TYBSc Semester V Examination (Online) December 2020 Physics Paper II (Solid State Physics) MCQ Sample Paper		
1	The Reciprocal lattice of a Face Centred Cubic lattice is _____.	
	(a)	Simple Cubic
	(b)	Hexagonal
	(c)	Body Centred Cubic
	(d)	Orthorhombic
2	The area of the nonprimitive cell is an _____ of the primitive cell.	
	(a)	Integral multiple
	(b)	Reciprocal
	(c)	Square root
	(d)	Square
3	The two vectors must be _____ which form a set of basis vectors for the lattice, in terms of which the positions of all lattice points can be conveniently expressed.	
	(a)	Collinear
	(b)	Noncollinear
	(c)	Coplanar
	(d)	Non coplanar
4	The axial relationship of a monoclinic crystal system is given as	
	(a)	$a = b = c$
	(b)	$a \neq b = c$
	(c)	$a = b \neq c$
	(d)	$a \neq b \neq c$

5	The Miller Indices of a plane having intercepts x=2a, y=3b and z=1c is _____.	
	(a)	(2 3 1)
	(b)	(1 3 2)
	(c)	(3 2 6)
	(d)	(6 2 3)
6	Mobility of the electron is _____.	
	(a)	flow of electron per unit electric field
	(b)	reciprocal of conductivity
	(c)	average electron drift velocity per unit electric field
	(d)	flow of electron per unit electric field
7	If the Fermi energy of a material is 3.45 eV, then the zero-point energy of the material is _____.	
	(a)	1.02 eV
	(b)	2.07 eV
	(c)	3.45 eV
	(d)	4.16 eV
8	The collision time and the root mean square velocity of the electron at room temperature are 2.5×10^{-14} s and 1×10^{5} m/s respectively. The classical value of mean free path of the electron is_____.	
	(a)	2.5 nm
	(b)	2.5×10^{-9} nm
	(c)	5.2×10^{-9} nm
	(d)	5.2 nm

9	Fermi temperature is represented by expression _____.	
	(a)	$T_F = E_F K_B$
	(b)	$T_F = 1/K_B$
	(c)	$T_F = E_F/K_B$
	(d)	$T_F = E_F$
10	In Thermionic emission equation $p^2_{x0} / 2m = E_F + \phi$; the height of barrier ϕ is called _____.	
	(a)	Energy Function
	(b)	Thermal constant
	(c)	Work Function
	(d)	Power constant
11	Which of the following is not correct about the Brillion Zones of a square lattice with lattice constant 'α'.	
	(a)	The first BZ is a square of side $2\pi/\alpha$ in kx-ky plane
	(b)	The areas of the first BZ and third BZ are the same
	(c)	The *k*-points are equidistant in k_x as well as in k_y directions
	(d)	The area of the second BZ is twice that of the first BZ
12	What is the velocity when the electric field is 6V/m and the magnetic field is 6 A/m?	
	(a)	1m/s
	(b)	25 m/s
	(c)	0.2m/s
	(d)	0.125m/s

13	In Kronig Penney model, as the scattering power of the potential barrier p tends to infinity then _____.	
	(a)	Reduce to single energy levels
	(b)	Reduce to smaller bands
	(c)	Increase to bigger bands
	(d)	Remains the same
14	In Hall Experiment, n = $5´10^{20}$ and e = charge = $1.6´10^{-19}$C, then R_H =_____.	
	(a)	0.125 m^3/c
	(b)	0.0125 m^3/c
	(c)	0.00125 m^3/c
	(d)	1.25 m^3/c
15	The voltage equivalent of temperature (V_T) in a P-N junctions is given by_____.	
	(a)	T/1000 volts
	(b)	T/300 volts
	(c)	T/1600 volts
	(d)	T/11600 volts
16	The cut off voltage for diode of silicon semiconductor and germanium semiconductor is ____ volts.	
	(a)	0.05 and 0.01
	(b)	0.1 and 0.5
	(c)	0.7 and 0. 3
	(d)	0.5 and 1

17	Due to Meissner effect, the magnetic flux is ____.	
	(a)	present inside the superconductor
	(b)	excluded inside the superconductor
	(c)	present only inside the superconductor
	(d)	nowhere around superconductor
18	Superconducting tin has a critical temperature of 3.7 K at zero magnetic field and a critical field at 0.0306 tesla at 0K. The critical field at 2 K is _____.	
	(a)	0.0306 tesla
	(b)	0.0370 tesla
	(c)	0.0217 tesla
	(d)	0 tesla
19	What is the difference between type I and type II superconductors?	
	(a)	Type I has only one critical field, Type II has two critical fields.
	(b)	Type I has only one critical temperature, Type II has two critical temperatures.
	(c)	Type I has two critical fields, Type II has only one critical field.
	(d)	Type I has two critical temperatures, Type II has only one critical temperature.
20	In an open circuit p n junction diode, _____.	
	(a)	drift current is caused by majority while diffusion current is caused by minority carriers
	(b)	diffusion current is caused by majority while drift current is caused by minority carriers
	(c)	drift and Diffusion both currents are caused by majority carriers
	(d)	drift and Diffusion both currents are caused by minority carriers