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10EC81

**Eighth Semester B.E. Degree Examination, June/July 2017**  
**Wireless Communications**

Time: 3 hrs.

Max. Marks:100

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

**PART – A**

- 1 a. Briefly explain the different generation of cellular system. (10 Marks)  
 b. Explain with a neat flow diagram AMPS mobile originated call. (10 Marks)
- 2 a. Explain with diagram mobile switching centre (MSC). (10 Marks)  
 b. Explain with necessary diagram the formats of cell global identity number, mobile global identity number, IMEI number and local area identity number. (10 Marks)
- 3 a. Explain differences between cell splitting and cell sectoring capacity expansion techniques with neat diagram. (07 Marks)  
 b. For a mobile system of cluster size of 12 determine the frequency reuse distance if the cell radius is 8 km. (03 Marks)  
 c. Name three basic functions performed by the location management and explain cellular location updating with figure. (10 Marks)
- 4 a. Explain with diagram GSM network architecture. (10 Marks)  
 b. Explain in detail GSM channel concepts. (10 Marks)

**PART – B**

- 5 a. Explain with flow diagram GSM call configuration and call accepted. (10 Marks)  
 b. Explain with diagram GSM intra BSC handover operation. (10 Marks)
- 6 a. Explain reverse traffic channel generation in CDMA. (10 Marks)  
 b. Explain different call hand offs in CDMA system. (10 Marks)
- 7 a. What is the received power dBm for a signal in free space with a transmitting power of 800 mW at a frequency of 980 MHz and distance from the receiver is 6000m, if the transmitting receiving gain is approximately equal to 1. What is the path loss in dB? (06 Marks)  
 b. Explain direct sequence and frequency hopping spread spectrum. (08 Marks)  
 c. Explain RAKE receiver with a diagram. (06 Marks)
- 8 a. List four fundamental ways in which 802.16a (Wimax), 802.11 in (WLAN) and 802.15 (Bluetooth) different from one another. (04 Marks)  
 b. Explain Bluetooth protocol stack with diagram. (08 Marks)  
 c. Explain with suitable diagram independent basic service set networks and distribution system concept supported by IEEE 802.11 architecture. (08 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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**Eighth Semester B.E. Degree Examination, June/July 2017**  
**Digital Switching Systems**

Time: 3 hrs.

Max. Marks:100

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

**PART – A**

- 1 a. Write four-wire circuit used in two-way transmission network and explain its working principle. (08 Marks)
- b. Explain network topologies in brief. (06 Marks)
- c. Express the following power levels in dBm and dBW:  
(i) 1 mW; (ii) 1 W; (iii) 2 mW (06 Marks)
- 2 a. Design a 10,000 line step-by-step telephone exchange with a suitable diagram. (06 Marks)
- b. Enumerate the functions of switching system. (08 Marks)
- c. Explain the operation of BORSCHT circuit with a suitable block diagram. (06 Marks)
- 3 a. Derive an expression for second Erlang's distribution formula. (08 Marks)
- b. A group of 20 trunks provides a grade of service of 0.01 when offered 12 E of traffic:  
(i) How much is the grade of service improved if one extra trunk is added to the group?  
(ii) How much does the grade of service deteriorate if one trunk is out of service? (06 Marks)
- c. A group of five trunks is offered 2E of traffic:  
Find  
(i) The grade of service.  
(ii) The probability that only one trunk is busy.  
(iii) The probability that only one trunk is free.  
(iv) The probability that at least one trunk is free. (06 Marks)
- 4 a. Deduce the expression to determine the total number of cross points for two stage network with incoming trunks M greater than outgoing trunks N. (06 Marks)
- b. Explain progressive, skipped and homogeneous gradings. (06 Marks)
- c. Design a three stage network for 100 incoming trunks and 400 outgoing trunks. (08 Marks)

**PART – B**

- 5 a. Explain space-time-space switching network with a suitable block diagram. (07 Marks)
- b. Describe the frame alignment and synchronization networks. (07 Marks)
- c. Explain cross-bar or space switching with a suitable diagram. (06 Marks)
- 6 a. Explain the classification of digital switching system with a suitable block diagram. (10 Marks)
- b. Describe the concept of software linkages during a call required in telephony system. (10 Marks)
- 7 a. Describe the organizational interfaces of a typical digital switching system control office. (10 Marks)
- b. Use strategic analysis and highlight to improve the software quality with a neat block diagram. (10 Marks)
- 8 a. Write a call connection flow-chart and a basic steps necessary to complete a simple call through a digital switching system. (12 Marks)
- b. Write short notes on:  
(i) Common characteristics of digital switching system.  
(ii) Analysis report for digital switching system. (08 Marks)

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10EC834/10TE835

**Eighth Semester B.E. Degree Examination, June/July 2017**  
**High Performance Computer Networks**

Time: 3 hrs.

Max. Marks:100

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

**PART – A**

- 1 a. Explain digital carrier systems in telephone networks. (10 Marks)  
b. Compare and contrast the key innovation in CATV and wireless network. (10 Marks)
- 2 a. How statistical multiplexing can achieve much higher multiplexing gain relative to TDM and FDM? (10 Marks)  
b. Explain congestion control mechanism. Calculate the time required to transmit (TRANS) a packet of size 1000 bit with speed 1 Mbps. (10 Marks)
- 3 a. Explain IPV6 header. (10 Marks)  
b. Compare and contrast TCP and UDP. (10 Marks)
- 4 Write a short notes on :  
a. DWDM. (07 Marks)  
b. SONET frame. (07 Marks)  
c. Function of overhead bytes in SONET. (06 Marks)

**PART – B**

- 5 a. Explain main feature of ATM and ATM header structure. (10 Marks)  
b. Explain signaling and addressing with respect to ATM network. (10 Marks)
- 6 a. Explain different link level design techniques. (10 Marks)  
b. Discuss multiple access techniques. (10 Marks)
- 7 a. Explain means of control of different types of network. (10 Marks)  
b. Discuss QoS. (10 Marks)
- 8 a. Explain optical network and Ring network. (10 Marks)  
b. Explain architecture of an optical cross connect with N input, output fiber. (10 Marks)

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10EC835

**Eighth Semester B.E. Degree Examination, June/July 2017**  
**Internet Engineering**

Time: 3 hrs.

Max. Marks: 100

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

**PART – A**

- 1 a. Describe the different types of communication software. (10 Marks)  
b. Describe the simple exchange protocol in the form of pertrients. (10 Marks)
- 2 a. Explain briefly about the layered architecture. (10 Marks)  
b. Explain the functions of layers in OSI model. (10 Marks)
- 3 a. Mention the salient features of SDL. (06 Marks)  
b. With a neat diagram and explain about components of a communication system structure in SDL. (08 Marks)  
c. Write a short notes on communication path :  
i) Channels  
ii) Signal routers. (06 Marks)
- 4 a. With a block diagram, explain SDL specification of TCP. (10 Marks)  
b. Explain with a simple two process communication system deadlocks and unspecified receptions. (10 Marks)

**PART – B**

- 5 a. Explain about different types of protocol verifications (10 Marks)  
b. Explain about verification of the ABP with neat diagram of MSC to observe the safely property. (10 Marks)
- 6 a. Explain the conformance testing methodology and frame work. (10 Marks)  
b. Explain the test sequence generation methods. (10 Marks)
- 7 a. Explain the protocol performance testing by analytical methods. (10 Marks)  
b. Describe the relationship between the conformance testing and interoperability testing. (10 Marks)
- 8 a. Explain the automatic synthesis of SDL from MSC. (10 Marks)  
b. Explain the synthesis methodology. (10 Marks)

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10EC/TE841

**Eighth Semester B.E. Degree Examination, June/July 2017**  
**Multimedia Communication**

Time: 3 hrs.

Max. Marks: 100

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

**PART – A**

- 1 a. With the help of a diagram, describe the main components of PSTN. Show how a high speed modem provides multiple services in addition to basic telephony. (10 Marks)
- b. List the five basic types of communication networks that are used to provide multimedia services. Explain with neat diagram (i) Broadcast television network (ii) Integrated services digital network. (10 Marks)
- 2 a. Explain the principle of operation of a PCM speech codec with a block diagram. (06 Marks)
- b. Find out the time taken to transmit the following digitized images at both 64 kbps and 1.5 Mbps:
  - (i) a 640×480×8 VGA compatible image
  - (ii) a 1024×768×24 SVGA compatible image (04 Marks)
- c. With a neat diagram explain audio/sound synthesizer. (06 Marks)
- d. Write a note on 4 : 2 : 2 format? (04 Marks)
- 3 a. With a neat block diagram explain the working of JPEG encoder. (10 Marks)
- b. Encode the string "went." comprising characters with probabilities of e = 0.3, n = 0.3, t = 0.2, w = 0.1, . = 0.1 using arithmetic coding. (10 Marks)
- 4 a. With the help of a neat diagram explain LPC encoder and decoder. (08 Marks)
- b. Explain H.261 encoding format. (08 Marks)
- c. Give the meaning of motion estimation and compensation with respect to video compression. (04 Marks)

**PART – B**

- 5 a. Explain the principle of operation of token ring network with the help of a diagram. (10 Marks)
- b. Explain in detail the LAN protocols and protocol framework with diagram. (10 Marks)
- 6 a. With example explain fragmentation and reassembly in the internet. (10 Marks)
- b. Describe the operation of ARP and RARP. (10 Marks)
- 7 a. With the help of diagram explain broadband ATM cell formats. (10 Marks)
- b. Explain LAN emulation in ATM. (10 Marks)
- 8 a. Explain TCP/IP protocol suite. (10 Marks)
- b. Explain RTP and RTCP. (10 Marks)

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10EC842

**Eighth Semester B.E. Degree Examination, June/July 2017**  
**Real Time Operating Systems**

Time: 3 hrs.

Max. Marks:100

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

**PART – A**

- 1 a. Write the pseudocode for event driven real time service. (06 Marks)  
b. Write the basic block diagram of distributed continuous media real time services. (04 Marks)  
c. Explain real time service timeline with hardware acceleration and without hardware acceleration. (10 Marks)
- 2 a. What are the 3 resources to be considered for the design of any embedded system? Mention the issues to be considered for these in brief. (10 Marks)  
b. Explain how the code for computing the satellite position function can be made thread safe reentrant by using task lock( ) and task unlock( ) function. (10 Marks)
- 3 a. Derive an equation for RMLUB considering two services with two different cases. (12 Marks)  
b. Describe the relationship between sufficient, necessary and N and S feasibility tests using subset diagram. (10 Marks)
- 4 a. Explain pipeline stage overlap with a depth of 4, Mention the factors that contribute for CPI[Clocks Per Instruction] and explain how hazards can be minimized. (10 Marks)  
b. Explain WCET and ACET with necessary equations. Explain each and every parameter in the equations. (10 Marks)

**PART – B**

- 5 a. What is priority inversion? Mention three conditions that cause unbounded priority inversion. Explain the solution for priority inversion. (12 Marks)  
b. Explain how to handle missed deadlines. (08 Marks)
- 6 a. Explain test access ports and power on self test (POST). (10 Marks)  
b. Explain exceptions and assert with example. (10 Marks)
- 7 a. Explain building performance monitoring in to software. (10 Marks)  
b. Explain path length, efficiency and calling frequency. (10 Marks)
- 8 a. With a simple C code with two paths perform MCDC testing. (10 Marks)  
b. With a neat block diagram, explain the architecture of PIC microcontroller. (10 Marks)

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