

19U205

(Pages: 2)

Name :

Reg.No :

SECOND SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2020

(CBCSS - UG)

CC19U PHY2 C02 : OPTICS LASER AND ELECTRONICS

(Physics - Complementary)

(2019 Admission - Regular)

Time: 2.00 Hrs

Max. Marks: 60

Credit: 2

(Draw diagram wherever necessary. The students can answer all questions in sections A & B)

A. Short answer questions. Each question carries 2 marks.

1. State superposition theorem.
2. What are Newton's rings? Give its uses.
3. What is a grating?
4. What is meant by negative and positive crystal?
5. Define specific rotation.
6. What is a half wave rectifier?
7. What is the ripple factor of a full wave rectifier?
8. Draw the practical circuit of a CE transistor amplifier.
9. Write down the expression for the gain of negative feedback amplifier.
10. State the De-Morgan's theorem.
11. What is meant by stimulated emission?
12. Draw the energy levels and transitions in a ruby laser.

(Ceiling: 20 Marks)

B. Short essay questions (Paragraph). Each question carries 5 marks.

13. The distance between the slit and biprism is 4 cm and between the biprism and screen is 40 cm each. The angle of biprism is 178° and its refractive index is 1.52. If the distance between successive fringes is 0.012 cm, calculate the wavelength of light.
14. Derive an expression for the intensity distribution in the diffraction pattern of a single slit and draw intensity curve.
15. When sunlight is incident on water at glancing angle of 37° , the reflected light is found to be completely plane polarised. Determine the refractive index of water and angle of refraction.
16. How a Zener diode acts as a voltage stabilizer?
17. Draw the diagram of Colpitts oscillator and explain the working.
18. Write the truth table of a NAND gate and using NAND gates construct an OR gate.
19. What are induced absorption, spontaneous emission and stimulated emission in lasers?

(Ceiling: 30 Marks)

C. Essay questions. Answer any one question.

20. Describe an experiment with theory to determine the wavelength of sodium light using Newton's ring system.
21. Explain the theory for the production of plane, circularly and elliptically polarized light.

(1 × 10 = 10 Marks)
