



NATIONAL SCHOOL OF BUSINESS MANAGEMENT
BSc. In Management Information Systems (Special) – 20.3
BSc. (Honours) in software Engineering – 20.3
BSc. (Honours) in Computer Science – 20.3
BSc. (Honours) in Computer Networks – 20.3
Bachelor of Information Technology (VU) – 20.3

Year 01 Semester 02 Examination

4th of October 2021

CN101.3- Data Communications and Network

Instructions to Candidates

- 1) **Section A compulsory to answer and answer TWO questions from Section B.**
- 2) Please keep proper formatting in your answer sheets
- 3) Mention your Index number and the name that appear on the student ID
- 4) **Time allocated for the examination is three (03) hours and 30 minutes (Including downloading and uploading time)**
- 5) Download the paper, provide answers to the selected questions in a word document.
- 6) Please upload the document with answers (Answer Script) to the submission link before the submission link expires
- 7) Answer script should be uploaded in PDF Format
- 8) Under any circumstances, E-mail submissions would not be taken into consideration for marking. An incomplete attempt would be counted as a MISSED ATTEMPT.
- 9) The Naming convention of the answer script – Module Code_Subject name_Index No
- 10) You must adhere to the online examination guidelines when submitting the answer script to N-Learn.
- 11) Your answers will be subjected to a Turnitin similarity check. Hence, direct copying and pasting from internet sources, friend's answers etc., will be penalized.

Section A
Compulsory to answer.

Question 01 **(25 Marks)**

Nalinda is chatting with Darshana through a web application (using a chrome browser)with a 4.4 Mbps 4G internet connection. The connection between Nalinda's computer and Darshan's is full of disturbances (errors) due to various technical reasons.

- a) Identify the reasons to have many errors in the connection and explain (11 Marks)
- b) Explain the above communication between Saman's computer and Suraj's Computer by using OSI Model (11 Marks)
- c) Covert 4.4 Mbps connection speed into **bps** and **kpbs** (03 Marks)

Question 02 **(25 Marks)**

- a) What is TCP/IP model & make a comparison between the old version and the new version (IPv4,IPv6) with proper explanation with examples (10 Marks)
- b) Explain the purpose of the TCP/IP layers with proper diagrams (08 Marks)
- c) Compare and contrast OSI model and TCP/IP Model with proper diagram (07 Marks)

Section B
Answer two questions out of three questions.

Question 03 **(25 Marks)**

- a) Explain the purpose of the data link layer with justifications (08 Marks)
- b) Explain how does the Selective-Reject ARQ works (07 Marks)
- c) What is the functionality of the network layer explin with appropriate example. (10 Marks)

Question 04 **(25 Marks)**

Imagine you are building a small network for your home to full fill the below requirements

- To connect 2 Desktop computers, 2 Laptops and 2 Smart Mobiles
- 2 Desktop computers are for gaming purpose and will play game over the internet
- Should have an internet connection

- a) What is the basic hardware that you would recommend and justify your selection? (06 Marks)
- b) If you need to select a Switch or Hub, which device will you choose and why? (07 Marks)
- c) What are the transmission mediums that you recommend to connect these devices and briefly explain the reason (05 Marks)
- d) Which type of internet connection that you recommend to connect this network to the internet and briefly explain the reason (07 Marks)

Question 05**(25 Marks)**

a) Explain the advantages of having multiplexing?

(06 Marks)

b) Find an internet checksum for the following binary packet sequences

I. 10011111 10101101

II. 10011110 11110110

III. 11111010 11010101

IV. 10110111 10110101

V. 11111101 10110111

VI. 10011010 10101010

(06 Marks)

c) Explain what WDM (Wavelength-division Multiplexing) is with example

(06 Marks)

d) Compare and contrast circuit switching and packet switching with examples

(07 Marks)

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