GENERAL SIR JOHN KOTELAWALA DEFENCE UNIVERSITY

Faculty of Engineering

Intake 30

BSc in Electronic and Telecommunication Engineering Degree
Semester 5 **Supplementary** Examination – Sept./Oct. 2015

ET 5082 – COMMUNICATION NETWORKS

Time allowed: 3 hours 5th Oct, 2015

INSTRUCTIONS TO CANDIDATES

This paper contains 5 questions on 4 pages

Answer all FIVE questions

This is a closed book examination

This examination accounts for 70% of the module assessment. A total maximum mark obtainable is 100. The marks assigned for each question and parts are indicated in square brackets

If you have any doubt as to the interpretation of the wordings of a question, make your own decision, but clearly state it on the script

Assume reasonable values for any data not given in or provided with the question paper, clearly make such assumptions made in the script

All examinations are conducted under the rules and regulations of the KDU

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Question 1

a) Compare the difference between 3rd and 4th generation mobile networks.

(5 marks)

b) What is Femto cell and specify key differences between Femto cell and 802.11 wireless network? Briefly discuss the technical challenges of Femto cell deployment.

(5 marks)

c) What is cloud computing? Draw the layer structure of cloud computing and discuss them briefly.

(5 marks)

d) What are the key characteristics that the wireless sensor network device exhibits? Briefly explain the application of wireless sensor network?

(5 marks)

Question 2

a) Draw a block diagram of the communication model and briefly explain the basic function of each block.

(4 marks)

b) Briefly discuss the advantage and disadvantages of coaxial communication and optical fiber communication. Provide some examples to justify your answer.

(6 marks)

c) Explain the difference between the packet switching and circuit switching communication and highlight the advantages of packet switching network over circuit switching network.

(6 marks)

d) Transmission media are materials on which data signal can propagate. Different material offer different channel capacities. What is the Shannon channel capacity theorem which provide outline for such transmission and explain the effect of relevant parameters.

(4 marks)

Question 3

a) There are two applications, let's say Application A and Application B. Application A is sensitive against the delay and delay variation whereas application B is sensitive against packet losses.

I. Provide two examples for Application A and Application B

II. Which transport protocols are suitable for those applications and justify your answer.

(8 marks)

b) What are the basic functionalities of the TCP and IP layers? Explain TCP three way handshake connection establishment process between two end terminals. (6 marks)

c) Compare the seven OSI layer model and Internet (TCP/IP) layer model. Explain the difference between application layers of the both models. (6 marks)

Question 4

a) Why audio and video codecs are important in data communication? Specify 3 popular video and 3 audio codecs separately? (5 marks)

b) What are difference between the IPv4 and IPv6 packet formats? (6 marks)

c) Briefly explain the functionality of two IP routing protocols used in communication networks. (4 marks)

d) Explain and compare functionalities of following three email protocols: SMTP, POP3 and IMAP. (5 marks)

Question 5

a) Briefly explain how delay, jitter and packet loss can influence the VoIP, video and internet browsing. (6 marks)

b) One student at the class room is saying that TCP protocol can provide the end-to-end reliability during the data transmission over the network. Do you agree with him? Justify your answer. (6 marks)

c) Explain what is the difference between connection orient mode transmission and connectionless mode transmission. (4 marks)

d) Specify and explain the basic service primitives used in data communication between protocol layers. (4 marks)

End of question paper