

MP BOARD CLASS 10 EM SCIENCE MODEL PAPER SET 4 2020

म.प्र. बोर्ड कक्षा 10 EM विज्ञान मोडल पेपर सेट 4 2020

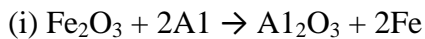
Time : 3 Hours)

(Max. Marks : 80

Instructions :

- (1) All questions are compulsory.
- (2) There are four types of objective questions from Q. No. 1 to 4.
- (3) Internal choices are given in question No. 5 to 22.
- (4) Marks of each question are indicated against it.
- (5) Draw neat and labelled diagram where necessary.

1. Choose and write the correct alternative : 5x 1 = 5



The above reaction is an example of a :

- (a) combination reaction. (b) double displacement reaction
- (c) decomposition reaction (d) displacement reaction.
- (ii) Which among the following is not a metalloid ?
(a) Silicon (b) Germanium (c) Boron (d) Sodium.
- (iii) Which of the following metals is associated with haemoglobin ?
(a) Aluminium (b) Potassium (c) Calcium (d) Iron.
- (iv) The brain is responsible for : <http://www.mpboardonline.com>
(a) thinking (b) regulating heart beat (c) balancing the body (d) all of these.
- (v) The chromosome responsible for sex determination in a male is :
(a) X (b) Y (c) XY (d) XX.

Ans. (i) (d), (ii) (d), (iii) (d), (iv) (d), (v) (c).

2. Fill in the blanks : 5 x 1 = 5

- (i) can dissolve gold and platinum.
- (ii) objects generate their own light.
- (iii) The colour is least scattered by fog or smog.
- (iv) Polythene is an example of waste.
- (v) are biodiversity hot spots.

Ans. (i) Aqua regia, (ii) Luminous, (iii) Red, (iv) Non-biodegradable, (v) Forests.

3. Match the columns : 5 x 1 = 5

Column 'A'

Column 'B'

- | | |
|-----------------------|--------------------------------|
| (i) Fire extinguisher | (a) $V = IR$ |
| (ii) Respiration | (b) Second tropic level |
| (iii) Concave lens | (c) Oxidation |
| (iv) Ohm's law | (d) Baking soda |
| (v) Herbivores | (e) Facilitates distant vision |

Ans. (i) \rightarrow (d), (ii) \rightarrow (c), (iii) \rightarrow (e), (iv) \rightarrow (a), (v) \rightarrow (b).

4. Answer in one word/sentence : 5 X 1 = 5

- (i) What is the chemical formula of washing soda?
- (ii) In which form glucose is stored for longer duration in plant cells ?

(iii) What will be the 23rd chromosome pair for a female human body ?

(iv) What will happen if the intake of iodine in the diet is low?

(v) What is a galvanometer ? <http://www.mpboardonline.com>

Ans. (i) Na_2CO_3 , $10\text{H}_2\text{O}$, (ii) As starch, (iii) XX, (iv) Its deficiency causes goitre,

(v) An instrument used to detect the presence and direction of current in a circuit is called galvanometer.

5. Why does the colour of copper sulphate solution change when an iron nail is dipped in it ? 2

Or

Why do we apply paint on iron articles ?

6. An atom has electronic configuration 2, 8, 7. What is the atomic number of this element ? 2

Or

Name –

(a) three elements that have a single electron in their outermost shells.

(b) two elements that have two electrons in their outermost shells.

7. How does binary fission differ from multiple fission ? 2

Or

What is the role of seminal vesicles and the prostate gland ?

8. What are analogous organs ? 2

Or

Why are the traits acquired during the lifetime of an individual not inherited ?

9. Define the principal focus of a concave mirror. 2

Or

The magnification produced by a plane mirror is + 1. What does this mean?

10. Why should a magnesium ribbon be cleaned before it is burnt in air ? 3

Or

Explain the following terms of gain or loss of oxygen with two examples each :

(a) Oxidation, (b) Reduction.

11. The far point of a myopic person is 80 cm in front of the eye. What is the nature and power of the lens required to correct the problem ? 3

Or

Explain advanced sunrise and delayed sunset.

12. (a) Why does a compass needle get deflected when brought near a bar magnet? 3

(b) Why don't two magnetic lines of force intersect each other ?

Or

State Fleming's left hand rule.

13. List the properties of magnetic lines of force. 3

Or

Imagine that you are sitting in a chamber with your back to one wall. An electron beam, moving horizontally from back wall towards the front wall is deflected by a strong magnetic field to your right side. What is the direction of magnetic field ? <http://www.mpboardonline.com>

14. If you could use any source of energy for heating your food, which one would you use and why ? 3

Or

What are the advantages and disadvantages of using solar cooker ? Are there places where solar cooker would have limited utility ?

15. Why do HCl, HNO₃ etc. show acidic characters in aqueous solutions, while solutions of compounds like alcohol and glucose do not show acidic character ? 4

Or

Differentiate between acids and bases. Name a strong acid and a base.

16. An aldehyde as well as a ketone can be represented by the same molecular formula, say C₃H₆O. Write their structures and name them. State the relation between them in the language of science. 4

Or

How can ethanol and ethanoic acid be differentiated on the basis of their physical and chemical properties ?

17. What are the differences between autotrophic nutrition and heterotrophic nutrition ? 4

Or

Compare the functioning of alveoli in the lungs and nephrons in the kidneys with respect to their structure and functioning.

18. Write the main functions of cytokinins. 4

Or

What is the function of receptors in our body? Think of situations where receptors do not work properly. What problems are likely to arise ?

19. An electric motor takes 5 A from a 220 V line. Determine the power of the motor and the energy consumed in 2 hours. 4

Or

An electric heater of resistance 8 Ω draws 15 A from the series mains for 2 hours. Calculate the rate at which heat is developed in the heater.

20. Define the following terms : 5

(i) Mineral, (ii) Ore, (iii) Gangue.

Or

(i) Write the electron-dot structures for sodium, oxygen and magnesium.

(ii) Show the formation of Na₂O and MgO by the transfer of electrons.

(iii) What are the ions present in these compounds ?

21. Explain the term regeneration as used in relation to reproduction of organisms. Describe briefly how regeneration is carried out in multicellular organisms like Hydra. 5

Or

List six specific characteristics of sexual reproduction. <http://www.mpboardonline.com>

22. The absolute refractive indices of glass and water are 4/3 and 3/2 respectively. 5

If the speed of light in glass is 2×10^8 m/s. Calculate the speed of light in (i) vacuum, (ii) water.

Or

A 4 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 20 cm. The distance of the object from the lens is 15 cm. Find the nature, position and size of the image.