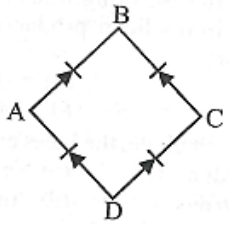
PHYSICS

41. The electron concentration in an n- type semiconductor is the same as hole concentration in a p- type semiconductor. An external field (electric) is applied across each of them. Compare the currents in them
(1) No current will flow in p-type, current will only flow in n- type
(2) Current in n - type = current in p - type
(3) Current in p-type > current in n-type
(4) Current in n-type > current in p-type

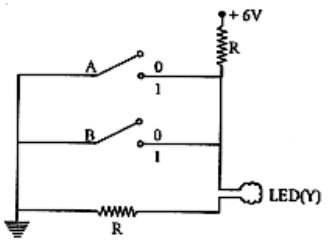
42. Considering the following statements (A) and (B) and identify the correct answer
(A) A zener diode is connected in reverse bias, when used as a voltage regulator
(B) The potential barrier of p-n junction lies between 0.1 V to 0.3 V
(1) (A) is incorrect but (B) is correct
(2) (A) and (B) both are correct
(3) (A) and (B) both are incorrect
(4) (A) is correct and (B) is incorrect

43. In the diagram, the input is across the terminals A and C and the output is across B and D then the output is



(1) zero
(2) same as the input
(3) Full wave rectifier
(4) Half wave rectifier

44. The circuit diagram shown here corresponds to the logic gate



(1) NAND (2) NOR
(3) AND (4) OR

45. Which of the following statement is FALSE?
(1) Pure Si doped with trivalent impurities gives a p-type semiconductor
(2) Majority carriers in a n-type semiconductor are holes
(3) Minority carriers in a p-type semiconductor are electrons
(4) The resistance of intrinsic semiconductor decrease with increase of temperature

46. The rear – view mirror of a car is
(1) plane
(2) convex
(3) concave
(4) none of these

47. An a concave mirror if x_1 and x_2 are the distances of object and its image respectively from the focus, then the focal length of the mirror is
(1) x_1x_2 (2) $\sqrt{x_1x_2}$
(3) $\frac{(x_1+x_2)}{2}$ (4) $\frac{x_1x_2}{(x_1+x_2)}$

48. If a spherical mirror is immersed in a liquid, its focal length will
(1) increase
(2) decrease
(3) remains unchanged
(4) depend on the nature of liquid

49. A dentist uses a small mirror that gives a magnification of 4. When it is held 0.60 cm from a tooth. The radius of curvature of the mirror is
(1) 1.60 cm (convex)
(2) 0.8 cm (concave)
(3) 1.60 cm (concave)
(4) 0.8 cm (convex)

50. Which mirror is to be used to obtain a parallel beam of light from a small lamp?
(1) Plane mirror
(2) Convex mirror
(3) Concave mirror
(4) Any one of these