

BE, PART-III 6TH SEMESTER (IT) FINAL EXAMINATION, MAY 2012
SUBJECT: TELECOMMUNICATION SYSTEMS (IT – 602)

Full Marks = 70

Time: 3 hrs.

(Answer any **FIVE** questions)

1. (a) Classify telecommunication switching system.
(b) What do you mean by bit interleaving and word interleaving?
(c) Calculate average frame acquisition time for bit interleaving.

(4 + 4 + 6 = 14)

2. (a) Explain connectionless and connection oriented packet switching.
(b) What are the basic steps for signal transmission through telecommunication network? Explain in brief.
(c) How traffic intensity in a telecommunication network is measured?

(6 + 6 + 2 = 14)

3. (a) What is the minimum sampling frequency required for a signal with a frequency range of d.c. to 15 kHz., if it is (i) bandlimited between 1kHz. and 10kHz. (ii) passed through a low pass filter, which has a cut off frequency of 5 kHz.
(b) A PCM encoder using uniform PCM has a dynamic voltage range of $\pm 2V$. Determine the code words (length 8 bit) when input signal is (i) -120mV, (ii) 0.5 mV, (iii) -1.5V, (iv) 1.8V. (v) determine the input signal values for code words 01101001, 10011011

(4 + 10 = 14)

4. (a) Calculate total number of cross points for a three stage blocking switching network.
(b) Design a three-stage, 200×200 switch ($N = 200$) with $k = 4$ and $n = 20$ using the above design.
(c) How non-blocking network can be generated from a three stage blocking network? Explain with proper mathematical derivation.

(4 + 2 + 8 = 14)

5. (a) How number of subscribers is increased in time division time switch using phased operation?
(b) In a Time-Space switch, explain the communication procedure between $I_{47} - O_{29}$, and $I_{43} - O_{69}$ simultaneously.
(c) Explain cyclic control operation for a time division PAM switch.

(6 + 4 + 4 = 14)

6. (a) How frequency reuse is performed in a cellular network?
(b) How FDMA-TDMA relationship is established in second generation GSM communication?
(c) On the basis of which performance metrics GSM handover takes place? Explain the handover operation in brief.

(4 + 4 + 6 = 14)

7. Write short notes on:
(a) ISDN
(b) SONET

(7 + 7 = 14)