

USN

1KT14E0004

10EC81

Eighth Semester B.E. Degree Examination, June/July 2018
Wireless Communication

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.

PART – A

- 1 a. Describe the characteristics of 2G and 3G cellular systems. (10 Marks)
- b. Explain with a neat flow diagram AMPS mobile originated call. (10 Marks)
- 2 a. With a neat block diagram, explain the functions performed by various blocks of a subscriber device. (10 Marks)
- b. Define and explain the generation of IMSI, IMEI and CGI. (10 Marks)
- 3 a. Explain capacity expansion techniques: (10 Marks)
 - (i) Cell splitting
 - (ii) Cell sectoring
 - (iii) Overlaid cells
- b. Explain the concept of frequency reuse for cellular system. For a mobile system of cluster size of 7, determine the frequency reuse distance if the cell radius is 5 km. Repeat the calculation for a cluster size of 4. (10 Marks)
- 4 a. With a neat sketch, explain GSM signaling model. (10 Marks)
- b. Explain the various logical channels used in GSM. (10 Marks)

PART – B

- 5 a. Explain GSM Inter-BSC handover operation with a neat diagram. (10 Marks)
- b. With a neat block diagram, explain the generation of CDMA reverse access channel. (10 Marks)
- 6 a. Explain with block diagram the generation of CDMA forward traffic control with power control for 14.4 kbps traffic. (10 Marks)
- b. Describe the soft handoffs process in CDMA. (10 Marks)
- 7 a. Explain convolutional and turbo encoders. (06 Marks)
- b. Discuss path loss model. (04 Marks)
- c. Explain with a neat block diagram RAKE receiver. (10 Marks)
- 8 a. What are the IEEE 802.11 extensions? (06 Marks)
- b. Describe the blue tooth protocol stack with relevant figures. (08 Marks)
- c. Depict the relationship between IEEE 802.11 sending and receiving station with a state diagram. (06 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and/or equations written eg, 42+8 = 50, will be treated as malpractice.

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10EC82

Eighth Semester B.E. Degree Examination, June/July 2018
Digital Switching System

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions, selecting
at least TWO questions from each part.**

PART – A

- 1 a. Explain briefly the different network structures used in communication system. (08 Marks)
- b. A four-wire circuit has an overall loss [two-wire to two wire) of 1 dB and the balance return loss at each end is 6 dB. Find:
 - i) The singing point
 - ii) The stability margin
 - iii) The attenuation of talker and listener echo. (04 Marks)
- c. Explain the principle operation of time-division multiplexing transmission system. (08 Marks)
- 2 a. Explain the working of distribution frames in strowger exchange. (10 Marks)
- b. Draw the block diagram of central office linkage and explain individual blocks. (10 Marks)
- 3 a. Starting from basic principle, derive an expression for the second Erlang's distribution. (10 Marks)
- b. What is congestion? Discuss briefly. (06 Marks)
- c. On average, one call arrives every 5 seconds. During a period of 10 seconds what is the probability that (i) No call arrives (ii) One call arrives (iii) Two call arrives (iv) more than two call arrives. (04 Marks)
- 4 a. Design a progressive grading system connecting 20 outgoing trunks and having switches with availability of 10. Draw the grading diagram. (10 Marks)
- b. Draw and explain two stage switching network and design a two stage switching network for connecting 200 incoming and 200 outgoing trunks. (10 Marks)

PART – B

- 5 a. Draw and discuss space switch diagram with K incoming and m outgoing PCM highways. (08 Marks)
- b. A T-S-T network has 20 incoming and 20 outgoing PCM highway, each conveys 30 channels. The required grade of service is 0.01, 0.02, 0.001, 0.005. Find the traffic capacity of network in mode 1 and mode 2. (06 Marks)
- c. Explain the frame alignment of PCM signals entering a digital exchange. (06 Marks)
- 6 a. Draw and explain the basic software architecture of a digital switching system. (10 Marks)
- b. Explain flow diagram using three modes of operation. (10 Marks)
- 7 a. Draw and explain the block diagram of interfaces of a typical digital switching system central office. (10 Marks)
- b. Discuss briefly: i) Firm ware-software coupling ii) Switching system-maintainability metrics. (10 Marks)
- 8 a. Explain generic switch software architecture. (10 Marks)
- b. Discuss common characteristics of digital switching systems. (10 Marks)

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10EC834/10TE835

Eighth Semester B.E. Degree Examination, June/July 2018
High Performance Computer Networks

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions, selecting
at least TWO questions from each part.**

PART – A

- 1 a. Describe the key innovations in Telephone networks. (08 Marks)
- b. Compare and contrast the key innovations in CATV and wireless networks. (09 Marks)
- c. A Telephone network transmits a frequency of 4 kHz and SNR is 48 dB. Find the
(i) Sampling rate (ii) Number of bits per sample (iii) Bit rate of the signal. (03 Marks)
- 2 a. Give comparison between connection oriented and connectionless service. (04 Marks)
- b. Explain the layered architecture of network functions and its implementations. (08 Marks)
- c. Explain with a neat sketch, open data network model. (08 Marks)
- 3 a. Explain with a neat sketch, the IPv6 header structure. (08 Marks)
- b. Explain with a neat sketch, TCP header and steps involved in a TCP connection. (07 Marks)
- c. Explain window adjustment technique in TCP. (05 Marks)
- 4 Write a short notes on:
 - a. SONET frame. (07 Marks)
 - b. Functions of overhead bytes in SONET. (06 Marks)
 - c. Explain DWDM. (07 Marks)

PART – B

- 5 a. Explain the following with respect to ATM network:
 - (i) Features of ATM. (12 Marks)
 - (ii) QOS parameters. (08 Marks)
 - (iii) Types of delay.
 - (iv) Signalling.
- b. Discuss ATM Adaptation layer, with suitable diagrams.
- 6 a. Explain different link level design technique. (08 Marks)
- b. Write notes on:
 - (i) Architecture in wireless.
 - (ii) Bluetooth.
 - (iii) Adhoc wireless networks. (12 Marks)
- 7 a. Discuss datagram network's queuing model and key queuing result with suitable diagrams. (10 Marks)
- b. Explain means of control of different types of networks. (10 Marks)
- 8 a. Explain ring networks and hierarchical mesh networks with suitable diagrams. (08 Marks)
- b. Write short notes on:
 - (i) Optical cross connects.
 - (ii) Single hop LANs.
 - (iii) Multihop LANs. (12 Marks)

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Eighth Semester B.E. Degree Examination, June/July 2018
Multimedia Communication

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting
at least TWO questions from each part.**

PART – A

- 1 a. List the different types of multimedia networks. Explain (i) Telephone Network (ii) Integrated Services Digital Network (ISDN) in detail with suitable figures. (08 Marks)
- b. Explain the working principle of circuit mode and packet mode of operation of multimedia networks. (08 Marks)
- c. List the different operational modes of a communication channel with relevant figures. (04 Marks)
- 2 a. Assuming the Bandwidth of a speech signal is from 50 Hz through to 10 kHz and that of a music signal is from 15 Hz through 20 kHz. Derive the bit rate that is generated by the digitization procedure in each case assuming the Nyquist sampling rate is used with 12 bits per sample for speech signal and 16 bits per sample for music signal. Derive the memory required to store a 20 minute passage of stereophonic music. (06 Marks)
- b. With the aid of a diagram, explain how an image produced by a scanner or digital camera is captured and stored within a computer memory. (10 Marks)
- c. Assuming the CD-DA standard is being used device: (i) The storage capacity of a CDROM to store a 60 minute multimedia title (ii) The time to transmit a 30 second portion of the title using a transmission channel of bit rate * 64 Kbps, * 1.5 Mbps (04 Marks)
- 3 a. Explain the meaning of following terms relating to compression:
 - (i) Lossless and lossy compression
 - (ii) Source and Entropy encoding. (10 Marks)
- b. A message comprising of a string of characters with probabilities $e = 0.3$, $n = 0.3$, $t = 0.2$, $w = 0.1$, $\bullet = 0.1$ is to be encoded. The message to be sent is 'went'. Compute the arithmetic codeword. (10 Marks)
- 4 a. Explain how better sound quality can be obtained by using subband ADPCM, with the help of block diagrams of encoder and decoder. (10 Marks)
- b. Draw the block diagram of H.261 video encoder and explain the role of FIFO buffer and the associated high and low threshold values. (10 Marks)

PART -- B

- 5 a. Explain in detail token ring network frame formats and field description. (10 Marks)
- b. Explain in detail, with a diagram LAN protocols and protocol frame work. (10 Marks)
- 6 a. Explain the datagram format of IPv6. Explain the role of each header fields. (10 Marks)
- b. Explain the operation of internet with a neat diagram of protocols associated with networking components. (10 Marks)
- 7 a. Explain the general structure of ATM switch architecture. (10 Marks)
- b. Explain the ATM adaptation layer 1 and 2 with neat diagrams. (10 Marks)
- 8 a. Explain TCP/IP protocol suite. (10 Marks)
- b. In relation to RTP packet format, explain briefly the meaning and use of the following fields: (i) CC and CSRC (ii) M and Payload type (iii) Sequence number. (05 Marks)
- c. With the aid of a diagram, explain briefly UDP datagram header fields. (05 Marks)

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