



**UNIVERSITY OF NORTH BENGAL**  
B.Sc. Honours 5th Semester Examination, 2020

**DSE1-COMPUTER SCIENCE (53)**

Full Marks: 40

**ASSIGNMENT**

*The figures in the margin indicate full marks.  
Candidates should answer in their own words and adhere to the word limit as practicable.  
All symbols are of usual significance.*

**The question paper contains DSE-E1 and DSE-E2 and DSE-E3  
The candidates are required to answer any one from three courses.  
Candidates should mention it clearly on the Answer Book.**

**E1- MICROPROCESSOR**

**Attempt any two questions**

20×2= 40

1. (a) Draw and explain the internal structure of a typical microprocessor. 10  
(b) Discuss the interrupt structure of an 8085 microprocessor. 10
2. (a) Discuss computer instruction formats with examples. 10  
(b) Draw and explain the timing diagram of memory read cycle of 8085 microprocessor. 10
3. (a) Explain various lines and their functions that constitute the control bus of an 8085 microprocessor. 10  
(b) Explain register indirect and inherent addressing modes used with 8085 microprocessor. 10
4. Draw and explain the pin diagram of an 8085 microprocessor and explain the purpose of each pin. 20
5. (a) Explain different special purpose registers of 8085 microprocessor with their purpose of use. 10  
(b) Discuss memory interfacing techniques with 8085 microprocessor. 10

**E2- INFORMATION SECURITY**

**Answer any two questions**

20×2= 40

1. (a) What is information security? Explain the principles of information security. 10  
(b) What are Security Services and Security Mechanisms? Briefly classify the categories of Security Services and Security Mechanisms. 10

2. (a) What is Digital Signature? Explain the purpose of digital signature. 10  
(b) What is the difference between a 'digital signature' a 'digital certificate' and a 'digital signature certificate (DSC)'? 10
3. (a) What is an attack? Explain different types of attack in information security? 10  
(b) What are the different types of Hacker? Differentiate between Hackers and Crackers. 10
4. (a) What do you mean by cryptography? Explain Plain Text and Cipher Text? 10  
(b) Explain Substitution Ciphers and Transpositions Cipher technique with an example. 10
5. (a) Who is a computer criminal? Briefly explain different types of computer criminals. 10  
(b) What is a code? Briefly explain malicious and Non malicious code. 10

### E3- MODELLING AND SIMULATION

Answer any *two* questions from the following

20×2= 40

1. (a) What is Model? What are the different types of Models? Give example for each. 2+8  
(b) Define the queuing system. Explain elements of queuing system with examples. 2+8
2. (a) Differentiate between Dynamic physical models and Static physical models with suitable examples. 10  
(b) Explain the steps in Simulation study. What are the limitations of simulation? 10
3. (a) Explain Markov Chains with examples and its applications. 10  
(b) Define Physical model. Explain Dynamic physical model with the help of suitable diagrams and expressions. 10
4. (a) What do you understand by Analog method of system simulation? Explain it with suitable examples. 3+7  
(b) Describe different types of mathematical simulation models. Develop a mathematical model (differential equation) for any Dynamic system. 10
5. Write short notes on the following: 5×4 = 20  
(a) Phases of Simulation Study  
(b) Feedback system  
(c) Verification and Validation  
(d) Random numbers and pseudo-random numbers

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