



'সমানো মন্ত্র: সমিতি: সমানী'

UNIVERSITY OF NORTH BENGAL

BCA Honours 5th Semester Examination, 2023

DSE-P1-BACHELOR OF COMPUTER APPLICATION (53)

Time Allotted: 2 Hours

Full Marks: 40

The figures in the margin indicate full marks.

Answer all questions with internal choices.

The question paper contains DSE53:E1 and DSE53:E2 and DSE53:E3.

The candidates are required to answer any *one* from *three* courses.

Candidates should mention it clearly on the Answer Book.

DSE53:E1 (BCADSE1)

MICROPROCESSOR

1. Answer any *five* questions: 1×5 = 5
 - (a) Give an example of any two non-maskable interrupts.
 - (b) Name any arithmetic instructions which do not affect the Carry Flag.
 - (c) What do you understand by an n-bit microprocessor?
 - (d) What do you understand by speed of 3.6 GHz of a microprocessor?
 - (e) What is the function of the program counter register?
 - (f) What is the use of Stack Pointer?
 - (g) Why accumulator is called processor register?
 - (h) Write the full form of USART.

2. Answer any *three* questions: 5×3 = 15
 - (a) Discuss the instruction set for arithmetic operations with respect to 8085 microprocessor.
 - (b) Discuss the interrupt structure of 8085 microprocessor.
 - (c) Discuss the merits and demerits of I/O mapped I/O.
 - (d) Draw and explain the timing diagram for the memory read cycle of any microprocessor.
 - (e) Write a program using ALP (Assembly Language Program) to find the maximum of three numbers.

3. Answer any *two* questions: 10×2 = 20
- (a) Discuss the need for having several types of addressing mode in a single microprocessor.
 - (b) Discuss the working principle of DMA controller.
 - (c) Draw and explain the timing diagram of I/O read cycle of 8085 microprocessor.
 - (d) Discuss different instruction formats of 8085 microprocessor with examples.

DSE53:E2 (BCADSE2)

INFORMATION SECURITY

1. Answer any *five* questions: 1×5 = 5
- (a) What are the characteristics of Information Security?
 - (b) What are Trap doors?
 - (c) What is cryptography?
 - (d) What is data Integrity?
 - (e) What is E-mail Spoofing?
 - (f) What is Malware?
 - (g) What is residual risk?
 - (h) What is the difference between attack and vulnerability?
2. Answer any *three* questions: 5×3 = 15
- (a) Differentiate Direct and Indirect attacks.
 - (b) Discuss the role of Digital Signature in data security.
 - (c) Explain the various components of an Information system.
 - (d) What are the integrity and confidentiality of data?
 - (e) What is Firewall? Discuss its functions.
3. Answer any *two* questions: 10×2 = 20
- (a) Explain Substitution Ciphers and Transpositions Cipher technique with an example.
 - (b) What is an attack? Explain different types of attacks in information security?
 - (c) What is symmetric key cryptography? What are the challenges of symmetric key cryptography? List out various symmetric key algorithms and explain Caesar cipher in detail.
 - (d) With neat illustration explain Data Encryption Standard (DES) algorithm.

DSE53:E3 (BCADSE3)

MODELLING AND SIMULATION

1. Answer any *five* questions: 1×5 = 5
- (a) What is Simulation?
 - (b) Define co-variance and correlation.
 - (c) Define Markov Chain.
 - (d) List two simulation SW packages.
 - (e) What do you mean by continuous systems?
 - (f) What is a deterministic activity?
 - (g) What is the role of maximum density in random number generation?
 - (h) When Simulation is not appropriate tool?
2. Answer any *three* questions: 5×3 = 15
- (a) Design a Telephone System simulation model using GPSS symbols.
 - (b) Explain the uniform distribution with example.
 - (c) List a few advantages and disadvantages of simulation.
 - (d) What do you understand by interactive and feedback system in simulation? Explain.
 - (e) Write short notes on Monte-Carlo methods.
3. Answer any *two* questions: 10×2 = 20
- (a) Define congestion in a queuing system. Describe different types of components and characteristics of a queuing system.
 - (b) Differentiate between Dynamic physical models and Static physical models with suitable examples.
 - (c) Explain Markov Chains with examples and its applications.
 - (d) Explain the properties of random number and its consequences. Also explain the process of generating Pseudo-random Numbers.

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