16172

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**

(a) Define the following terms :

(i) Refraction

(ii) Diffraction

(iii) Reflection

(iv) Scattering

(b) State the functions of following in cellular system :

(i) Visitors location Register

(ii) Equipment Identity Register

(c) How does optical time domain reflectometer detects faults in optical fiber ?

(d) State basic function of optical detector and optical source. Draw neat diagram of optical communication system.

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

(a) Explain cellular telephone system with neat diagram.

(b) Draw labelled structure of fiber optic cable and compare fiber optic cable with copper cable on basis of :

(i) Security

(ii) Interference

(iii) Bandwidth

(iv) Installation

2. Attempt any FOUR : **16**

(a) Draw simplified eye pattern in optical fiber communication and define the following :

(i) noise margin

(ii) time jitter

(b) Why does bending losses occurs in fiber. Explain different types of bending losses with neat diagram.

(c) With neat diagram, explain following terms :

(i) Total internal reflection

(ii) Critical angle

(iii) Numerical aperture

(iv) Acceptance cone

(d) Explain sectoring technique used in cellular system for improvement of cell coverage.

(e) If refractive index of fused quartz clad = 1.46, refractive index of core = 1.5, angle of incidence = 30°. Find (i) angle of refraction, (ii) angle of acceptance.

3. Attempt any TWO : **16**

(a) Define fiber joint. State different types of fiber joint. Explain prefusion splicing method.

(b) Define frequency synthesizer. Draw block diagram of frequency synthesizer used in mobile and state its operation.

(c) Draw diagram of :

(i) Proper & Improper situation of handoff

(ii) Intersystem handoff

4. (A) Attempt any THREE : **12**

(a) Draw well labelled architecture of IMT2000.

(b) List and explain any four characteristics of good optical detector.

(c) Explain working of Injection laser diode as optical source.

(d) State two advantages and two disadvantages of the following :

(i) Fixed Channel Assignment Strategy

(ii) Dynamic Channel Assignment Strategy

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

(a) Explain call flow sequence for mobile call origination in GSM system.

(b) Draw architecture of Local Multipoint Distribution Service (LMDS) and explain its operation. State any two applications of LMDS.

5. Attempt any TWO : **16**

(a) Define :

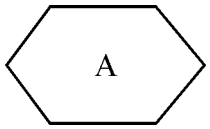
(i) Cell

(ii) Co-channel cell

(iii) Co-channel reuse ratio

(iv) Cell splitting

State the procedure of locating co-channel cell and draw co-channel on any two sides of given cell



(b) State any four features of the following :

(i) GPRS for 2.5 G GSM

(ii) EDGE for 2.5 G GSM

(c) List any 8 air interface parameters of WCDMA.

6. Attempt any FOUR : **16**

(a) Draw labelled architecture of IS-95 and state function of any two block.

(b) State two different properties of fiber joint. Explain expanded beam connector.

(c) List the function of following :

(i) UMTS Subscriber Identity Module (USIM)

(ii) Radio Network Controller (RNC).

(d) Draw diagram showing all the logical channels of GSM and state type of modulation used in GSM.

(e) State any four features of 3G-TD-SCDMA.
