



V. P. & R. P. T. P. Science College
Vallabh Vidyanagar 388 120

T. Y. B. Sc. (Sem-5) PHYSICS US05CPHY03 First Internal Test

5th October, 2019 Saturday Time: 11.00 am to 12.15 pm Mark:25

Q-1	Multiple Choice Question [Attempt all]				05
1	What is the energy of a neutron used in a diffraction method?				
(a)	0.08 GeV	(c)	0.08 KeV		
(b)	0.08 MeV	(d)	0.08 eV		
2	Range of wavelength used in a Laue diffraction experiments are _____				
(a)	2 Å to 200 Å	(c)	0.2 Å to 2 Å		
(b)	0.2 Å to 20 Å	(d)	2 Å to 2000 Å		
3	Drude model of free electron theory cannot explain				
(a)	Electron diffraction	(c)	Isotopic Mass		
(b)	Electrical and thermal conductivity	(d)	Electron heat capacity & paramagnetic susceptibility		
4	n-type semiconductors can be made using _____ impurity				
(a)	Tetravalent	(c)	Pentavalent		
(b)	Divalent	(d)	Trivalent		
5	Nanotechnology is the engineering of the structure less than _____ size				
(a)	100 nm	(c)	100 Amp		
(b)	100 Cm	(d)	100 C		

Q-2	(a)	Describe powder method for determination of crystal structure in detail.	5
OR			
Q-2	(a)	Discuss the Ewald construction of X-ray diffraction.	5
Q-3	(a)	For free electron derive the necessary equation for energy density of states.	5
OR			
Q-3	(a)	Derive the necessary equation for dc electrical conductivity.	5
Q-4	(a)	Discuss in detail extrinsic semiconductors.	5
OR			
Q-4	(a)	What is Photoelectric effect? Discuss it in detail.	5
Q-5	(a)	What is dip pen lithography?	5
OR			
Q-5	(a)	What are smart materials?	5