2E9203

M. Tech. (Sem. II) (Main/Back) Examination, June/July - 2012
Digital Communication
2MDC3 Advanced Optical Communication
(Common for 2MDC3 and EC206)

Time : 3 Hours] [Maximum Marks : 100
[Min. Passing Marks : 35

Attempt any five questions.
Marks of questions are indicated against each question.
Draw neat and comprehensive sketches wherever necessary to clearly illustrate your answer.
Assume missing data suitably if any and specify the same.

Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)

1. NIL 2. NIL

1 (a) Explain dispersion shifted and dispersion compensated fiber. How we can minimized dispersion in single and multimode fiber ? 12

(b) Calculate numerical aperture, multipath pulse broadening and distance bandwidth product of silica fiber with refractive index of core and clad are 1.46 and 1.0 respectively. 8

2 (a) Explain construction working and material of LASER diode and PIN photo diode. 12

(b) A photo diode has quantum efficiency of 6.5% when photons of energy 1.5×10^{-16} J are incident upon it calculate :
(i) Wave length of photodiode
(ii) Incident optical power required to obtain photo current of 1.5μ Amp. 8

3 (a) Explain fiber brag grating WDM. Also compare WDM and DWDM. 12

(b) Write significance of optical network. Explain types of fiber optic system topology and compare it. 8

4 Write in short :
(i) SONET
(ii) OTDR (time domain reflectometer)

10×2=20

5 (a) What is optical amplifier ? Derive the gain of Erbium doped fiber amplifier and compare EDFA and SOA. 12

(b) An EDFA is pumped at 980 nm with 10 mw pump if the gain at 1480 nm is 20 dB (100) find maximum input power. 8

6 (a) Explain working of isolator and circulator. 12

(b) Write function of coupler, A splitter. Define main characteristic of coupler. How to make WDM coupler ? 8

7 (a) What are system requirements needed in analyzing link ? What are major component and characteristic used in optical link design ? Calculate link power budget with suitable example. 12

(b) Describe FDDI network. 8

8 Write short notes on any two of followings :
(a) Optical sensor
(b) Optical switching
(c) Optical filter.

10×2=20