

17669

21415

3 Hours / 100 Marks

Seat No.

--	--	--	--	--	--	--	--

- Instructions :** (1) All Questions are *compulsory*.
(2) Answer each next main Question on a new page.
(3) Illustrate your answers with neat sketches wherever necessary.
(4) Figures to the right indicate full marks.
(5) Assume suitable data, if necessary.
(6) Use of Non-Programmable Electronic Pocket Calculator is permissible.
(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. (A) Attempt any THREE :

12

- List and explain any two advantages and disadvantages of fiber optic communication.
- Draw the schematic of fiber optic communication system and describe the function of LED and photodiode in it.
- Draw well labelled diagram of eye pattern of optical fiber. Define any two features in it.
- State function of Mobile switching center and mobile base station.

(B) Attempt any ONE :

06

- State and explain Snell's law with neat diagram. How does Total Internal Reflection takes place in optical fiber ? Explain with neat diagram.
- Explain paging system with neat diagram. What types of messages are sent ?

P.T.O.

- 2. Attempt any FOUR :** **16**
- (a) Explain OTDR with neat labelled diagram.
 - (b) Give reason for the cause of the coupling. Absorption losses with neat diagram in optical fiber.
 - (c) Raju is calling his grandfather from landline phone to mobile phone to wish him for birthday. How does the call processing takes place on FCC, RCC, FVC, RVC ?
 - (d) Explain with neat diagram how capacity is enhanced by cell splitting process.
 - (e) Define numerical aperture and for a silica optical fiber having a refractive index of its core 1.50 and cladding refractive index of 1.47. Find (i) Critical angle (ii) Numerical aperture (iii) Acceptance angle.
- 3. Attempt any TWO :** **16**
- (a) Describe briefly intermodal and intramodal dispersion in optical fiber with neat diagram.
 - (b) Draw neat diagram of transmitter unit of mobile phone. Explain operation of APC in it. What are the frequencies used by transmitter unit ?
 - (c) Explain frequency planning in wireless communication system with neat diagram. Draw reuse pattern for cluster size 7 and 12. Also explain how co-channels cells are located.
- 4. (A) Attempt any THREE :** **12**
- (a) Describe co-channel interference. How does co-channel interference becomes a serious concern in the design of cellular system ?
 - (b) State features of IMT 2000 (any four).
 - (c) With neat sketch explain the working principle of Avalanche photodiode.
 - (d) With neat diagram explain working of edge emitter LED.
- (B) Attempt any ONE :** **06**
- (a) Draw GSM architecture and explain function of any three blocks in it.
 - (b) With neat diagram explain wireless local loop setup.

5. Attempt any TWO :**16**

- (a) Describe and eight features of 3G WCDMA cellular system.
- (b) Compare WCDMA with CDMA 2000 on the basis of following parameters :
 - (i) Multiple access technique
 - (ii) Chip rate
 - (iii) Modulation scheme
 - (iv) Frame length
 - (v) Pilot structure
 - (vi) Spreading modulation
 - (vii) Scrambling codes
 - (viii) Channelization code
- (c) Define and explain hand-off process in mobile system with neat diagram. List types of handoff and explain any one in brief.

6. Attempt any FOUR :**16**

- (a) List tele-services and data services in CDMA one system.
 - (b) List any four radio parameter with values of IS-95.
 - (c) Draw and explain architecture of UMTS.
 - (d) Explain authentication process in GSM system with neat diagram.
 - (e) Explain V-groove and fusion splicing technique with neat diagram.
-

