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Question Paper Code:U2204

M.E. DEGREE EXAMINATION, MAY 2024

Second Semester

Communication Systems

21PCM204 -FIBRE OPTIC NETWORKS

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART - A (5 x 20 = 100 Marks)

1. (a) Design optical amplifiers for All-optical regeneration with CO2- App (20)
reshaping and retiming (3R) using a combination of cross-gain
modulation and cross-phase modulation in semiconductor.

Or

- (b) Design system using MLM lasers over single-mode fiber in the 1.3 CO2- App (20)
 μm band to overcome intermodal dispersion in multimode fiber.

2. (a) Analyze the two categories of non-linearities in fiber optic CO4- Ana (20)
networks and justify the suitable network for optical fiber
communication.

Or

- (b) Analyze the Spectrum of a baseband signal compared with the CO4- Ana (20)
spectra of double sideband (DSB) and single sideband (SSB)
modulated signals.

3. (a) Design a suitable OTN to transport data packet traffic over fiber CO3- App (20)
optics in underwater optical communication.

Or

- (b) Design a Client layer for the optical network that can be used for CO3- App (20)
telephonic conversation.

4. (a) Analyze the cost trade-offs in designing networks in different ways CO5- Ana (20)
to meet the same traffic demand by varying the light path
topology.

Or

- (b) Analyze the importance of protection in the optical layer, despite the existence of protection mechanisms in the client layers for WDM Ring network and SONET/IP Network CO5- Ana (20)
5. (a) Analyze the performance of twisted-pair telephone access network and The hybrid fiber coax cable television network which then distributes it to individual subscribers via coaxial cable drops. CO5- Ana (20)
- Or
- (b) Analyze the HFC and FTTC in optical network unit (ONUs).Justify the suitable ONUs. CO5- Ana (20)