JUNE 2008

Code: AE17 / AT17 **Subject: TELECOMMUNICATION SYSTEMS**

3 Hours **Max. Marks: 100**

NOTE: There are 9 Questions in all.

- **Question 1 is compulsory and carries 20 marks. Answer to Q. 1. must be written in the space provided for it in the answer book supplied and nowhere else.**
- **Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.**
- **Any required data not explicitly given, may be suitably assumed and stated.**

Q.1 Choose the correct or best alternative in the following: **(2x10)**

a. In electronic switching system the control function is performed by _____

(A) switches **(B)** amplifiers
(C) computer **(D)** transistors

b. The links that run between switching systems are called _____

(A) subscriber lines **(B)** trunks
(C) channels **(D)** transmission lines

c. A two stage non-blocking network requires _____ switching elements

(A) 2N **(B)** N^2
(C) $2N\sqrt{N}$ **(D)** $2N^2$

d. The ideal Grade of Service (GoS) in a telephone system is

(A) 0 **(B)** 1
(C) 10 **(D)** 100

e. A fully connected network of 8 nodes needs _____ links

(A) 16 **(B)** 64
(C) 56 **(D)** 28

f. Cost Capacity Index CCI = _____

(A) $\frac{\text{switching capacity}}{\text{cost per call}}$ **(B)** $\frac{\text{switching capacity}}{\text{cost per subscriber line}}$
(C) cost per channel **(D)** cost of switching elements

g. Switching Capacity SC = _____

(A) number of call per hour
(B) number of calls lost
(C) number of switches in network
(D) number of simultaneous calls supported by the network

h. H0 channel of ISDN supports _____

(A) 384 kbps **(B)** 1536 kbps
(C) 64 kbps **(D)** 1920 kbps

i. One Erlang = _____

(A) 60 CCS **(B)** 72 CCS
(C) 36 CCS **(D)** 120 CCS

j. Most common form of modulation used in cellular communication is

(A) FM **(B)** AM
(C) Wide Band FM **(D)** Narrow Band FM

Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.

Q.2 a. Compare and contrast single stage and multi stage networks. **(8)**

b. Discuss the three modes of centralized SPC. Compare its performance with distributed SPC. **(8)**

Q.3 a. Write notes on classification of switching systems. Enumerate the advantages of electronic switching systems. **(8)**

b. Illustrate the working of Time Space (TS) Combination switch. **(8)**

Q.4 Write short notes on the following:

(i) Transmission systems. **(4)**
(ii) Two wire to four wire conversion. **(4)**
(iii) Concentration and multiplexing. **(4)**
(iv) BORSCHT **(4)**

Q.5 a. Explain the Delay System analysis. **(8)**

b. Derive an expression for Grade of Service in a "Lost calls cleared" (LCC) System with finite sources. **(8)**

Q.6 a. Draw a sketch and explain the cellular structure for effective mobile communication. **(8)**

b. Describe CDMA cellular system and explain channel establishment. **(8)**

Q.7 a. What are the fibre optic transmission system elements? Give a brief description. **(8)**

b. Compare the following
(i) Single mode fibres and Multi mode fibres.
(ii)Step Index fibre and Linearly graded fibres. **(8)**

Q.8 a. Describe the basic ISDN architecture. **(8)**

b. Write note on data networks. **(8)**

Q.9 a. Explain store and forward technique for data transmission. **(8)**

b. Write note on ATM network. **(8)**