CAREERS360

MBSE HSLC Science

Sample Paper 2021

SCIENCE
(Theory)
SAMPLE QUESTION PAPER
Full Marks – 70
Time – 3 Hours

General Instructions :

(i) *All questions are compulsory.*
(ii) *All diagrams should be drawn neatly.*
(iii) *Write the number and sub-number of the question before attempting it.*
(iv) *Figures in the margin indicate marks.*

SECTION – A (PHYSICS) 24 Marks

1. Choose the correct answer: $6\times1 = 6$

   (a) The magnification produced by a plane mirror is

   (i) +10 (ii) 0 (iii) infinity (iv) +1

   (b) If a ray of light passes normally at right angles from one medium to another medium, the angle of refraction is

   (i) 90° (ii) 45° (iii) 0° (iv) none of these

   (c) Due to the atmosphere, the sky looks

   (i) black (ii) blue (iii) green (iv) yellow

   (d) Power of a device can only be calculated by

   (i) amount of electrical energy supplied

   (ii) amount of electrical energy consumed

   (iii) amount of energy consumed and time taken

   (iv) amount of time taken

   (e) Resistivity of a wire depends upon the

   (i) length (ii) shape (iii) thickness (iv) none of these

   (f) The rule used to find the direction of force on a current carrying conductor in a magnetic field is

   (i) Maxwell's thumb rule (ii) Fleming's left hand rule

   (iii) Fleming's right hand rule (iv) Clock rule

2. If the image formed by a mirror is always virtual, what type of mirror is it ? 1

3. What is an ammeter ? How is it connected in a circuit ? 2

4. Why does the sun appear reddish early in the morning ? 2

5. (a) Write any three uses of concave mirrors. 3

OR

(b) What is dispersion of light ? Explain with the help of a diagram. 2+1=3

6. (a) Two bulbs rated 100 w is at 220 V and 200 w at 220 V are connected in parallel to a 220 V line. What total current is drawn by them ? 3

OR

(b) Calculate the resistance of an electric bulb which uses 15 A current when connected to a 220 V source. 3

7. (a) With the help of a ray diagram, determine the nature, size and position of the image formed by a convex lens when the object is placed between f and 2f.

1½+½+½+½=3

OR

(b) With the help of a ray diagram, determine the nature, size and position of the image formed by a concave mirror when the object is placed beyond C.

1½+½+½+½=3

8. (a) Explain the working of an electric motor with the help of a labelled diagram.

3+1=4

OR

(b) Describe an experiment to show that a force is experienced by a current carrying conductor when placed in a magnetic field with the help of a diagram. 3+1=4

SECTION-B (CHEMISTRY) 23 Marks

9. Choose the correct answer : 5×1=5

(a) Which one of the following metals will not liberate hydrogen gas when treated with dilute hydrochloric acid ?

(i) Magnesium (ii) Zinc (iii) Copper (iv) Iron

(b) What is the pH of a solution which turns red litmus blue ?

(i) 2 (ii) 4 (iii) 7 (iv) 8

(c) If a member of alkane group have 25 carbon atoms. Its formula will be

(i) $C_{25}H_{48}$ (ii) $C_{25}H_{50}$ (iii) $C_{25}H_{52}$ (iv) $C_{25}H_{100}$

(d) The only non- metal which exist in liquid at room temperature is

(i) Flourine (ii) Bromine (iii) Mercury (iv) Iodine

(e) Which one of the following compound has a triple bond ?

(i) C_2H_2 (ii) C_5H_{12} (iii) C_4H_{10} (iv) C_4H_8

10. How does the valency of elements change on moving from left to right in the third period of the periodic table ? 1

11. What is Homologous series ? 1

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12. Name the two allotropes of carbon. 1

13. An atom X has electronic configuration 2,8,7 2

(i) What is its atomic Number ?

(ii) What is its valency ?

14. Give reason why Aluminium is a highly reactive metal, yet it is used for making cooking utensils. 2

15. What is Baking soda ? Write two uses of Baking Soda. 2

16. Explain the mechanism of the cleansing action of soap. 2

17. (a) (i) Show the formation of Na_2O by the transfer of electrons between the combining atoms. 1

(ii) How is it that ionic compounds in solid state do not conduct electricity but they do so when they are in molten state ? 1

(iii) Why are ionic compounds usually hard ? 1

OR

(b) A compound which is prepared from gypsum has the property of hardening when mixed with proper quantity of water.

(i) Identify the compound 1

(ii) Write the chemical equation of its preparation. 1

(iii) Mention one important use of the compound. 1

18. (a) State Modern Periodic Law. Explain briefly the achievement of the modern periodic table. 1+3=4

OR

(b) Iron articles are shiny when new, but get coated with reddish brown powder when left for sometime. Give reason. What type of chemical reaction is involved in the corrosion of iron ? 2+2 =4

SECTION-C (BIOLOGY) 23 Marks

19. Choose the correct answer : 3×1=3

(a) Role of oxygen in photosynthesis is as

(i) a reactant (ii) food (iii) a catalyst (iv) a by-product

(b) The digested food is mainly absorbed by

(i) Stomach (ii) duodenum (iii) small intestine (iv) colon

(c) Artery is differentiated from vein in having

(i) Strong muscular wall (ii) narrow lumen

(iii) pigmented wall (iv) non-pigmented wall

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20. Name the structural and functional unit of kidney. 1

21. In which part of Sweet Potato vegetative propagation takes place ? 1

22. Where are genes located ? 1

23. Write the sequence of the passage of air in the body. 2

24. State any two significance of a food chain. 2

25. (a) How does excretion take place in a plant ? 3

OR

(b) Write two differences between aerobic and anaerobic respiration. List the end products for each. 2+1=3

26. Mention any three general practices that may help in protecting our environment. 3

27. What is heredity? Describe how the sex of the offspring is determined in the zygote in human beings. 1+2=3

28. (a) What is pollination? Differentiate between self-pollination and cross-pollination. Name the agents of pollination. 1+2+1=4

OR

(b) (i) Name two methods of fertilization that take place in animals. Give one example each. 1+1=2

(ii) Draw a diagram of a flower to show its male and female reproductive parts. 2

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