



## **NATIONAL SCHOOL OF BUSINESS MANAGEMENT**

**BSc in Management Information Systems (Special) (NSBM)– 21.1**

**BSc (Honours) in Software Engineering (NSBM)– 21.1**

**BSc (Honours) in Computer Networks (NSBM)– 21.1**

**BSc (Honours) in Computer Science (NSBM)– 21.1**

**BSc (Honours) Software Engineering (PU)– 21.1**

**BSc (Honours) Computer Networks (PU)– 21.1**

**BSc (Honours) Computer Science (PU)– 21.1**

**BSc (Honours) Computer Security (PU)– 21.1**

**Bachelor of Information Technology (NBIT): major in Web and Mobile Application  
Development (VU)– 21.1**

**Year 01 Semester 01 Examination**

**22 October 2021**

**CS101.3 Introduction to Computer Science**

### **Instructions to Candidates**

- 1) **Answer All Questions.**
- 2) **Time allocated for the examination is five (05) hours (Including downloading and uploading time) . (Note: No email submissions are accepted under any condition.)**
- 3) Weightage of Examination: 60% out of final grade
- 4) Download the paper, provide answers to the selected questions in a word document.
- 5) Please upload the document with answers (Answer Script) to the submission link before the submission link expires
- 6) Answer script should be uploaded in PDF Format
- 7) Under any circumstances E-mail submissions would not be taken into consideration for marking. Incomplete attempt would be counted as a MISSED ATTEMPT.
- 8) The Naming convention of the answer script – Module Code\_Subject name\_Index No
- 9) You must adhere to the online examination guidelines when submitting the answer script to N-Learn.
- 10) Your answers will be subjected to Turnitin similarity check, hence, direct copying and pasting from internet sources, friend's answers etc. will be penalized.

**Question 01****(20 Marks)**

01. Explain the difference between computer and a typical machine in your own words.  
You may use relevant diagrams if needed. (4 Marks)
02. Explain the role of a processor in a computer and explain difference types of processors which available along with their characteristics. (6 Marks)
03. Compare and contrast system software and application software. (5 Marks)
04. Compare and contrast typical Hard Disk Drive (HDD) and Solid-State Drive (SSD). (5 Marks)

**Question 02****(20 Marks)**

01. Compare and contrast Octal number system and Hexadecimal number system. (5 Marks)
02. Convert following numbers to its Octal and Hexadecimal equivalent. You may do the workings on the answer script itself. (6 Marks)
  - a.  $111010101_2$
  - b.  $341_{10}$
  - c.  $10100010100101_2$
03. Perform following arithmetic operations. You may do the workings on the answer script itself. (9 Marks)
  - a.  $1010101_2 - 100100_2$
  - b.  $245_8 + ABC_{16}$
  - c.  $EFA_{16} + 11010101_2$

**Question 03****(20 Marks)**

01. Explain how computer represents numbers and characters inside the computer. (4 Marks)
02. Compare and Contrast Binary Coded Decimal (BCD) representation and Packed Decimal representation. (4 Marks)
03. Explain how to represent a negative number using Ones Complement Representation and Twos Complement representation using an example. (6 Marks)
04. Perform following operations by using Twos Complement addition. You may do the workings on the answer script itself. (6 Marks)
  - a.  $23 - 14$
  - b.  $-56 - 12$

**Question 04****(20 Marks)**

01. Explain the importance of pixel value in image representation. (4 Marks)
02. Compare and contrast Gray scale image and Color image. (4 Marks)
03. Assume that Jane bought a new 16 mega pixel camera, and she captured a photo by using that. (Note that the resolution of the image is equals to the pixel rate of the camera). Now she wants to store that image by using color image and gray scale image format inside the computer. Calculate the total number of memory consumption on both occasions. (6 Marks)
04. Assume that you want to purchase a new Hard Disk Drive (HDD) and you have two options as follows,

Feature	Hard Disk 01	Hard Disk 02
No. of Platters	8	10
No. of Tracks per surface	1000	900
Sectors per Track	23	20
Size of a Sector	2Kb	3Kb

Which HDD has more capacity from above two. (You may do the calculations on paper itself) (6 Marks)

**Question 05****(20 Marks)**

01. Explain what is meant by a network using your own words. (4 Marks)
02. Compare and contrast Bus network topology and Ring network topology. (5 Marks)
03. Explain how websites are working by using your own words. You may use diagrams if needed. (4 Marks)
04. Compare and contrast Man in the middle attack and Denial of service attack. (4 Marks)
05. Explain the contribution of firewall in cyber security. (3 Marks)

\*\*\*\*\*END OF THE PAPER\*\*\*\*\*