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BSc3PhyC301x

Seat No :_____

B.Sc. Semester - 3 (*CBCS*) Examination

Nov/Dec. -2021 [NEW COURSE]

Physics-P301(Core)

Time: 2:30 Hours

Marks: 70

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate marks.

Q.1 (a) Answer the following questions (any two). [10]

(1) Explain critical angle of propagation for an optical fiber.

(2) Explain types of an optical fiber.

(3) Discuss fiber optics communication system in detail.

Q.1 (b) Answer the following questions (any one). [04]

(1) Write advantages of an optical fiber.

(2) An optical fiber refractive indices of core and cladding are 1.50 and 1.45 respectively. Calculate its critical angle of propagation and acceptance angle.

Q.2 (a) Answer the following questions (any two). [10]

(1) What is Laser? Discuss three processes of Laser.

(2) What is population inversion? Discuss about principle pumping schemes.

(3) Explain construction and working Ruby Laser.

Q.2 (b) Answer the following questions (any one). [04]

(1) Write a note on PN junction Laser.

(2) Write a note on optical resonant cavity.

Q.3 (a) Answer the following questions (any two). [10]

(1) Describe base resistor method for transistor biasing. Write its advantages and disadvantages.

(2) Describe voltage divider bias method for transistor biasing.

(3) What is phase reversal? Explain it in detail with graphical demonstration.

Q.3 (b) Answer the following questions (any one). [04]

(1) Discussing stabilization of operating point, explain its need.

(2) Write a note on frequency response of CE amplifier.

Q.4 (a) Answer the following questions (any two). [10]

(1) Deriving an expression of current for L-C-R series a.c. circuit, discuss its special cases and explain series resonance and Q – factor.

(2) Explain Maxwell's L-C bridge. Write its advantages and disadvantages.

(3) Explain the action of Wien bridge Oscillator.

Q.4 (b) Answer the following questions (any one). [04]

(1) Explain R–C series a.c. circuit.

(2) Explain Shearing bridge.

Q.5 (a) Answer the following questions (any two). [10]

(1) What is modulation? Why modulation is necessary in communication system?

(2) What do you meant by demodulation? Explain with necessary operation.

(3) Write a note on Superhetrodyne radio receiver.

Q.5 (b) Answer the following questions (any one). [04]

(1) Write difference between AM and FM modulation.

(2) Explain working of a transistor amplitude modulator.

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