(Pages 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, DECEMBER 2008

EC 04 803—COMMUNICATION SWITCHING SYSTEMS

(2004 Admissions)

Time : Three Hours Maximum : 100 Marks

Answer **all** *questions.*

I. (a) How are switching systems classified ? In what way is stored program control superior to hard wired control.

(b) Find the switch advantage ratio of a three stage network with N inlets and N outlets for the cases (i) N = 128 and (ii) N = 32,768.

(c) Derive an expression for blocking probability of a three stage switch.

(d) Write short notes on DMS 100 switching systems.

(e) A switching system serves 1000 subscribers with a traffic intensity of 0.1 E per subscriber. If there is a sudden spurt in traffic, increasing average traffic by 50%, what is the sudden effect of arrival rate ?

(f) A subscriber makes three phone calls of three minutes, four minutes and two minutes duration in a one hour period. Calculate the subscriber traffic in erlangs, CCS and CM.

(g) Distinguish between inband signalling and out of band signalling.

(h) What are design issues involved in the design of ATM switches ?

(8 × 5 = 40 marks)

II. (a) Explain in detail about time multiplexed space switching. (15 marks)

Or

(b) (i) Differentiate between single stage and multistage networks. (8 marks)

(ii) Mention the various types of switching network configurations. (7 marks)

III. (a) (i) Write short notes on non-blocking switches. (8 marks)

(ii) Draw and explain a three stage non blocking configuration. (7 marks)

Or

(b) Explain in detail about AT and T 5ESS switching systems. (15 marks)

IV. (a) Explain in detail about delay systems. (15 marks)

Or

Turn over

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(b) (i) A traffic arrival stream is formed by merging the input from K independent poisson sources with source i having an arrival rate of λ_i for all $1 \leq i \leq k$. Show that merged stream is also poisson with an arrival rate $\lambda = \sum_{i=1}^{k} \lambda_i$.

(8 marks)

(ii) Consider a B-D process with coefficients :

$$\lambda_k(0) = \begin{Bmatrix} \lambda \text{ for } k = 0 \\ 0 \text{ for } k \# 0 \end{Bmatrix} \text{ and } \mu_k(0) = \begin{Bmatrix} \mu \text{ for } k = 0 \\ 0 \text{ for } k \# 0 \end{Bmatrix}.$$

Give the differential-difference equation for $P_0(t)$ and $P_1(t)$. Solve these equations and express the answers in terms of $P_0(0)$ and $P_1(0)$.

(7 marks)

V. (a) (i) Distinguish between inchannel and common channel signalling. (6 marks)

(ii) Explain basic scheme of common channel signalling. (9 marks)

Or

(b) Write short notes on :

(i) Self routing switches. (7 marks)

(ii) Strict sense non-block switches. (8 marks)

[4 × 15 = 60 marks]

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