GENERAL SIR JOHN KOTELAWALA DEFENCE UNIVERSITY
Faculty of Engineering
Department of Electrical, Electronic and Telecommunication Engineering

BSc Engineering Degree
Semester V Examination – May/June 2018
(Intake 33 - EE/ET)

ET3102 – COMMUNICATION NETWORKS

Time allowed: 3 hours

14 June 2018

ADDITIONAL MATERIAL PROVIDED

Nil

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 **80%** of the module assessment. A total maximum mark obtainable is **100**. The marks assigned for each question and parts thereof 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

181

QUESTION 1

a. Explain the operating principles of Asymmetric Digital Subscriber Line(**ADSL**) with a typical ADSL equipment configuration. [6 marks]

b. Explain the following communication technology with aid of a diagram [6 marks]

i. PON

ii. WDM

c. Explain the architecture of a telephone communication system. [8 marks]

QUESTION 2

a. Explain the architecture of an optical fibre communication system [6 marks]

b. **Compare the transmission Properties,** Light Sources and Bandwidth of Single Mode Vs Multimode optical fibre cable [6 marks]

c. Compare the satellite communication Vs Optical fibre communication systems [8 marks]

QUESTION 3

a. The data link layer offers different services to the network layer, Explain the following services in Data Link Layer. [6 marks]

i. Unacknowledged connectionless service.

ii. Acknowledged connectionless service.

iii. Acknowledged connection-oriented service.

b. Explain the framing techniques of Byte count with a suitable diagram [6 marks]

c. Explain the Framing method of Flag Byte with Byte stuffing with a suitable diagram [8 marks]

QUESTION 4

a. Explain the following header format information in the IP datagram [8 marks]

i. HLEN

ii. Service Type

iii. Fragmentation offset

iv. Time to live

b. Calculate the Hamming code for the data sequence of **10101000110110011101O1** [12 marks]

183

QUESTION 5

a. Explain the number of networks and number of hosts for the Classes of A, B & C networks. [5 marks]

b. Explain the concept of network mask and subnet mask with an example. [5 marks]

c. Given the Class C network of 204.25.5.0/24, subnet the Network to create a network as shown in Figure Q5. [10 marks]

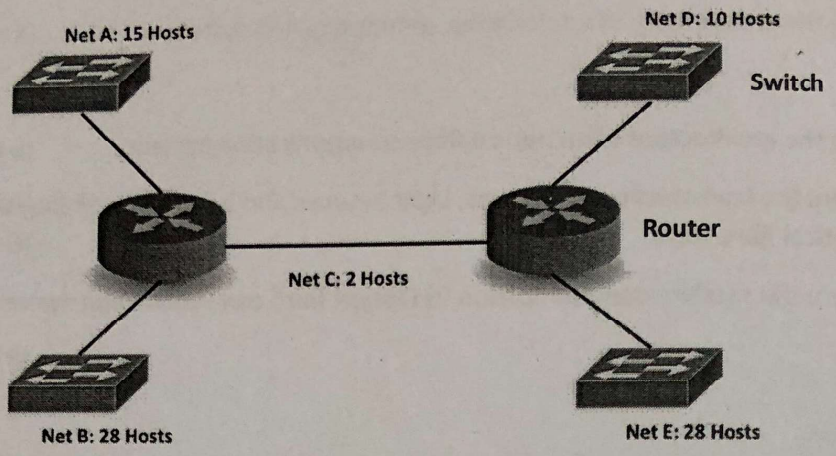

Fig Q5

End of the question paper

181