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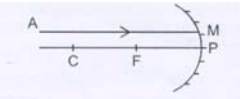
Time-2:30hrs. Subject- Science Class-X M.M- 60+17

SECTION A

1. Aray of lightAM is incident on a spherical mirror as shown in the diagram.
Red raw the diagram on the answer sheet and show the path of reflected ray. Also indicate and mark the angle of reflection in the diagram.



2. A metal M forms an oxide having the formula $M_2 O_3$ It belongs to 3rd period in the modern periodic table. Write the atomic number and valency of the metal.

3. The ciliary muscles of a normal eye are in their(i) most relaxed (ii) most contracted state. In which of the two cases is the focal length of the eye-lens more?

4. Tap water conducts electricity whereas distilled water does not. Why?

5. An electric geyser has the ratings 2000W, 220V marked on it. What should be the minimum rating, in whole number of a fuse wire, that may be required for safe use with this geyser?

6. An organic compound burns with a sooty flame. Is it a saturated or an un saturated compound?

7. Two metallic wires A and B of the same material are connected in parallel. Wire A has length land radius r, wire B has a length 2land radius 2r. Compute the ratio of the total resistance of parallel combination and the resistance of wire A.

8. A student performs an experiment to study the magnetic effect of current around a current carrying straight conductor. He reports that

(i) the direction of deflection of the north pole of a compass needle kept ata given point near the conductor remains unaffected even when the terminals of the battery sending current in the wire are inter changed.

(ii) for a given battery, the degree of deflection of a N-pole decreases when the compass is kept at a

(iii) point farther away from the conductor.

Which of the above observations of the student is incorrect and why?

9. A housewife wanted her house to be whitewashed. She bought 10kg of quick lime from the market and dissolved it in 30 litres of water. On adding lime to water she noticed that the water started boiling even when it was not being heated. Give reason for her observation. Write the corresponding chemical equation and name the product formed.

10. Write the electron - dot stricture for sodium and chlorine atoms. How do these form a chemical bond? Name the type of bond so formed. Why does a compond so formed have high melting point?

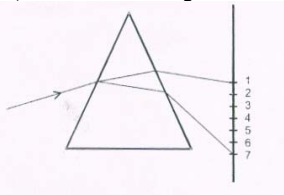
11. Two carbon compoundsAand B have the molecular formula $C_3 H_8$ and $C_3 H_6$ respectively. Which one of the two is most likely to show addition reaction? Justify your answer. Explain with the help of a chemical equation, how an addition reaction is useful in vegetable ghee industry.

12. A beam of white light falling on a glass prism gets split up into seven colours marked 1 to 7 as shown in the diagram.

A student makes the following statements about the spectrum observed on the screen.

a) The coloursat positions marked 3 and 5 are similar to the colour of the sky and the core of a hard boiled egg respectively. Is the above statement made by the student correct or incorrect? Justify.

b) Which two positions correspond closely to the colour of



(i) a solution of potassium permanganate?

(ii) 'danger' or stop signal lights?

13. Baking soda is used in small amount in making bread and cake. It helps to make these soft and spongy. An aqueous solution of baking soda turns red litmus blue. It is also used in soda acid fire extinguisher. Use this information to answer the following questions:

(i) How does Baking Soda help to make cakes and bread soft and spongy?

(ii) How does it help in extinguishing fire?

(iii) is the pH value of baking soda solution lesser than or greater than 7?

14. A concave mirror produces three times enlarged image of an object placed at 10 cm infront of it. Calculate the radius of curvature of the mirror.

15. a) What were the two major shortcomings of Mendeleev's periodic table? How have these been removed in the modern periodic table?

b) Two elements X and Y have atomic numbers 12 and 16 respectively. Write the electronic configuration for these elements. To which period of the modern periodic table do these two elements belong? What type of bond will be formed between them and why?

16. a) The electric power consumed by a device may be calculated by using either of the two expressions $P = 1^2R$ or $P = v^2$. The first expression indicates that it is directly R proportional to R whereas the second expression indicates inverse proportionality. How can the seemingly different dependence of P on R in these expressions be explained?

b) Explain the following:

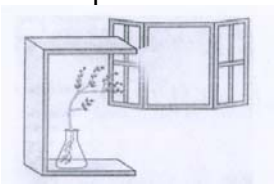
(i) Why is tungsten used almost exclusively for filament of electric lamps?

(ii) Why are copper and aluminium wires usually used for electricity transmission?

Section B

17. From the list given below, pick out the items which can be recycled: Used clothes, polythene carry bags, glass bottles, newspaper .

18. What does the given experimental set-up dornonstrate?

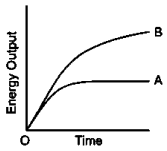


19. A particular hormone requires Iodine for its synthesis. Name the endocrine gland which secretes this hormone and state its location in the human body.

20. Why are many thermal power plants set up near coal or oilfields?

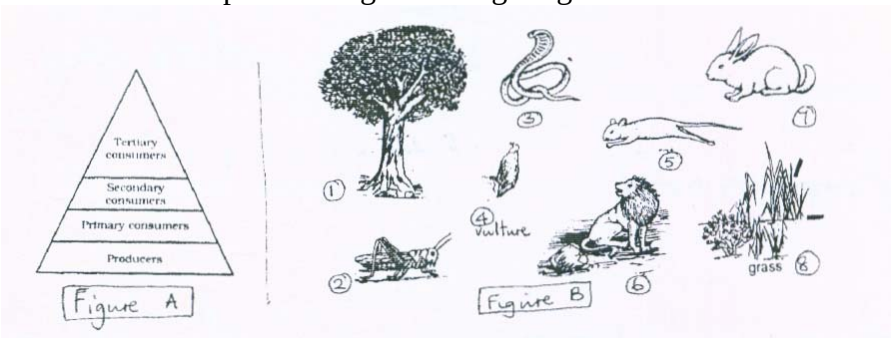
21. Name those parts of the flower which serve the same function as the following do in the animals:

22. A graph was plotted to show the energy output of two types of respiration. Identify the types of respiration denoted by curves A and B.



23. How did the 'Chipko andolan' ultimately benefit the local population? Give any two benefits.

25. Write the number given to any six of the organisms shown in Figure B against their relevent Trophic evels given in figure given below. 3



26. The genotype of green stemmed tomato plants is denoted as GG and that of purple- stemmed tomato plants as gg. When these two are crossed,

(i) What colour of stem would you expect in their F1 progeny?

(ii) Give the percentage of purple-stemmed plants if F1 plants are self pollinated. (iii) In what ratio would you find the genotypes GG and Gg in the F2 progeny?

MCQ TEST -

(1.) Which of the following is not a solid?

(A) Honey (B) Cotton wool (C) Flour (D) Plasticine

(**2.**) Which of the following uses compressed air?

(A) Car tyres (B) Aerosol cans (C) Air guns (D) All of these

(3.) Which is more effective in cooling?

(A) Water at 0°C (B) Water at 100°C (C) Ice at 0°C (D) All of these

(**4.**) What type of clothes are comfortable for us in summer**?**

(A) Silk clothes (B) Cotton clothes (C) Leather clothes (D) Rayon clothes

(5.) On heating temperature of the system does not change (1 mark)

(A) After the melting point is reached, till the entire solid melts.

(B) Before the melting point is reached, till all of the solid melts.

(C) Till solid completely changes into vapour.

(D) When thermometer is faulty.

(6.) Which of following statement is true? (1 mark)

(A) Energy of particles in steam at 373 K > Energy of particles in water at 373K

(B) Energy of particles in steam at 373 K < Energy of particles in water at 373 K

(C) Energy of particles in steam at 373 K = Energy of particles in water at 373 K

(D) None of these

(7.) Which of the following sublimes on heating? (1 mark)

(A) Ice (B) Dry ice (C) Both (1) and (2) (D) None of these (1 mark)

(8.) Melting points of four solids A, B, C & D are 773°C, 826°C, 932K and 1238°C respectively. Which of these has strongest force of attraction between its particles?

(A) A (B) B (C) C (D) D

(9.) Which of the following is considered as normal atmospheric pressure? (1 mark)

(A) 1 atmosphere (B) 1.01 × 105 Pa (C) both (1) and (2) (D) none of these

(10.) Rate of evaporation is highest in (1 mark)

(A) An open vessel of diameter 25 cm. (B) An open vessel of diameter 30 cm. (C) An open vessel of diameter 27.5 cm.
(D) An open vessel of radius 25 cm.

(11.) Evaporation (1 mark)

(A) Makes the surrounding cold. (B) Makes the surrounding hot.
(C) Does not affect the surroundings. (D) Makes the surrounding sometimes cold and sometimes hot.

(12.) Rate of evaporation is lowest in (1 mark)

(A) Summers (B) Rainy reason (C) Winter season (D) None of these

(13.) A liquid is different from a solid in that it has (1 mark)

(A) A definite shape. (B) A definite volume. (C) No definite shape. (D) No definite volume.

(14.) Corresponding temperature in fahrenheit scale for 36°C is (1 mark)

(A) 96.8ºF (B) 97.4ºF (C) 32.8ºF (D) 46.4ºF

(15.) Which of the following state of matter consists of super energetic and super excited particles in the form of ionized gases? (1 mark)

(A) Solid (B) Liquid (C) Plasma (D) Bose Einstein Condensate

(16.) Which of the following statements is false? (1 mark)

(A) The states of matter are inter-convertible.
(B) Evaporation is a surface phenomenon.
(C) Kinetic energy of the particles is minimum in case of solids.
(D) The arrangement of particles is most ordered in the case of liquids.

(17.) Which physical quantity varies in a uniform circular motion? (1 mark)

(A) Speed (B) Velocity (C) Acceleration (D) Both velocity and acceleration