

17669

21819

3 Hours / 100 Marks

Seat No.

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

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

Marks

1. (A) Attempt any THREE :

- | | |
|---|----------|
| (a) State four limitations of LED as a source to optical fiber. | 4 |
| (b) Calculate critical angle of incidence between two substances with different refractive indices $\eta_1 = 1.4$ and $\eta_2 = 1.36$. | 4 |
| (c) State the advantages of optical fiber communication. (any four points) | 4 |
| (d) Define Mobile station, Base station & Control station. | 4 |

(B) Attempt any ONE :

- | | |
|---|----------|
| (a) State and explain Snell's law with neat diagram. How does total internal reflection takes place in optical fiber ? Explain with neat diagram. | 6 |
| (b) Explain any three mobile radio system around the world. | 6 |

2. Attempt any FOUR :

- (a) Draw the constructional sketch of fiber optic cable and give its classification. 4
- (b) Draw and explain the block diagram of OTDR. 4
- (c) Explain the process of call initiation from landline telephone to cellular phone. 4
- (d) State different techniques used to improve capacity and coverage in cellular system. Describe cell splitting in detail. 4
- (e) Explain any two quality parameters with respect to (i) Optical source, (ii) Optical detector. 4

3. Attempt any TWO :

- (a) State four requirements of optical detector. Describe working principle of photo diodes. 8
- (b) (i) State working principle of receiver unit. State significance of RSSI signal. 4
- (ii) For mobile unit how many signals are obtained from frequency synthesizer ? State the use of these signals. 4
- (c) (i) State significance of frequency reuse in cellular system. Write procedure to select cell for frequency reuse. 4
- (ii) A mobile communication system is allocated RF spectrum of 25 MHz with RF channel b/w 25 kHz and service area is divided into 40 cells with cluster size 4. Compute the system capacity. 4

4. (A) Attempt any THREE :

- (a) Describe the effect of co-channel interference in cellular system. How it effects system capacity ? 4
- (b) Draw the forward channel structure of IS-95. Write function of each channel in it. 4
- (c) Describe operation, principle of PIN diode. 4
- (d) Compare between LED & LASER. 4

(B) Attempt any ONE :

- (a) Describe various stages of call processing in GSM system with the help of neat diagram. 6
- (b) State significance of IMT 2000 & state vision of IMT 2000. (any 4 points) 2 + 4

5. Attempt any TWO :

- (a) Describe the processing units in CDMA 2000 system. How do these units differ from those in a CDMA one system ? 8
- (b) Draw the architecture of UMTS & state important parameters of WCDMA & CDMA 2000. 8
- (c) Compare the following :
- (i) Hard Handoff and Soft handoff. 4
- (ii) Delayed handoff and Queued Handoff. 4

6. Attempt any FOUR :

- (a) State important features of IS-95. 4
- (b) For IS-95, write the meaning and their sequence of following :
Call processing state, system access state, system idle state, traffic channel state, system initialization state 4
- (c) List out specifications of 2.5 a GSM. 4
- (d) State function of following blocks of GSM and using sketch show their interconnection :
- (i) HLR (ii) VLR
- (iii) MSC (iv) BSC 4
- (e) What are different types of splicing techniques ? Explain fusion splicing techniques. 4
-

