



'সমানো মন্ত্র: সমিতি: সমানী'

**UNIVERSITY OF NORTH BENGAL**

B.Sc. Honours 5th Semester Examination, 2021

**DSE-P1-COMPUTER SCIENCE (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**

**MICROPROCESSOR**

1. Answer any *five* questions : 1×5 = 5
  - (a) How many pins of 8085 microprocessor includes?
  - (b) What is the function of the READY signal in an 8085 microprocessor?
  - (c) Which is/are the 16-bit register in 8085?
  - (d) What are the DMA signals for 8085 microprocessors?
  - (e) Which interrupt is the non-vectored in 8085?
  - (f) How many maskable interrupts are available in the 8085 microprocessor?
  - (g) How many general-purpose registers are there in 8085?
  - (h) What is the address lines required to connect the microprocessor with a 4 KB RAM?
  
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) What are vectored interrupts? How is the address of the Interrupt Service Routine calculated in vectored interrupts? Explain with an example.
  - (c) Explain the assembly language implementation of the following:
    - (i) FOR-LOOP      (ii) REPEAT      (iii) IF-THEN-ELSE      (iv) WHILE
  - (d) Explain the following assembler directives:
    - (i) END      (ii) ORG      (iii) PTR      (iv) OFFSET
  - (e) Distinguish between synchronous and asynchronous serial data transmission techniques.

3. Answer any *two* questions: 10×2 = 20
- (a) What is an addressing mode? With suitable example, explain any 4 addressing modes in 8085.
  - (b) With a neat diagram, discuss the internal architecture of 8085 microprocessor.
  - (c) Explain the need of DMA. Discuss in detail about the DMA data transfer scheme.
  - (d) Draw the Register organisation of 8085 microprocessor and explain its operation.

**DSE53-E2**

**INFORMATION SECURITY**

1. Answer any *five* questions: 1×5 = 5
- (a) What is information security?
  - (b) Mention the components of Information security.
  - (c) What are worms in context to information security?
  - (d) What are viruses in context to information security?
  - (e) What is the importance of digital signatures?
  - (f) What is phishing?
  - (g) What is data confidentiality?
  - (h) What is Data Integrity?
2. Answer any *three* questions: 5×3 = 15
- (a) Explain various types of attack on computer system.
  - (b) What is security mechanism? List and explain various security mechanisms.
  - (c) Explain cryptanalysis. Discuss any one technique for it.
  - (d) Explain limitation of DES in detail.
  - (e) What is the difference between authentication, integrity, confidentiality and nonrepudiation?
3. Answer any *two* questions: 10×2 = 20
- (a) With neat illustration explain Advanced Encryption Standard (AES) algorithm.
  - (b) Compare public key and private key cryptography. Also list various algorithms for each.
  - (c) How key management is done in case of symmetric and asymmetric cryptography?
  - (d) Explain the different types of Intrusion Detection System (IDS) with their advantages and disadvantages.

DSE53-E3

**MODELLING AND SIMULATION**

1. Answer any *five* questions: 1×5 = 5
- (a) What is Simulation?
  - (b) What is a deterministic activity?
  - (c) What is a stochastic activity?
  - (d) What do you mean by discrete systems?
  - (e) What do you mean by continuous systems?
  - (f) What are Real Time Systems?
  - (g) What is model validation?
  - (h) List two simulation SW packages.
2. Answer any *three* questions: 5×3 = 15
- (a) Discuss the characteristics of queuing systems.
  - (b) Discuss different types of simulations with respect to output analysis.
  - (c) Write short notes on verification of simulation models.
  - (d) Write short notes on Cobweb Models.
  - (e) Explain the uniform distribution with example.
3. Answer any *two* questions: 10×2 = 20
- (a) Discuss the Monte-Carlo Method with example.
  - (b) List any five circumstances, when the simulation is the appropriate tool and when it is not.
  - (c) Explain discrete random variable and continuous random variable with example.
  - (d) What are pseudorandom numbers? What are the problems that occur while generating pseudorandom number?

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