Total No. of Questions: 05

Total No. of Printed Pages: 02

Roll No. 22100BTCSEII552

BTPH101

Common for B. Tech. Programs

I Semester Examination, February 2023

Applied Physics

Choice Based Credit System (CBCS)

Duration: 3 Hrs.

Maximum Marks: 60

Minimum Pass Marks: 24

Note: *(1) All questions carry equal marks, out of which part 'A' and 'B' carry 3 marks and part 'C' carries 6 marks.*

(2) From each question, part 'A' and 'B' are compulsory and part 'C' has internal choice.

(3) Draw neat diagram, wherever necessary.

(4) Assume suitable data wherever necessary.

Q.1.(A) What is Heisenberg's Uncertainty principle? **03**

(B) Define Phase velocity and group velocity and also derive relation between them. **03**

(C) Solve Schrodinger equation for one dimensional motion of a particle in a box of side L and also show that the energy eigen values are discrete. **06**

OR

Deduce an expression for Compton shift.

Q.2.(A) Explain V-I characteristic and working of Zener Diode. **03**

(B) Discuss the postulates of Kronig Penney model. **03**

(C) What is Hall Effect? Derive the expression for Hall's Coefficient. **06**

OR

What is Meissner effect? Discuss type I and type II superconductors.

Q.3.(A) Explain the postulates of Liquid Drop Model. **03**

(B) Explain the construction of Cyclotron. **03**

(C) Discuss the construction and working of Betatron and also derive the expression for betatron condition. **06**

OR

Discuss construction and working of Bainbridge mass spectrograph.

Q.4.(A) Explain what is stimulated emission? **03**

(B) Explain the principle through which light propagates through the optical fibre. **03**

Contd.....

(C) What is Ruby Laser? Explain the construction and working of Ruby laser. Also, draw the self-explanatory energy level diagram. **06**

OR

What is acceptance angle? Derive expression for the same.

Q.5.(A) What is difference between interference and diffraction? **03**

(B) What is Rayleigh's Criterion for just resolution? **03**

(C) Explain the construction and working of Newton's Ring Experiment? **06**

OR

What is Brewster's law? Derive the necessary expression.

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