



Mavinay

Avinashilingam Institute for Home Science and Higher Education for Women

(Deemed to be University under Category 'A' by MHRD, Estd. u/s 3 of UGC Act 1956)

Re-accredited with 'A+' Grade by NAAC. Recognised by UGC Under Section 12B

Coimbatore - 641 043, Tamil Nadu, India

Bachelor's Degree Examination – June / July 2021

II Semester

Class : I UG

Time : 3 hours

Major : Biochemistry and Biotechnology

Max. Marks : 100

18BBCI03 DSE – II Physics for Biochemistry

Part A

10 x 1 = 10

Choose the correct answer

- Which of the following parameters are constant in Boyle's law? CO1 K2
 - pressure and volume
 - pressure and amount of gas
 - temperature and amount of gas
 - temperature and volume
- For superconductors, the materials must be _____ in nature. CO1 K2
 - piezo-electric
 - ferromagnetic
 - diamagnetic
 - paramagnetic
- Damping of a ballistic galvanometer is made small to CO2 K2
 - make the system oscillatory
 - get first deflection large
 - get minimum overshoot
 - make the system critically damped
- _____ are examples for ferromagnetic materials. CO2 K1
 - alkali metals
 - actinide metals
 - transition metals
 - noble metals
- Which one of the following atoms is not a doping element in n-type semiconductor? CO3 K2
 - arsenic
 - phosphorous
 - boron
 - antimony
- The colour of light emitted by a LED depends on the CO3 K2
 - applied forward bias
 - recombination rate of electron-hole pairs
 - amount of forward-bias current
 - type of semiconductor material used in LED
- X-rays are electromagnetic radiations having CO4 K2
 - lower energy & shorter wavelength
 - higher energy & shorter wavelength
 - lower energy & longer wavelength
 - higher energy & longer wavelength
- Which one of the following statements about photoelectric effect is not true? CO4 K2
 - Photoelectric emission occur below the threshold frequency
 - Threshold frequency depend on the metal used
 - Photoelectric current depends on the intensity of incident light
 - Emission of photoelectrons is an instantaneous process
- Laser light is not CO5 K2
 - directional
 - polychromatic
 - coherent
 - highly intense

10. In Raman scattering, _____ is not conserved. CO5 K2
a. total energy b. momentum c. kinetic energy d. potential energy

Part B

5 x 6 = 30

Answer ALL questions

Each answer should not exceed 400 words or two pages

- 11.a. Explain the process of liquefaction of helium using regenerative cooling. CO1 K2
(or)
- 11.b. Discuss briefly about superconductivity and Meissner effect. CO1 K2
- 12.a. Compare the properties of diamagnetic and paramagnetic materials. CO2 K2
(or)
- 12.b. Differentiate between ferromagnetic and anti-ferro magnetic materials. CO2 K2
- 13.a. Differentiate between n-type and p-type semiconductors. CO3 K4
(or)
- 13.b. Distinguish the principles of a LED and solar cell. CO3 K4
- 14.a. Explain briefly about photovoltaic cell and photo-multiplier tube. CO3 K2
(or)
- 14.b. Sketch the Miller indices of (1 0 0), (1 1 0) and (1 1 1) cubic crystal planes. CO4 K2
- 15.a. Distinguish between spontaneous emission and stimulated emission. CO5 K4
(or)
- 15.b. Analyse the difference between Stokes and Antistokes lines in Raman effect. CO5 K4

Part C

5 x 12 = 60

Answer ALL questions

Each answer should not exceed 800 words or four pages

- 16.a. Illustrate the experiment for the liquefaction of hydrogen with suitable diagram. CO1 K2
(or)
- 16.b. Explain the principle of adiabatic demagnetization and the method of reaching temperature near absolute zero. CO1 K2
- 17.a. Discuss the principle of a Ballistic Galvanometer and the method to evaluate its charge sensitiveness. CO2 K2
(or)
- 17.b. Describe the method to measure the thermo emf of a material using a potentiometer. CO2 K2
- 18.a. Examine the principle, construction and working of a LED. CO3 K3
(or)

- 18.b. Demonstrate the verification of Demorgan's theorem using logic gates. CO3 K3
- 19.a. Analyse the verification of photoelectric equation by Millikan's experiment. CO4 K4
- (or)
- 19.b. Infer the features of X-ray spectrum and Moseley's law. CO4 K4
- 20.a. Explain the principle, construction and working of a Ruby laser. CO5 K2
- (or)
- 20.b. Describe the theory, construction and working of a Laser Raman spectrometer. CO5 K2
