

MT

2017 __ __ 1100

Seat No.

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MT - SCIENCE & TECHNOLOGY - I (72) - SEMI PRELIM - II : PAPER - 2

Time : 2 Hours

(Pages 4)

Max. Marks : 40

Note :

- (i) All questions are compulsory.
- (ii) All questions carry equal marks.
- (iii) Draw neat and labelled diagrams wherever necessary.

Q.1. (A) Fill in the blanks: 3

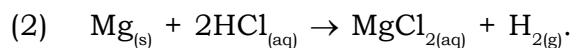
- (1) Elements showing properties of both metals and non-metals are called as
- (2) If a P.D. of 12V is applied across a 3 Ω resistor then the current passing through it is
- (3) The focal length of lens is positive.

Q.1. (B) State whether the following statements are true or false 2 and if false, write the correct statement:

- (1) Digestion of food is a combination reaction.
- (2) The conventional direction of flow of current is from positive terminal to negative terminal.

Q.2. Rewrite the following statements by selecting the correct alternative: 5

- (1) When the crystals of ferrous sulphate are strongly heated, the residue obtained is
 - (a) red in colour
 - (b) blue in colour
 - (c) green in colour
 - (d) colourless



What type of reaction is this ?

- (a) Combination reaction
 - (b) Decomposition reaction
 - (c) Displacement reaction
 - (d) Double displacement reaction
- (3) Which of the following represents the mirror formula ?
- (a) $\frac{1}{v} + \frac{1}{u} = \frac{1}{f}$
 - (b) $\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$
 - (c) $\frac{1}{v} + \frac{1}{u} = \frac{1}{R}$
 - (d) $\frac{1}{u} - \frac{1}{v} = \frac{1}{f}$
- (4) Which one of the following is true according to Ohm's law ?
- (a) Resistance increases as current increases
 - (b) Current increases as resistance increases
 - (c) Resistance increases as voltage increases
 - (d) $I \rightarrow V$ graph is linear.
- (5) In series combination it remains constant:
- (a) current
 - (b) voltage
 - (c) both current and voltage
 - (d) both variable

Q.3. Answer the following in short : (Any 5)

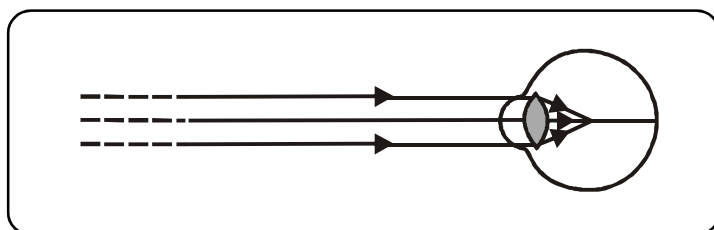
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- (1) Explain the following chemical reaction with the help of balanced equation :
Cement with sand and gravel reacts with water at new construction sites.
- (2) Give scientific reason : Atomic size increases down the group.
- (3) Distinguish between : d-block elements and f-block elements.
- (4) Explain the following chemical reaction with the help of balanced equation :
Copper is exposed to air.

- (5) Give scientific reason :
The materials used for fuses have low melting point.
- (6) A ray diagram for object between F and C for a concave mirror.
- (7) State Ohms' Law.

Q.4. Answer the following in brief : (Any 5)**15**

- (1) Explain the limitations or features of Newlands' law of Octaves.
- (2) What is corrosion? Do gold ornaments corrode, if not why?
- (3) (a) Give scientific reason : Edible oil is not allowed to stand for a long time in an iron or tin container.
(b) Define : Oxidation reaction
- (4) Find the expression for resistivity of a material.
- (5) (a) Define : Focal length of lens
(b) An image is formed 5 cm behind a convex mirror of focal length 10 cm. At what distance is the object placed from the mirror ?
- (6) State the different positions of source of light with respect to concave mirror.
(i) In torches
(ii) Projector lamps
(iii) Flood lights
- (7) Given below is a diagram showing a defect of human eye.



Study it and answer the following questions :

1. Name the defect shown in figure.
2. Give two possible reasons for this defect of eye in human being.
3. Name the type of lens used to correct the eye defect.

Q.5. Answer in detail: (Any 1)

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- (1) Find the expression for the resistance connected in series.
- (2) Explain the term periodic properties and explain the following trends of the periodic table with respect to :
 - (a) Valency
 - (b) Metallic character and Non-metallic character
 - (c) Atomic size.

Best Of Luck 🍀