

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Bachelor of Technology (Computer Engineering) SEMESTER - 1 Summer 2026 (Supply.)

Course :Bachelor of Technology (Computer Engineering) Branch : Engineering and Technology

Semester : SEMESTER - 1

Subject Code & Name: 24AF1PHYBS102 - ENGINEERING PHYSICS

Time : 3 Hours]

[Total Marks : 60

Instructions to the Students:

1. Each question carries 12 marks.
2. Question No. 1 will be compulsory and include objective-type questions.
3. Candidates are required to attempt any four questions from Question No. 2 to Question No.6
4. Use of non-programmable scientific calculators is allowed.
5. Assume suitable data wherever necessary and mention it clearly.

Q1. Objective type questions. (Compulsory Question)

12

- 1 In non-polar dielectrics, the permanent dipole moment is
a. Infinity b. Zero c. Unity d. Variable
- 2 What is the standard unit of the sound absorption coefficient?
a. Decibel b. Watt c. Sabine d. Hertz
- 3 The frequency of ultrasonic waves is
a. 20 kHz b. more than 20 kHz c. more than 20000 Å d. more than 20000 m
- 4 Spontaneous emission is
a. Controlled b. Random c. Coherent d. Polarized
- 5 The central fringe in Newton's rings observed in reflected light is
a. Bright b. Dark c. Colored d. Invisible
- 6 The core of an optical fiber has a ----- refractive index than the cladding.
a. Lower b. Higher c. Same d. Zero
- 7 The total probability of finding a particle in space is
a. 0 b. 1 c. ∞ d. π
- 8 The basic unit of quantum computing is
a. Bit b. Qubit c. Byte d. Pixel
- 9 Number of atoms per unit cell in Simple Cubic (SC) structure is
a. 1 b. 2 c. 4 d. 6
- 10 Which of the following is NOT a crystal system?
a. Cubic b. Hexagonal c. Triclinic d. Circular
- 11 Extrinsic semiconductors are formed by
a. Cooling b. Doping c. Heating only d. Magnetization
- 12 Superconductors are perfect
a. Conductors b. Diamagnets c. Semiconductors d. Insulators

Q2. Solve the following.

- A) Explain any three types of dielectric polarization.

6

- B) Explain echo, reverberation and absorption coefficient. 6

The volume of an auditorium is 12000 m^3 . Its reverberation time is 1.5 sec. If the average absorption coefficient of interior surface is 0.4 Sabine m^2 . Find the area of interior surface.

Q3. Solve the following.

- A) Explain interference of light in thin film of uniform thickness due to reflected light. 6
B) Explain the construction and working of He-Ne laser. 6

Q4. Solve Any Two of the following.

- A) State Heisenberg's Uncertainty Principle. Using this principle find the accuracy in position of an electron if it has a speed of 400 m/s with uncertainty of 0.01%. 6
B) Derive Schrodinger's time dependent wave equation 6
C) What is difference between Classical computing and Quantum computing? 6

Q5. Solve Any Two of the following.

- A) Calculate atomic packing fraction for SC, BCC, and FCC structure. 6
B) State the properties of α , β and γ rays. 6
C) What are Miller Indices? Explain the procedure to find Miller Indices. 6

Q6. Solve Any Two of the following.

- A) What is semiconductor? Explain conductivity in intrinsic and extrinsic semiconductor. 6
B) What is nanomaterials? Explain top-down and bottom-up approach. 6
C) Explain B-H curve with diagram, hence define coercivity and retentivity. 6

*** End ***