

B.Sc. Semester - 3 (CBCS) Examination
Oct/Nov - 2024 [As Per Syllabus Year June-2019]
Physics-P301(Core)

Time: 2:30 Hours**Marks: 70****Instructions:**

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

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- Que.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 applications of fiber optics in detail.
- Que.1(B) Answer the following questions (any one). (04)
- (1) Derive an expression for acceptance angle of the optical fiber.
 - (2) Write advantages of an optical fiber.
- Que.2(A) Answer the following questions (any two). (10)
- (1) Explain construction and working of Ruby Laser.
 - (2) What is Laser? Explain three processes of Laser .
 - (3) What do you mean by pumping? Discuss the principle pumping schemes.
- Que.2(B) Answer the following questions (any one). (04)
- (1) Write applications of Laser.
 - (2) Write a note on PN junction Laser.
- Que.3(A) Answer the following questions (any two). (10)
- (1) Describing fixed bias (base resistor) method of transistor biasing, write its advantages and disadvantages.
 - (2) Describe voltage (potential) divider bias method for transistor biasing.
 - (3) What is phase reversal? Explain it in detail with graphical demonstration.
- Que.3(B) Answer the following questions (any one). (04)
- (1) Write a note on Stability Factor.
 - (2) Write a note on frequency response of CE amplifier.
- Que.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.
 - (2) Explaining Maxwell's L-C Bridge, write its advantages and disadvantages.
 - (3) Explain the action of Colpit's oscillator along with feedback fraction.
- Que.4(B) Answer the following questions (any one). (04)
- (1) Explain L-R series a.c. circuit.
 - (2) Explain De Sauty Bridge.
- Que.5(A) Answer the following questions (any two). (10)
- (1) What is modulation? Why is modulation necessary in communication system?
 - (2) Drawing AM diode detector circuit, explain its action.
 - (3) Drawing the transistor amplitude modulator circuit, discuss its working from it.
- Que.5(B) Answer the following questions (any one). (04)
- (1) Write difference between AM and FM Modulation.
 - (2) Write a note on Superhetrodyne radio receiver.
