1. Regular and periodic arrangement of atoms and molecules is called_____
a)Crystalline solids
b)amorphous solid
c)insulating material
Ductile material

2. The crystal structure is _____but space lattice is_____
a)real,imaginary
b)imaginary ,real
c)real real
d)none of above

3. The smallest geometrical unit which repeated indefinitely in space , the entire space lattice is generated is _____
a)unit cell
b)space lattice
c)lattice point
d)basis

4. Calculate no. of atomes per unit cell in FCC structure
a)1
b)2
c)3
d)4

5. Find miller indices of [2 1 2]
a) $a/2, a,$

b) $a/2,-a,a$

c) $(-a)/2,$

d) none of above

6. Find the interplanar spacing between the family of planes(1 1 1)in a crystal lattice constant 3 A°

a)1.732 A°

b)1.5 A°

c)1.778 A°

d)2.33 A°

7.Packing efficiency of diamond cubic strycture

a)74%

b)34%

c)43%

d)47%

8.An electron is confined to a box of dimension 1 A° Calculate minimum uncertainty in its velocity

a)$1.16\times[10]^\wedge6\ m/s$

b)$2.26\times[10]^\wedge6\ m/s$

c)$1.16\times[10]^\wedge7\ m/s$

d)$1.16\times[10]^\wedge9\ m/s$

9.Calculate the de broglie wavelength of a proton with a velocity equal to $(1/2)$ velocity of light (mass of proton = $1.6\times[10]^\wedge(-27$

a) $2.763\times[10]^\wedge(-4$

b) $2.9\times[10]^\wedge(-4$

c)$3.00\times[10]^\wedge(-4$

d)$3.32\times[10]^\wedge(-4$

10.Which type of light source is used in photoelectric effect?

a) monochromatic

b)coherent

c)inherent

d)unidirectional

11.Interatomic distance for Ni crystal is

a)2.15 A°

b)3.15 A°

c)1.1 A^(

d)2.67A^(

12.At which angle maximum diffraction occur in Ni crystal

a)⟦50⟧

b)⟦54⟧

c)⟦56⟧

d)⟦53⟧

13.Matter waves are _____

a)not mechanical,nor electromagnetic

b)not electrical , nor magnetic

c)mechanical and electromagnetic

d)electrical and magnetic

14.Matter wave can travel with speed

a)>c

b)< c^(

c)<c

d)=c

15.Calculate the frequency and wavelength of photon whose energy is 75eV

a)18.13×⟦10⟧^15 Hz & 165.5.

b)19.13×⟦10⟧^15 Hz & 165.5.

c)18.13×⟦10⟧^15 Hz & 150.

d)19.13×⟦10⟧^15 Hz&150

16.In N type semiconductor pentavalent impurity atoms are added these atoms are known as _____atoms

a)acceptor

b)donor

c)neutral

d)none of above

17.The highest filled energy level in any solid at absolute zero temperature ia known as

a)fermi level

b) donor level

c)acceptor level

d)bfermi dirac distribution function

18.In intrinsic semiconductor fermy energy level lies _____ of the forbidden energy gap in an intrinsic semiconductor

a)middle

b)towards conduction band

c) towards valence band

d)overlapped in conduction band

19. Zener diodes are specially designed to operate in _____region _____bias.

a)Breakdown , of reverse

b)Breakdown , of forward

c)Breakdown , in both

d)none of above

20.A Cu strip 2cm wide and 1mm thick is placed in a magnetic field B= 1.5 wb/m ,if a current of 200 Amp is set up in the strip Calculate the hall voltage that appears acr

a)9mV

b)10mV

c)6mV

d)5mV

21.Which type of superconductor exhibit complete Meissner effect

a)type I

b)type II

c)both

d)none of above

22.The critical field of niobium is $[10]^5\, A$ at 8k and $2 \times [10]^5\, A$ /at 0k. Calculsate critical temperature of the element

a)11.3k

b)15.3k
c)12.3k
d)13.3k

23. range of ultrasonic waves is_____
a)below 20 Hz
b)above 20KHz
c)in between 20Hz to 20KHz
d)in between 20Hz to 20MHz

24._____is called optical axis.
a)The axis joining two end point of the pyramid
b)The lines passing through the opposite corners of the crystal
c)Hexagon with three lines passing through the sides of hexagon.
d)none of above.

25.Range of hypersonic wave is
a)The axis joining two end point of the pyramid
b)The lines passing through the opposite corners of the crystal
c)Hexagon with three lines passing through the sides of hexagon.
d)equal to or greater than $〚10〛$ Hz

$A^{\wedge}$ ⟦10⟧^5 A 2×⟦10⟧^5 $A/$ 0_0

As_H_e6st{ip()]^(−7) m

$$R_H = 6 \times 10^{-7}$$