'समानो मन्त्रः समितिः समानी'

UNIVERSITY OF NORTH BENGAL

B.Sc. Honours 5th Semester Examination, 2023

DSE-P1-COMPUTER SCIENCE (53)

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.

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

MICROPROCESSOR

GROUP-A

1. Answer any ***five*** questions: 1×5 =5

   (a) How many pins of 8085 microprocessor includes?

   (b) Which is/are the 16-bit register in 8085?

   (c) Which interrupt is the non-vectored in 8085?

   (d) How many general-purpose registers are there in 8085?

   (e) Define DAD instruction.

   (f) What is an address bus?

   (g) List one instruction having implicit mode of addressing.

GROUP-B

2. Answer any ***three*** questions: 5×3 = 15

   (a) With suitable diagram, explain how the Address/Data bus (AD0-AD7) of 8085 microprocessor is de-multiplexed.

   (b) Explain the assembly language implementation of the following: (i) FOR-LOOP (ii) IF-THEN-ELSE

   (c) Distinguish between synchronous and asynchronous serial data transmission techniques.

   (d) Draw and explain the timing diagram of the memory read cycle in Intel 8085.

   (e) What are the different types of interrupts present in Intel 8085? Explain.

GROUP-C

3. Answer any ***two*** questions: 10×2 = 20

(a) What is an addressing mode? With suitable example, explain any four addressing modes in 8085.

(b) Explain the need of DMA. Discuss in detail about the DMA data transfer scheme.

(c) What are registers? What is the need of having registers? Explain the different registers available in 8085.

(d) Discuss computer instruction formats with examples.

DSE53-E2

INFORMATION SECURITY

1. Answer any ***five*** questions: 1×5 = 5

(a) Define firewalls.

(b) What are Covert channels?

(c) What are Trap doors?

(d) What is the difference between a white hat and a black hat hacker?

(e) What do you mean by ethical hacking?

(f) What is Salami attack?

(g) What is a cipher text?

(h) What is a Trojan horse?

2. Answer any ***three*** questions: 5×3 = 15

(a) Describe DES (Data encryption standard) algorithm.

(b) Explain different types of keys used in cryptography.

(c) Discuss the role of Digital Certificates in data security.

(d) Explain various memory protection schemes provided by the OS.

(e) Differentiate Direct and Indirect attacks.

3. Answer any ***two*** questions: 10×2 = 20

(a) What are the different threats in a network? Explain each threat with examples.

(b) Explain Intrusion Detection System (IDS) in detail with suitable example.

(c) Who is a computer criminal? Briefly explain different types of computer criminals.

(d) Write short notes on any ***two***:

(i) User Authentication

(ii) Transpositional Ciphers

(iii) Malicious and Non malicious code.

DSE53-E3

MODELLING AND SIMULATION

1. Answer any ***five*** questions: 1×5 = 5

(a) What is a Model?

(b) Define Physical model.

(c) What are real time systems?

(d) What are the types of simulations with respect to output analysis?

(e) What do you understand by Analog method of system simulation?

(f) What is the role of maximum density in random number generation?

(g) Name any General Purpose Simulation Packages.

(h) What is co-variance?

2 Answer any ***three*** questions: 5×3 =15

(a) Explain a feedback system with an example.

(b) Discuss different Phases of Simulation Study.

(c) Describe different types of mathematical simulation models.

(d) What do you understand by Analog method of system simulation? Explain it with suitable examples.

(e) Design a Telephone System simulation model using GPSS symbols.

3. Answer any ***two*** questions: 10×2 = 20

(a) Explain Markov Chains with examples. Discuss its applications.

(b) Differentiate between Dynamic physical models and Static physical models with suitable examples.

(c) Define the queuing system. Explain elements of queuing system with examples.

(d) Write short notes on (any ***two***):

(i) Monte-Carlo methods

(ii) Random number generation techniques

(iii) Distribute lag model.

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