

16. Assertion (A) : Two bar magnets attract when they are brought near to each other with the same pole.

Reason (R) : Unlike poles will attract each other.

Directions : Q. No 17 - 20 contain five sub-parts each. You are expected to answer any four subparts in these questions.

17. Study the given experimental set-up and answer any four questions.



- (a) The above experimental set up shows reaction between metal and
- | | |
|--------------------------------|----------------------|
| (i) Acid | (ii) Metal carbonate |
| (iii) Metal hydrogen carbonate | (iv) Metal oxide |

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(b) Which gas is liberated during the process?

- | | |
|--------------------|----------------------------|
| (i) Hydrogen gas | (ii) Carbon dioxide gas |
| (iii) Nitrogen gas | (iv) Hydrogen sulphide gas |

(c) Identify the balanced chemical equation for the given reaction.

- (i) $\text{Zn} + \text{H}_2\text{SO}_4 \rightarrow \text{ZnSO}_4 + \text{H}_2$
 - (ii) $2\text{Zn} + 2\text{H}_2\text{SO}_4 \rightarrow 2\text{ZnSO}_4 + 2\text{H}_2$
 - (iii) $\text{Zn} + 2\text{H}_2\text{SO}_4 \rightarrow 2\text{ZnSO}_4 + \text{H}_2$
 - (iv) $2\text{Zn} + \text{H}_2\text{SO}_4 \rightarrow 2\text{ZnSO}_4 + \text{H}_2$

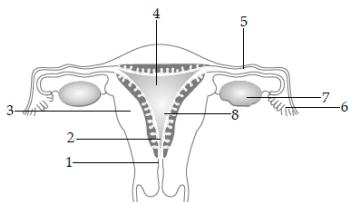
(d) What will happen if NaOH is used in place of dil. sulphuric acid and the test tube is heated?

- (i) It will produce sodium zincate (salt) and hydrogen gas.
 - (ii) It will produce sodium sulphate and hydrogen gas.
 - (iii) It will produce sodium zincate (salt) and carbon dioxide gas.
 - (iv) It will produce sodium sulphate and carbon dioxide gas.

(e) How will you test for the gas evolved?

- (i) Bring a glowing splint near test tube, it will reignite.
 - (ii) Bring moist litmus paper is placed in a test tube of this gas, it turns red.
 - (iii) Bring a burning splint near the opening of a test tube containing this gas, a popping sound occurs.
 - (iv) Using universal litmus solution.

18. The given diagram represents female reproductive system. Study the diagram and answer any four questions.



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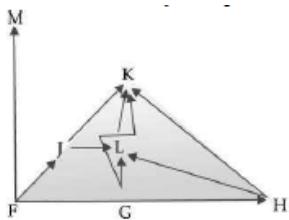


19. From the following part of the periodic table, answer any of the four questions:

1 Lithium	2	13	14 Carbon	15	16 Oxygen	17 Fluorine
X			P			Q
Y						R
Z						T

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20. Study the following food web and answer any four questions.



(a) Which of these is the producer?

- | | |
|---------|--------|
| (i) K | (ii) L |
| (iii) J | (iv) G |

(b) Which organisms are primary consumers?

- | | |
|-----------------|-----------------|
| (i) F, L, H, K | (ii) M, K, J, H |
| (ii) J, L, K, M | (iv) F, K, M, H |

(c) Which organisms will receive maximum energy in the ecosystem?

- | | |
|---------|--------------------|
| (i) M | (ii) K |
| (iii) G | (iv) None of these |

(d) Which organisms represent top level carnivores?

- | | |
|---------|------------------------|
| (i) K | (ii) M |
| (iii) G | (iv) Both (i) and (ii) |

(e) What will happen if we kill all the organisms in one trophic level?

- (i) Population of organisms in previous trophic level will increase.
- (ii) Population of organism in previous trophic level will decrease.
- (iii) Population of organism in next trophic level will increase.
- (iv) This will not affect the population of any trophic level.

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Section – B

21. Give the respective scientific terms used for studying :

- (i) the mechanism by which variations are created and inherited and,
- (ii) the development of new type of organisms from the existing ones.

Write two main differences between an acid and a base?

22. State the modern periodic law for classification of elements. How many (a) groups and (b) periods are there in the modern periodic table?

23. What is DNA copying ? State its importance.

OR

“The number of trophic levels in a food chain is limited.” Give reason to justify this statement

24. (i) Define dispersion of light.

- (ii) Name the colour that deviates least and the one which deviates most while passing through a glass prism. What is scattering of light? Explain with the help of an example.

OR

What are magnetic field lines? How is the direction of magnetic field at a point in a magnetic field determined using field lines?

25. List four characteristics of the image formed by plane mirrors.

26. State one difference between Kilowatt and Kilowatt hour? Express 1 kWh in joules.

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Section – C

27. Write balanced chemical equations for the following reactions ?

- (i) dilute sulphuric acid reacts with aluminium powder.
- (ii) dilute hydrochloric acid reacts with sodium carbonate.
- (iii) Carbon-dioxide is passed through lime water

28. Write the names given to the vertical columns and horizontal rows in the Modern Periodic Table. How does the metallic character of elements vary on moving down a vertical column? How does the size of atomic radius vary on moving left to right in a horizontal row? Give reason in support of your answer in the above two cases.

29. Explain the processes of aerobic respiration in mitochondria of a cell and anaerobic respiration in yeast and muscle with the help of word equations ?

30. (a) Budding, fragmentation and regeneration, all are considered as asexual mode of reproduction. Why ?

(b) With the help of neat diagrams, explain the process of regeneration in Planaria?

OR

Mention the total number of chromosomes along with the sex chromosomes that are present in a human female and a human male ? Explain how in sexually producing organisms the number of chromosomes in the progeny remains the same as that of the parents ?

31. Name the plant Mendel used for his experiment? What type of progeny was obtained by Mendel in F_1 and F_2 generations when he crossed the tall and short plants? Write the ratio he obtained in F_2 generation plants.

32. What is meant by power of a lens ? Write the SI unit ? A student uses a lens of focal length 40 cm and another of – 20 cm. Write the nature and power of each lens ?

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33. What is meant by Solenoid ? How does a current carrying Solenoid behave ?

Section – D

34. What is methane? Draw its electron dot structure. Name the type of bonds formed in this compound. Why are such compounds:

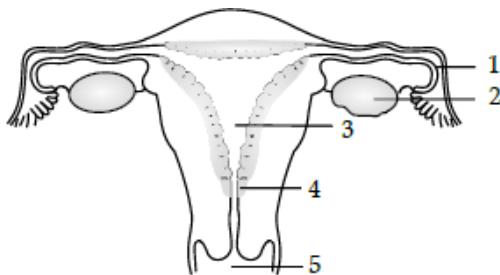
- (i) poor conductors of electricity ? and
 - (ii) have low melting and boiling points ? What happens when this compound burns in oxygen?
- (b) State two ways to prevent the rusting of iron.

OR

Explain giving justification the trends in the following properties of elements, on moving from left to right in a period, in the Modern periodic Table ?

- (a) Variation of valency. (b) Change of atomic radius.
- (c) Metallic to non-metallic character. (d) Electronegative character.
- (e) Nature of oxides.

35. (a) Identify the given diagram? Name the parts 1 to 5.



(b) What is contraception? List three advantages of adopting contraceptive measures :

OR

- (i) Describe the role of prostate gland, seminal vesicle and testes in the human male reproductive system?
- (ii) How is the surgical removal of unwanted pregnancies misused?
- (iii) Explain the role of oral contraceptive pills in preventing conception

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- 36.** A student wants to project the image of a candle flame on the walls of the school laboratory by using a mirror.
- (i) Which type of mirror should he use and why ?
 - (ii) At what distance, in terms of focal length 'f' of the mirror, should he place the candle flame to get the magnified image on the wall ?
 - (iii) Draw a ray diagram to show the formation of the image in this case.
 - (iv) Can he use this mirror to project a diminished image of the candle flame on the same wall? State 'how' if your answer is 'yes' and 'why not' if your answer is 'no.'