



QP CODE: 26019356



Reg No :

Name :

M.Sc DEGREE (CSS) EXAMINATION, MARCH 2026
Fourth Semester
M Sc ELECTRONICS
ELECTIVE - EL810403 - OPTICAL SENSOR TECHNOLOGY

2019 Admission Onwards

9543C2AD

Time: 3 Hours

Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

*Weight **1** each.*

1. State any four specific biomedical science application in which optical sensors are used.
2. Give the expression for V-number and its significance.
3. How the photons generated in a semiconductor laser structure?
4. Classify the FOS based on their topology and configuration.
5. How birefringent crystals can be used as temperature sensors?
6. What is Sagnac Interferometer?
7. Evaluate the working principal of an OTDR.
8. What are the advantages of FBG sensors over other type of fiber optic sensors?
9. Why FBG sensors are ideal for use in electrical power industry?
10. Discuss different biomedical application of FOSs.

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

*Weight **2** each.*

11. Explain advantages of optical fiber sensors.
12. Explain various basic requirements for optical detectors.
13. Discuss about optical filters.





14. Explain three type of light scattering associated with scattering based sensors.
15. Write about fiber optic displacement sensor based on reflective concept.
16. Give a short note different applications of Interferometric FOS .
17. Explain with neat diagram the distributed temperature measuring system based on Brillouin scattering.
18. What are the main drawbacks of distributed temperature sensor in temperature monitoring?

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

*Weight **5** each.*

19. Sketch an optical fiber cable and derive the expressions for critical angle and explain.
20. How the semiconductor photodetectors differ from other photodetectors? Explain any two semiconductor photodetectors in detail.
21. Explain sensing principles of Bragg gratings in detail.
22. Explain the different interferometric FOS configurations.

(2×5=10 weightage)

