QP CODE: 24001087

24001087

Reg No : .....

Name : .....

B.Sc DEGREE (CBCS) REGULAR / REAPPEARANCE EXAMINATIONS, MARCH 2024

Sixth Semester

B.Sc Electronics Model III

CORE COURSE - EL6CRT17 - OPTOELECTRONICS

2017 Admission Onwards

9F2F4F1C

Time: 3 Hours Max. Marks : 80

Part A

*Answer any **ten** questions.*

*Each question carries **2** marks.*

1. Why an optical resonant cavity is required in lasers?
2. What are the different types of lasers available?
3. Explain LASER diode characteristics.
4. How an LED works?
5. Draw any two important characteristics of an LED.
6. What are the merits of APD?
7. What is a solar cell?
8. What is total internal reflection? How it is occurs?
9. Draw the refractive index profile of step index fiber.
10. What are the advantages of optical fibers over copper wires?
11. What do you mean by non-radiative recombination?
12. What is optic axis of a crystal?

(10×2=20)

Part B

*Answer any **six** questions.*

*Each question carries **5** marks.*

13. Briefly explain absorption and emission of radiation.

14. Why a metastable state is required for laser action? Why four level active medium is preferred in lasers instead of a three level active medium?

15. Explain how a heterostucture LASER diode works with proper digrams.

16. Explain a DHLED with proper digrams.

17. Classify photosensors with suitable examples.

18. With diagram explain the working of a PIN photodiode.

19. Explain waveguide dispersion.

20. Explain important applications of optical fibers.

21. Distinguish between direct band gap and indirect band gap semiconductors.

(6×5=30)

Part C

*Answer any **two** questions.*

*Each question carries **15** marks.*

22. Explain various applications of lasers in detail.

23. Explain how a LASER diode works with proper diagrams.

24. Discuss the important characteristics of photodiode.

25. Explain different types of optical fibers based on modes and index difference with proper diagrams.

(2×15=30)