



**NATIONAL SCHOOL OF BUSINESS MANAGEMENT**  
**BSc. In Management Information Systems (Special) – 20.2**  
**BSc. (Honours) in software Engineering – 20.2**  
**BSc. (Honours) in Computer Science – 20.2**  
**BSc. (Honours) in Computer Networks – 20.2**  
**Bachelor of Information Technology (VU) – 20.2**

**Year 01 Semester 02 Examination**

**02 July 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) Clearly mention your Index number and the name as 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. 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 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)

Saman is chatting with Suraj through a web application using a chrome browser with a 3.4 Mbps internet connection. The connection between Saman's computer and Suraj computer is full of errors due to various technical reasons.

1. Identify the reasons to have many errors in the connection (03 Marks)
2. Explain what is the OSI Model with the layers of the model with examples (05 Marks)
3. Convert 3.4 Mbps connection speed into **bps** and **kbps** (03 Marks)
4. Explain the above communication between Saman's computer and Suraj's Computer by using OSI Model (14 Marks)

### Question 02 (25 Marks)

1. What is TCP/IP model explain with examples (05 Marks)
2. Explain the purpose of the TCP/IP layers with proper diagrams (12 Marks)
3. Compare and contrast OSI model and TCP/IP Model with proper diagram (08 Marks)

## Section B

Answer two questions out of three questions .

### Question 01 (25 Marks)

1. What are the methods that used to control the flow in data link layer (08 Marks)
2. Explain how does the Stop and wait ARQ works (07 Marks)
3. Why do we need to have flow control and error control discuss with examples (10 Marks)

### Question 02 (25 Marks)

1. What is a Switch, and discuss the advantages and disadvantages of having a Switch? (06 Marks)
2. Explain which device is ideal to have in a network comparing Switch and Hub. (07 Marks)
3. What is the difference and the purpose of having cross-over cable and straight cable (05 Marks)
4. Analyze the guided media (Bounded transmission media) category and propose a medium to use in an electromagnetic environment with justifications (07 Marks)

### Question 03 (25 Marks)

1. What is multiplexing and demultiplexing? Explain with diagrams? (06 Marks)
2. Find internet checksum for the following binary packet sequences
  - I. 10010111 10101101
  - II. 10110110 11110110 (06 Marks)
3. Explain what TDM (Time-division Multiplexing) with example (06 Marks)
4. Compare and contrast circuit switching and packet switching with examples (07 Marks)