11920

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 :**   **3 × 4 = 12**

(a)   Draw the frequency spectrum for communication and show the region for fiber optical communication.

(b)   Define :

(i)   Critical angle

(ii)   Numerical Aperture

(c)   Explain step index fiber with example.

(d)   Draw the block diagram of cellular transmitter and explain.

(B)   **Attempt any ONE :**   **6**

(a)   Draw the block diagram of OTDR and explain its working.

(b)   Draw and explain forward and reverse link channel structure of IS-95.

2. **Attempt any FOUR :** **4 × 4 = 16**

  (a) Compute the NA and acceptance angle of fiber having core refractive index 1.50 and cladding index 1.45.

  (b) State the four requirement of optical detector.

  (c) Draw the labelled block diagram of paging system and explain its operation.

  (d) Write the feature of GSM. (any four)

  (e) Compare LED and Laser diode. (any four points)

3. **Attempt any TWO :** **2 × 8 = 16**

  (a) Explain the concept of splicing of an optical fiber. Mention any two methods of splicing.

  (b) Explain Hand off procedure. List different types of Hand off. Explain any two hand off procedures

  (c) Describe 3G-TD-SCDMA with respect to spectrum utilization, Bandwidth, data rate and antenna.

4. **(A)** **Attempt any THREE :** **3 × 4 = 12**

  (a) Draw the construction of p-i-n detector and explain its working.

  (b) State the advantages of cellular mobile services.

  (c) Explain the concept of cell splitting using suitable diagram.

  (d) Describe WLL with suitable diagram.

  (B) **Attempt any ONE :** **1 × 6 = 6**

  (a) Draw and explain GSM system architecture in detail.

  (b) Describe 3G-W-CDMA with necessary diagram.

5. Attempt any TWO : **2 × 8 = 16**

    (a) Draw the block diagram of fiber optic communication and state the function of each block.

    (b) State four way to improve coverage and capacity of cellular system.

    (c) Draw and explain block diagram of forward CDMA channel modulation process.

6. Attempt any FOUR : **4 × 4 = 16**

    (a) Describe the call making procedure from mobile handset to landline phone unit.

    (b) Draw the block diagram of mobile unit. State the function of logic unit and control unit in mobile handset.

    (c) Describe the concept of frequency reuse. Draw two frequency reuse patterns.

    (d) List GSM air interface specification.

    (e) Explain message and call processing used in GSM.

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