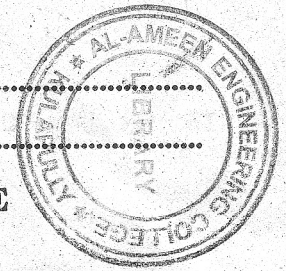C 26751

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SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, MAY 2012

EC 09 605—OPTICAL COMMUNICATION

(2009 admissions)

Time : Three Hours

Maximum : 70 Marks

Part A

Answer all questions.
Each question carries 2 marks.

1. What is diffraction ?

2. Define Quantum Efficiency.

3. What are the advantages of IM direct detection system ?

4. What is WDM ?

5. What is the frequency limit of optical fiber ?

$(5 \times 2 = 10 \text{ marks})$

Part B

Answer any four questions.
Each question carries 5 marks.

6. Explain about graded index fiber.

7. If a typical light detector produces 40 μS of current for 80 μW of incident light, what is the responsivity. Comment on the significance of the term responsivity in optical detection.

8. What is ISI ? Explain.

9. Explain about optical amplifier.

10. Explain about V number in optical fibers.

11. What is degradation due to fibre dispersion ?

$(4 \times 5 = 20 \text{ marks})$

Part C

Answer all questions.
Each question carries 10 marks.

12. (a) Derive the Maxwell's equation for a circularly symmetric step index optical fiber.

Or

(b) Discuss about dispersion in single mode and multimode fibers.

Turn over

13. (a) Draw the construction, operation and features of Laser diode.

Or

(b) Describe the structure and operation of PIN.

14. (a) Explain about the coherent homodyne IM direct detection system.

Or

(b) Describe the degradation induced by nonlinear effects in fiber propagation.

15. (a) Discuss the operation of erbium doped fiber amplifier.

Or

(b) Describe the operation of SONET.

$(4 \times 10 = 40 \text{ marks})$