NATIONAL SCHOOL OF BUSINESS MANAGEMENT

BSc in Management Information Systems (Special) (NSBM)– 20.3
BSc (Hons) in Software Engineering (NSBM)– 20.3
BSc (Hons) in Computer Science (NSBM)– 20.3
BSc (Hons) Software Engineering (PU) – 20.3
BSc (Hons) Computer Networks (PU) – 20.3
BSc (Hons) Computer Security (PU) – 20.3
BSc (Hons) Management Information Systems (UCD) – 20.3

1st Year 1st Semester Examination
21st May 2021

CS101.3 - Introduction to Computer Science

Instructions to Candidates

1) Answer all questions.
2) Time allocated for the examination is three (03) hours and 30 minutes (Including downloading and uploading time)
3) Download the paper, provide answers to the selected questions in a word document.
4) Please upload the document with answers (Answer Script) to the submission link before the submission link expires
5) Answer script should be uploaded in PDF Format
6) Under any circumstances E-mail submissions would not be taken into consideration for marking. Incomplete attempt would be counted as a MISSED ATTEMPT.
7) The Naming convention of the answer script – Module Code_Subject name_Index No
8) You must adhere to the online examination guidelines when submitting the answer script to N-Learn.
9) 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 **(Total 20 Marks)**

1. Explain the difference between typical machine and a computer. You may use relevant diagram(s) for explanation. (4 Marks)

2. Compare and contrast System software and Application software with examples. (3 Marks)

3. What is the difference between Dual core and Quad core processor architecture. Explain your answer with supporting diagrams. (4 Marks)

4. Expand the abbreviation of 'POST' and 'BIOS' and briefly explain their purpose when powering up the computer. (4 Marks)

5. Explain the contribution of RAM and Processor to the computer. Explain how increasing RAM and Processor will speed up the computer in your own words. (5 Marks)

Question 02 **(Total 20 Marks)**

1. Compare and Contrast octal number system and Hex number system. (4 Marks)

2. Convert your NSBM id number to its octal equivalent. (show your workings). (4 Marks)

3. Directly convert following binary numbers to its Hex equivalent (show your workings).

   a. 1110101110101_2 (2 Marks)

   b. 00100101110011_2 (2 Marks)

4. Perform following operations (show your workings).

   a. $101011_2 + 01010_2$ (2 Marks)

   b. $100000101_2 - 11010_2$ (2 Marks)

   c. $AB67_{16} + EF172_{16}$ (2 Marks)

   d. $ACE_{16} + 10110101_2$ (2 Marks)

Question 03 **(Total 20 Marks)**

1. Explain the importance of number representation in computing. (2 Marks)

2. Explain how computer stores character 'D' and '23' numerical value. (4 Marks)

3. Compare and contrast binary coded decimal and Zone decimal number representation techniques with an example. (4 Marks)

4. Explain how negative numbers are being represented inside the computer by 8 bits Ones complement representation and 8 bits Twos complement representation with an example. (4 Marks)

5. Perform Twos complement addition to following equation (show your workings).

   a. 34 – 65 (4 Marks)

6. Following value is represented in 8 bits Ones complement representation. What is the decimal value of the represented number and the sign of the number? Explain your answer. (2 Marks)

1	0	1	1	0	1	0	1

Question 04 **(Total 20 Marks)**

1. Compare and contrast primary storage and secondary storage with examples. (4 Marks)

2. Explain the difference between data storing process of CD-R and CD-RW. You may use suitable diagrams if needed. (4 Marks)

3. Explain the process of formatting a burned CD-RW by your own words. You may use suitable diagrams if needed. (4 Marks)

4. A Magnetic disk contains 12 platters and 36 sectors per each track. On each surface it contains ten times of sectors and size of a sector is 3KB. Find following capacities based on provided information.

   a. Find the capacity of a track (2 Marks)

   b. Find the capacity of a surface (2 Marks)

   c. Find the capacity of a cylinder (2 Marks)

   d. Find the capacity of total HDD (2 Marks)

Question 05 **(Total 20 Marks)**

1. Explain what is meant by a pixel and how pixel values are being store inside the computer. (2 Marks)

2. Explain the process of digitalizing an image inside the computer. (3 Marks)

3. Compare and contrast characteristics of grayscale image and color image. (3 Marks)

4. Assume that there are two screens one with 200x350 pixels and second screen with 560x780 pixels. Which screen has clear footages. Explain your answer in your own words. (3 Marks)

5. Assume that image contains 240x860 pixels. If the image stores inside the computer as Binary image how much memory it will consume? Explain your answer. (3 Marks)

6. Compare and contrast Star network topology and Bus network topology. (3 Marks)

7. Explain what is meant by Internet and why it's getting slow in Covid 19 pandemic situation. Explain your answer in your own words. (3 Marks)

**********End of the paper**********