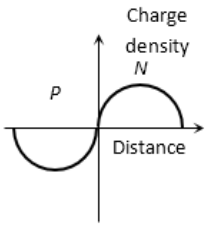
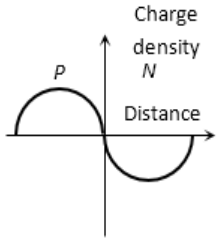
DPP
DAILY PRACTICE PROBLEMS

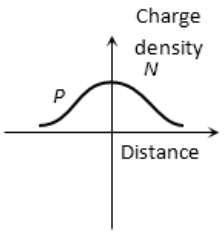
Class : XIIth **Subject : PHYSICS**
Date : **DPP No. : 3**

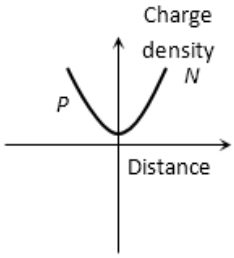
Topic :-.SEMICONDUCTOR ELECTRONICS: MATERIALS,DEVIES AND SIMPLE CIRCUITS

1. The curve between charge density and distance near P-N junction will be

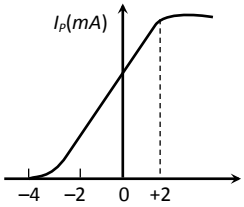
a) 

b) 

c) 

d) 

2. The crystal structure can be studied by using
   a) UV raus b) X-rays c) IR radiation d) Microwaves
3. The plate resistance of a triode is $2.5 \times 10^4 \Omega$ and mutual conductance is $2 \times 10^{-3}\ mho$. What will be the value of amplification factor
   a) 50 b) 1.25×10^7 c) 75 d) 2.25×10^7
4. The mutual characteristic curves of a triode are as shown in figure. The cut off voltage for the triode is



   a) $0\ V$ b) $2\ V$ c) $-4\ V$ d) $6\ V$
5. The voltage gain of an amplifier with 9% negative feedback is 10. The voltage gain without feedback will be
   a) 1.25 b) 100 c) 90 d) 10
6. Although carbon, silicon and germanium have same lattice structure and four valence electrons each, their band structure leads to the energy gaps as
   a) $E_g(Si) < E_g(Ge) < E_g(C)$ b) $E_g(Si) > E_g(Ge) < E_g(C)$
   c) $E_g(Si) < E_g(Ge) > E_g(C)$ d) $E_g(Si) > E_g(Ge) > E_g(C)$
7. Barrier potential of a p-n junction diode does not depend on
   a) Forward bias b) Doping density c) Diode design d) Temperature

8. The nature of binding for a crystal with alternate and evenly spaced positive and negative ions

is

a) Covalent b) Metallic c) Dipolar d) Ionic

9. The binary number 10111 is equivalent to the decimal number

a) 19 b) 31 c) 23 d) 22

10. C and Si both have same lattice structure, having 4 bonding electrons in each. However, C is insulator where as Si is intrinsic semiconductor. This is because

a) In case of C the valance band is not completely filled at absolute zero temperature

b) In case of C the conduction band is partly filled even at absolute zero temperature

c) The four bonding electrons in the case of C lie in the second orbit, whereas in the case of Si they lie in the third

d) The four bonding electrons in the case of C lie in the third orbit, whereas for Si they lie in the fourth orbit

11. The work function of oxide coated tungsten metal will be

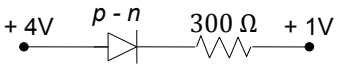
a) 0.5 eV b) 1.0 eV c) 2.6 eV d) 4.5 eV

12. A logic gate is an electronic circuit which

a) Makes logic decisions b) Allows electrons flow only in one direction

c) Works binary algebra d) Alternates between 0 and 1 values

13. Consider the junction diode is ideal. The value of current in the figure is

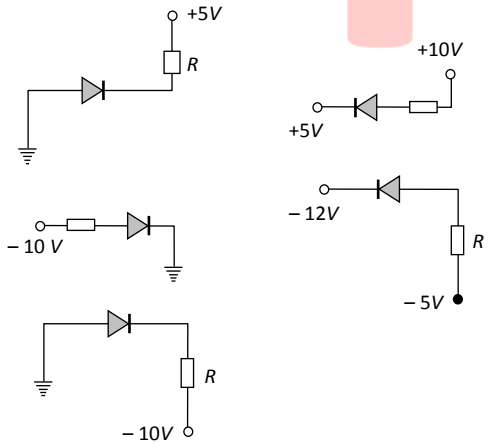


a) Zero b) 10^{-2}A c) 10^{-1}A d) 10^{-3}A

14. A crystal has bcc structure and its lattice constant is 3.6 Å. What is the atomic radius?

a) 3.6 Å b) 1.8 Å c) 1.27 Å d) 1.567 Å

15. In the given figure, which of the diodes are forward biased



a) 1, 2, 3 b) 2, 4, 5 c) 1, 3, 4 d) 2, 3, 4

16. In space charge limited region, the plate current in a diode is 10 mA for plate voltage 150 V. If the plate voltage is increased to 600 V, then the plate current will be

a) 10 mA b) 40 mA c) 80 mA d) 160 mA

17. If D_e , D_b and D_c are the doping levels of emitter, base and collector respectively of a transistor,

then

a) $D_e = D_b = D_c$ b) $D_e < D_b = D_c$ c) $D_e > D_b > D_c$ d) $D_e > D_c > D_b$

18. On applying a potential of $-1\ volt$ at the grid of a triode, the following relation between plate voltage V_p $(volt)$ and plate current I_p (in mA) is found $I_p = 0.125\ V_p - 7.5$. If on applying $-3\ volt$ potential at grid and 300 V potential at plate, the plate current is found to be $5mA$, then amplification factor of the triode is

a) 100 b) 50 c) 30 d) 20

19. A transistor has a base current of 1 mA and emitter current 90 mA. The collector current will be

a) 90 mA b) 1 mA c) 89 mA d) 91 mA

20. Suitable impurities are added to a semiconductor depending on its use. This is done to

a) Increase its life b) Enable it to withstand high voltage

c) Increase its electrical conductivity d) Increase its electrical resistivity