QP CODE: 25024623

25024623

Reg No : ....

Name : ....

M.Sc DEGREE (CSS) EXAMINATION, APRIL 2025

Fourth Semester

M Sc ELECTRONICS

ELECTIVE - EL810403 - OPTICAL SENSOR TECHNOLOGY

2019 ADMISSION ONWARDS

78A337CE

Time: 3 Hours | Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

*Weight **1** each.*

1. What are the limitations of OFS?Give explanation.
2. Define Numerical Aperture.
3. Differentiate between coherent and incoherent sources.
4. What is the fundamental operation principle of fiber optic sensors?
5. What do you mean by single point FOS?
6. What are interferometers?
7. Give the applications of fabri-perot interferometeric FOS.
8. Listout different advantages of FOSs in health monitoring after building construction.
9. What is the role of Mach-Zehnder electro optic modulator in a distributed temperature measuring system.
10. What are the widespread application of FOSs in Chemical sensing.

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

*Weight **2** each.*

11. List out different types of FOS based on modulation scheme and explain.
12. How the PIN photodiodes is better than photodiodes? Explain.
13. What is the importance of optical elements in sensor technology?
14. Explain fiber optic displacement sensor based on transmissive concept.
15. What are the advantages of micro bend fibers.

16. Explain any two basic interferometric configurations with figure.

17. What is the role of fiber optic sensors in winding temperature measurement of Generators.

18. What is the problem in using single mode fiber in measuring pressure of an oil reservoir.

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

*Weight **5** each.*

19. List out the advantages and uses of fiber optic sensors. Give explanation.

20. Discuss the concept of semiconductor. Explain in detail about the working of a semiconductor laser with necessary dragrams.

21. Categorise pressure sensors and explain its application in different field.

22. Analyse the working of a fiber gyroscope.

(2×5=10 weightage)