

MT

2017 ___ ___ 1100

Seat No.

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MT - SCIENCE & TECHNOLOGY -I (72) - SEMI PRELIM - I : PAPER - 4

Time : 2 Hours

(Pages 3)

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) The strength of a basic substance is represented by _____.
- (2) _____ coloured light is scattered the least by fog or smoke.
- (3) _____ is an alloy of aluminium, nickel, cobalt.

Q.1. (B) True or False : 2

- (1) Phenolphthalein is colourless in acid.
- (2) Magnetic lines of force always cross each other.

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

- (1) What is the mixture of several indicators known as ?
 - (a) Universal indicator
 - (b) Olfactory indicator
 - (c) Natural indicator
 - (d) Synthetic indicator

- (2) Zinc reacts with dil. HCl to give _____ .
 - (a) colourless and odourless H₂
 - (b) colourless and odourless CO₂
 - (c) colourless and pungent smelling H₂
 - (d) colourless and pungent smelling CO₂

- (3) A ray of light strikes the glass slab at an angle of 50° . What is the angle of incidence ?
- (a) 50° (b) 25°
(c) 40° (d) 100°
- (4) Rakesh performs the experiments on tracing the path of a ray of light passing through a rectangular glass slab for different angles of incidence. He observes that in all cases
- (a) $\hat{e}_i > \hat{e}_r$ but $\hat{e}_i = \hat{e}_e$
(b) $\hat{e}_i < \hat{e}_r$ but $\hat{e}_i = \hat{e}_e$
(c) $\hat{e}_i > \hat{e}_e$ but $\hat{e}_i = \hat{e}_r$
(d) $\hat{e}_i < \hat{e}_e$ but $\hat{e}_i = \hat{e}_r$
- (5) The magnetic field in solenoid depends on _____ .
- (a) current and number of turns per unit length
(b) current only
(c) Number of turn per unit length only
(d) material

Q.3. Answer the following in short : (Any 5)**10**

- (1) Distinguish between : Acid and Base
- (2) Give scientific reason : Blue coloured copper sulphate crystals become colourless on heating.
- (3) Explain the following chemical reaction with the help of balanced equation : Carbon dioxide is passed through lime water.

OR

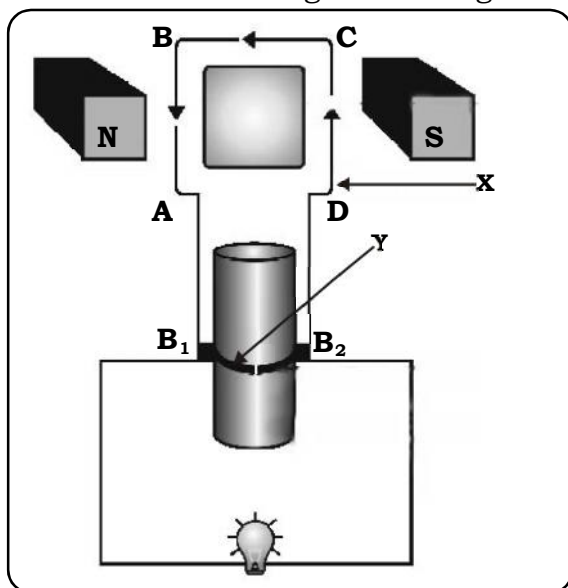
Carbon dioxide is passed through a solution of chalk in water.

- (4) Give scientific reason : Stars twinkle at night.
- (5) Give scientific reason : We should not use many electrical appliances simultaneously.
- (6) What is the refractive index of the second medium w.r.t. the first medium if light moves through the first medium with a velocity 2×10^8 m/s, which changes to 1.25×10^8 m/s in second medium ?
- (7) Draw a neat labelled diagram : Solenoid

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

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- (1) Write a short note on neutralization reaction.
- (2) How do metal carbonates react with acid ?
- (3) What are the uses of baking soda? or State applications of baking soda.
- (4) Answer the following from the given diagram.



- (a) State the principle on which generator works.
- (b) Label X and Y in the diagram.
- (c) Which type of current is generated in the above figure?
- (5) What is refraction of light? How is it related to refractive index?
- (6) State the characteristics of magnetic lines of force.
- (7) What do you mean by dispersion? Name the different colours of light in the proper sequence in the spectrum of light.

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

5

- (1) (a) Define Electric motor
(b) Explain the working of electric motor.
- (2) (a) Take 2 gm of Aluminium carbonate in boiling test tube, add dil. HCl to it. Do not allow the gas to escape. Through the delivery tube allow the gas to pass through decanted solution of chalk with H_2O . What are your observations?
(b) Take a small amount of red oxide (primer used before paint). Add to it a few drops of dil. HCl. What do you observe? What is chemical formula of red oxide?
- (c) Define the following : Water of crystallization

Best Of Luck 🍀