2019

B.Sc. (Honours)

5th Semester Examination

COMPUTER SCIENCE

Paper - DSE-1T

Full Marks : 40   Time : 2 Hours

The figures in the margin indicate full marks.
Candidates are required to give their answers
in their own words as far as practicable.

[Information Security]

Group - A

Answer any *five* questions from the following.

2×5=10

1. (a) What is information security and how is it achieved ?

   (b) What are the core principles of information security ?

   (c) What is non-repudiation ?

   (d) What is the relationship between Information Security and data availability ?

[Turn Over]

(e) What is a Security policy and why do we need ?

(f) What is the difference between logical and physical security ?

(g) What is the acceptable level of risk ?

(h) What is Transposition cipher ?

Group - B

Answer any *four* questions.　　5×4=20

2. (a) What do you understand by risk, vulnerability & Threat in a network ? How can the Identity theft be prevented ?　　3+2

(b) What are the black hat, white hat, grey hat hackers.　　5

(c) What is digital signature and digital certificate ?

　　3+2

(d) Explain man-in-the middle (MITM) attack and how to prevent it.　　3+2

(e) Explain denial-of service (DDoS) attack and how to prevent it ?　　3+2

(f) Explain DES algorithm in cryptography.　　5

Group - C

Answer any *one* question.　　10×1=10

3. (a) Explain the use of Firewall in Network security. What are salted hashes ? Explain SSL and TLS.

　　4+3+3

(3)

(b) Discuss about different types of viruses. How to increase the security of a database ? What is the difference between symmetric and asymetric encryption ? What are the ethical issues in security ?   4+2+2+2

[Microprocessor 8085]

Group - A

Answer any *five* questions from the following.

2×5=10

1. (a) What is the function of program counter ?

   (b) State the functions of : JPO, JNZ.

   (c) What is instruction format ?

   (d) What is the utility of stack pointer ?

   (e) What is Maskable interrupt ?

   (f) Mention the size of SP in 8051 microcontroller.

   (g) What is machine cycle ?

   (h) What is USB ?

[Turn Over]

(4)

Group - B

Answer any *four* questions :   5×4=20

2. (a) Explai2n memory mapped I/O and I/O mapped I/O scheme.   4

   (b) Write down the function of HOLD signal of 8085.   1

3. (a) What is vector interrupt ? Give example.   4

   (b) What is PUSH instruction ?   1

4. Write a short note DMA controller.   5

5. Write a program in 8085 to transfer a block of 4 bytes starting from 2000H.   5

6. Draw the timing diagram of MVI A, 05.   5

7. Explain the addressing modes of 8085.   5

Group - C

Answer any *one* question.   10×1=10

8. (a) Explain programmable peripherial interface (PPI) in Microprocessor.   5

   (b) Write a program in 8085 assembly language to find 1's complement of a 8 bit number.   5

9 . (a) What is subroutine ? Which instructions are used in 8085 microprocessor to implement subroutine ?   5

(b) What are the functions of ALE ?   3

(c) What is carry and auxiliary carry flag ?   2

[Operational Research]

Group - A

Answer any *five* questions from the following.

$$2 \times 5 = 10$$

1. (a) When can the dual simplex method be applied ?

   (b) List few applications of OR.

   (c) List down the variables in simplex method.

   (d) Explain the limitations of OR.

   (e) Define dual problem.

   (f) Explain the difference between a transportation problem and an assignment problem.

   (g) Discuss the methodology of solving replacement problems.

   (h) Does the simplex method find the global solution ? Explain.

Group - B

Answer any *four* questions.   5×4=20

2. (a) Define (i) Feasible solution (ii) Feasible region.

   (b) Define slack and surplus variable.

   (c) Explain weak and strong duality properties.

   (d) Compare simplex method and dual simplex method.

   (e) Briefly describe the steps for solving a Transportation problem.

   (f) Discuss the steps to solve a equation using simplex method.

Group - C

Answer any *one* question.   10×1=10

3. (a) Solve the following LPP by using dual simplex method :

   Minimize $Z = 10x_1 + 6x_2 + 2x_3$

   Subject to $-x_1 + x_2 + x_3 \geq 1$

   $3x_1 + x_2 - x_3 \geq 2$

   and $x_1, x_2, x_3 \geq 0$

   (b) A person requires 10, 12 and 12 units of chemicals A, B and C respectively for his

garden. The liquid product contains 5 units, 2 units and 1 unit of A, B and C per jar. If the liquid product sells for Rs. 3 per jar and dry product sells for Rs. 2 per jar, how many of each should be purchased to minimizes the cost and meet the requirements. Solve using graphical method.

[Cloud Computing]

Group - A

Answer any *five* questions from the following.

2×5=10

1. (a) What is cloud ?

(b) Compare cloud with on-premise computing.

(c) What do you mean by the term Cloud Bursting ?

(d) Mention the names of some large cloud service providers.

(e) Define grid computing.

(f) What is Mapreduce Compution ?

(g) What are the uses of APIs in cloud services ?

(h) Mention few benefits of cloud computing.

[Turn Over]

(8)

Group - B

2. (a) With a neat diagram, explain the PaaS reference model.   5

   (b) What is Virtualization ? Explain the pros and cons of virtualization ?   2+3

   (c) Explain cloud computing reference model ?   5

   (d) Discuss briefly about security monitoring.

   (e) What is Xen ? Name its elements for Virtualization ?   2+3

   (f) What are the cloud security challenges ? Explain.

Group - C

3. (a) Explain the service models of distributed and cloud computing in detail.   10

   (b) What is MapReduce programming model ? Describe the kinds of problems that MapReduce can solve ?   4+6

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