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10EC81

Eighth Semester B.E. Degree Examination, Dec.2016/Jan.2017
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. Explain with a neat diagram SS7 signaling system and their function. (10 Marks)
- b. Explain with a neat flow diagram, AMPS mobile originated call. (10 Marks)
- 2 a. With a neat block diagram, the MSC sub system. (08 Marks)
- b. Define and explain the generation of IMSI, IMEI and CGI. (08 Marks)
- c. What is the purpose of visitor location register and interworking location register? (04 Marks)
- 3 a. Explain capacity expansion techniques : (10 Marks)
 - i) Cell splitting
 - ii) Cell sectoring
 - iii) Overlaid cells.
- b. A service provider wants to provide cellular communication to a particular geographic area. The total bandwidth, the service provider is licensed for 5 MHz and system subscriber requires 10 KHz of bandwidth. Determine the system capacity; If the service provider implements a cellular system with 35 transmitter sites and cluster size of 7, determine the new system capacity. (06 Marks)
- c. Determine frequency reuse distance for cell radius 5 km and cluster size of 7. (04 Marks)
- 4 a. Explain briefly service provided by GSM. (06 Marks)
- b. With a neat block diagram, explain different protocols used in GSM signaling model. (10 Marks)
- c. Draw and explain GSM TDMA frame with logical channel. (04 Marks)

PART – B

- 5 a. Explain GSM intra BSC handover with a neat diagram. (10 Marks)
- b. Describe GSM chiphering mode setting operation and IMEI check. (10 Marks)
- 6 a. Explain with block diagram the generation of CDMA forward traffic control with power control channel for 14.4 kbps traffic. (10 Marks)
- b. Draw and explain CDMA synchronization channel signal. (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. Discuss the design issues of IEEE 802.11. (04 Marks)
- b. Explain the working of BDS, DS and ESS network with a neat diagram. (08 Marks)
- c. Describe the Bluetooth protocol stack with relevant figures. (08 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
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10EC82

Eighth Semester B.E. Degree Examination, Dec.2016/Jan.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. Explain the network services with diagram showing the relationship of service and bearer networks. (07 Marks)
- b. Explain the principle of operation of four-wire circuit with neat diagram. (08 Marks)
- c. Explain the principles of time-division multiplexing transmission with elementary TDM system and channel pulse trains. (05 Marks)
- 2 a. What are the different functions of switching system? Explain briefly. (05 Marks)
- b. Explain the cross bar system with matrix of cross points. (05 Marks)
- c. With diagram, explain the basic central office linkages, (relevant to MDF, TDF, power plant give explanation). (05 Marks)
- d. Explain the switching system hierarchy with relevant diagram. (05 Marks)
- 3 a. Explain the congestion in telecommunications traffic system. (05 Marks)
- b. During the busy hour, 1200 calls were offered to a group of trunks and six calls were lost. The average call duration was 3 minutes. Find:
 - i) The traffic offered.
 - ii) The traffic carried.
 - iii) The traffic lost.
 - iv) The grade of service.
 - v) The total duration of the periods of congestion. (05 Marks)
- c. Explain the lost call system with assumptions, diagram and mathematical expressions. (10 Marks)
- 4 a. Explain the principles of gradings diagrams showing sixteen trunks interconnected to two groups of switches of availability 10. Write the following: i) Full diagram; ii) Grading diagram. (08 Marks)
- b. Design a three-stage network for connection 100 incoming trunks to 100 outgoing trunks. Assume suitable data. (06 Marks)
- c. Explain briefly about grades of service of link systems. (06 Marks)

PART - B

- 5 a. With relevant diagram explain the principle of operation of the space switch showing the 'K' incoming PCM highways and the in outgoing PCM highways. (08 Marks)
- b. Explain the structure of time-space-time (T-S-T) switching network with m is number of PCM highways and 'n' is number of time slots. (07 Marks)
- c. With diagram, explain the following exchange synchronization systems:
 - i) Single ended unilateral system.
 - ii) Double-ended unilateral system. (05 Marks)

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- 6 a. With relevant diagram, explain the digital switching system software classification briefly. (08 Marks)
b. With neat diagram, explain the operation of the software linkages during a call. (08 Marks)
c. Name the different categories of call features. (04 Marks)
- 7 a. With flowchart explain the operation of interfaces of a typical digital switching system central office. (07 Marks)
b. With relevant block diagram approach explain the strategy for improving software quality. (08 Marks)
c. Write a note on 'Defect Analysis'. (05 Marks)
- 8 a. Explain briefly about generic switch hardware architecture with relevant diagram. (08 Marks)
b. Explain about some of the common characteristics of digital switching systems. (07 Marks)
c. Write note on 'Analysis Report'. (05 Marks)

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10EC832

Eighth Semester B.E. Degree Examination, Dec.2016/Jan.2017
Network Security

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1 a. What are the different types of active and passive attacks? (05 Marks)
 b. Draw the model for network security and specify the four major tasks performed by it. (04 Marks)
- c. For the cipher text "IMWNIAUP" find the plain text using the key "MINIMUM" using playfair cipher. (05 Marks)
- d. In an S – DES encryption system the 10 bit key is given as 1001000110. P₁₀ is given as P₁₀ = 2 7 1 6 3 5 4 9 10 8. P₈ is given as P₈ = 3 5 6 7 10 2 4 9. Deduce sub keys K₁ and K₂. (06 Marks)
- 2 a. Explain with neat block diagrams a single round of DES encryption. (10 Marks)
 b. Given the cipher text "E M Q Y". Find the plain text using the key $\begin{pmatrix} 1 & 1 \\ 3 & 2 \end{pmatrix}$ in Hill cipher. (07 Marks)
 c. Write three differences between conventional cryptosystems and public key crypto systems. (03 Marks)
- 3 a. Write the RSA algorithm. (05 Marks)
 b. In a public key system using RSA intercept the cipher text is 10, sent to a user where public key is 5 and n = 35. Deduce the plain text. (05 Marks)
 c. What are message Authentication codes? Give the block diagrams to show how MAC is obtained for i) Authentication ii) Confidentiality and authentication tied to plain text and iii) confidentiality and authentication tied to cipher text. (10 Marks)
- 4 a. Draw a block diagram to show any one use of hash functions. (02 Marks)
 b. Explain the arbitrated digital signature approach of the digital signature function. (10 Marks)
 c. Explain with diagrams the signing and verifying of digital signature algorithm. (08 Marks)

PART – B

- 5 a. Show the SSL record protocol operation and the details of SSL record format with diagram and explain. (06 Marks)
 b. Who are the participants of SET? Give the sequence of events required for SET. Explain with appropriate diagram. (10 Marks)
 c. What are the requirements for digital signature? (04 Marks)
- 6 a. Explain why we need web security. (02 Marks)
 b. Explain with diagrams how a new password is loaded and how a password is verified. (10 Marks)
 c. Explain with diagram the distributed intrusion detection. (08 Marks)
- 7 a. Explain how the compression virus propagates. (08 Marks)
 b. Explain the digital immune system. (10 Marks)
 c. What are the limitations of fire walls? (02 Marks)
- 8 a. What are the characteristics of a bastion host? (10 Marks)
 b. Explain with a diagram the application level gateway. (10 Marks)

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10EC843

Eighth Semester B.E. Degree Examination, Dec.2016/Jan.2017
GSM (Global System for Mobile 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 relevant figures. Explain GSM PLMN. What are its objectives and services? (08 Marks)
b. With a neat block diagram, explain mapping of GSM on to OSI layers. (06 Marks)
c. Briefly explain the different types of GSM interfaces. (06 Marks)
- 2 a. What are the future techniques available to reduce interference in GSM? Explain. (10 Marks)
b. Explain radio link features of GSM :
i) Discontinuous transmission(DTX)
ii) SFH. (10 Marks)
- 3 a. With a neat diagram explain data encryption in GSM. (06 Marks)
b. Describe the mobile identification process. (06 Marks)
c. Discuss the different Bursts in GSM. (08 Marks)
- 4 a. What are the attributes of speech codec? Explain. (08 Marks)
b. Explain with illustration, working of full rate vocoder. (06 Marks)
c. Write short notes on ITU –T standards. (06 Marks)

PART – B

- 5 a. With illustration explain the messages flow diagram for GSM mobile terminated call. (08 Marks)
b. Explain intra–MSC–hand over in GSM. (08 Marks)
c. What are the security algorithms used in GSM? (04 Marks)
- 6 a. Explain the requirements of wireless security. (10 Marks)
b. Explain with call flow diagram token–based challenge. (10 Marks)
- 7 a. Write short notes on telegraphic models. (06 Marks)
b. Briefly explain the design of TDMA frame. (06 Marks)
c. Explain the various requirements to design a wireless system. (08 Marks)
- 8 a. What are the five TMN layers in M3010? Explain the pertinent three TMN layers. (10 Marks)
b. With a neat block diagram. Explain the GSM containment tree. (10 Marks)

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