

AMIETE – ET (Current & New Scheme)

Time: 3 Hours

December - 2017

Max. Marks: 100

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

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.
- The answer sheet for the Q.1 will be collected by the invigilator after 45 minutes of the commencement of the examination.
- 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 the best alternative in the following: (2×10)

- a. A large numbers of computers in a wide geographical area can be efficiently connected using _____.
- (A) twisted pair lines (B) coaxial cables
(C) communication satellites (D) All of these
- b. In a time multiplexed space switching system, one speech sample appears every _____
- (A) 125 micro sec (B) 250 micro sec
(C) 125 m sec (D) 1 sec
- c. MAC is the abbreviation for _____
- (A) Multimedia Access Control (B) Media Access Control
(C) Mobile Access Control (D) Master Access Point Control
- d. The negative voltage is used in residential telephone wiring because _____.
- (A) it provides a cleaner current that does not fluctuate
(B) it enables the phone company to use diesel-powered generators to supply power to the telephone line
(C) it prevents corrosion of the lines
(D) None of these
- e. The ISDN provides services using _____ digit streams
- (A) 8 kbits/s (B) 16 kbits/s
(C) 32 kbits/s (D) 64 kbits/s
- f. The Poisson distribution formula for call arrival is
- (A) $p(x) = \frac{A^x}{x!} e^{-A}$ (B) $p(x) = \frac{x^T}{x!} e^{-T}$
(C) $p(x) = \frac{u^x}{x} e^{-u}$ (D) $p(x) = \frac{C^x e^{+x}}{x!}$

- g. Hybrid circuit performs _____
 (A) 4 wire to 2 wire conversions (B) coding function
 (C) decoding function (D) 2 wire to 4 wire conversion
- h. A VPN (Virtual Private Network) must provide
 (A) same numbering scheme only as private network
 (B) same signalling protocols only as private network
 (C) same services only as private network
 (D) same numbering, signaling protocols, and services as private network
- i. If a subscriber makes 3 calls of 4 minutes, 5 minutes and 3 minutes duration in a one hour period. The subscriber traffic will be
 (A) 12E (B) 36E
 (C) 4E (D) 3E
- j. Time Division switching is one
 (A) Which connects through different paths
 (B) Which connects through same path
 (C) Transmits simultaneously
 (D) Switches once in a way

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

- Q.2** a. Discuss evaluation of telecommunication and explain basic principle of switching system. (10)
- b. Discuss the principle of crossbar switching of link systems. (6)
- Q.3** a. Define Grade of Service (GOS). (6)
- b. A switching system serves 10000 subscribers with a traffic intensity of 0.2 Erlangs per subscriber. If the traffic increases by 40%, what is the effect on the arrival rate? (4)
- c. What are the assumptions taken into account while arriving at a queuing system? Explain the need of finite Queuing and how this capacity is arrived at. (6)
- Q.4** a. What are the single stage and multistage networks? Compare the strengths and weaknesses of each of them. (8)
- b. With the help of neat sketch, explain the function of three stage Switching Networks. (8)
- Q.5** a. Explain basic time division space switching with a diagram of switching structure. (4)

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- b. Compare TST and STS networks. (4)
- c. Calculate the maximum access time that can be permitted for the data and control memories in a TSI switch with a single input and single output trunk multiplexing 2500 channels. Also estimate the cost of the switch and compare it with that of a single stage space division switch. (8)
- Q.6** a. Explain the sequence of operations of call processing functions. (8)
- b. Define State Transition Diagram and explain the various SDL symbols used in state transition diagram. (8)
- Q.7** a. Name three types of signaling units used in SS7. With neat diagrams, explain each fields associated with the signaling units. (8)
- b. What is meant by Common channel signaling, what are its advantages? (8)
- Q.8** a. Explain the advantages and services offered by Asynchronous Transfer Mode (ATM) (9)
- b. What are the various network topologies? Compare the ring configuration with bus configuration. (7)
- Q.9** a. Explain the principles determining a national numbering plan. How is this influenced by the need for an international number plan? (8)
- b. Explain the principle of cellular radio networks. (8)