'समानो मन्त्रः समितिः समानी'

UNIVERSITY OF NORTH BENGAL

B.Sc. Honours 5th Semester Examination, 2022

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

Answer any *five* questions 1×5 = 5

1. What are the basic units of a microprocessor?
2. Define opcode.
3. List any two applications of a microprocessor based system.
4. What is a program counter?
5. Define DAD instruction.
6. What is an assembler?
7. What is an address bus?
8. List one instruction having implicit mode of addressing.

GROUP-B

Answer any *three* questions 5×3 = 15

9. Explain the different lines that constitute the control bus of an 8085 microprocessor.
10. Differentiate between direct and indirect mode of addressing. How many references to the memory are needed in each case?
11. Draw and explain the timing diagram of the memory read cycle in Intel 8085.
12. List and explain the different data transfer instructions available in 8085 assembly language programming.
13. What are the different types of interrupts present in Intel 8085? Explain.

GROUP-C

Answer any *two* questions 10×2 = 20

14. Draw and explain the internal architecture of Intel 8085.
15. What are registers? What is the need of having registers? Explain the different registers available in 8085.
16. What are addressing modes? Explain the different addressing modes available in a typical microprocessor.
17. Describe the different modes of data transfer in a microprocessor.

DSE53-E2

INFORMATION SECURITY

GROUP-A

Answer any *five* questions of the following 1×5 = 5

1. What is Cyber Security? 1
2. Who had coined the term "Cyberspace"? 1
3. Name a type of peer-to-peer cyber crime. 1
4. What is the existence of weakness in a system or network? 1
5. What can diminish the chance of data leakage? 1
6. State whether true or false: Data encryption is primarily used to ensure confidentiality. 1
7. What does EDR stand for? 1
8. In which category does compromising confidential information fall? 1

GROUP-B

Answer any *three* questions from the following 5×3 = 15

9. Explain the triple DES scheme with two keys and write about proposed attacks on 3 DES. 5
10. Give the steps of RSA algorithm. 5
11. What are the key components of internet mail architecture? 5
12. What are the types of firewalls? 5
13. What is the need for information security? 5

GROUP-C

Answer any *two* questions from the following 10×2 = 20

14. What is public key cryptography? What are the principal ingredients of a public key cryptosystem? Explain the steps followed in public key cryptography algorithms. 2+3+5

15. What is the difference between a monoalphabetic cipher and a polyalphabetic cipher? Explain in detail with examples. 10

16. What types of attacks are addressed by message and how? 10

17. Describe the critical characteristics of information. How are they used in computer security? 10

DSE53-E3

MODELLING AND SIMULATION

GROUP-A

Answer any *five* questions from the following 1×5 = 5

1. What is Simulation?
2. When is Simulation the appropriate tool?
3. What is the need of system modelling?
4. Define feedback system.
5. What is cost analysis?
6. Why do we need system modelling?
7. What is the performance measure of most interest for information system?
8. What is a random variable?

GROUP-B

Answer any *three* questions of the following 5×3 = 15

9. Explain the terms: 5

   (a) entity, (b) attribute, (c) activity,

   (d) event, and (e) state in the system simulation context.

10. Explain the concept of Discrete-Event Simulation. 5

11. Explain identifying the distribution of data with example. 5

12. How model can be build verification and validate? Explain with diagram. 5

13. Explain stochastic nature of output data with example. 5

GROUP-C

Answer any *two* questions from the following 10×2 = 20

14. Explain the characteristics of queuing systems. List different queuing notations. 10

15. Define discrete and continuous random variables. Explain the Binomial and Poisson distribution.

16. Explain the major concepts in discrete event simulation. Write the flowchart for arrival and departure events. 10

17. Explain the concepts of point estimation and interval estimation. 10

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