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M.Sc. DEGREE EXAMINATION, APRIL 2021 &
SUPPLEMENTARY / IMPROVEMENT / ARREAR EXAMINATIONS
Second Semester

Computer Science and Information Technology

DATABASE TECHNOLOGY

(CBCS – 2017 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1.   What is a major purpose of a database system?

2.   Distinguish between a weak and a strong entity set.

3.   Write the general form of the created table command in SQL.

4.   Define: Query Tree.

5.   What is a deadlock?

6.   What is a transaction? What are its properties?

7.   List out the two important issues in studying parallelism.

8.   What are the different types of spatial data?

9.   What is the goal of security of the database?

10.   Define: Data Warehouse.

Part B   (5 × 5 = 25)

Answer **All** questions, choosing either (a) or (b).

11. (a) Discuss the structural components of a DBMS.

Or

(b) Construct an ER-Diagram for the university database.

12. (a) What are the data types supported by SQL? Give examples.

Or

(b) Explain the cost components for a cost function that is used to estimate query execution cost. Which cost components are used most often as the basis for cost functions?

13. (a) Explain the distinction between the terms serial schedule and serializable schedule.

Or

(b) Describe how the two-phase commit protocol operates during normal operation.

14. (a) Explain the advantages of distributed databases.

Or

(b) Write a brief note on web databases.

15. (a) Discuss the issues of database security.

Or

(b) Explain about the GRANT and REVOKE commands in SQL.

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Part C (3 × 10 = 30)

Answer any **three** questions.

16. Define: Relational Algebra. Describe the various operations performed on relations.

17. What are the different categories of SQL Commands? Explain.

18. Explain the two principal methods for dealing with the deadlock problem.

19. Describe the benefits and drawbacks of pipelined parallelism.

20. What are the types of data marts? Explain.

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M.Sc. DEGREE EXAMINATION, APRIL 2021 &
SUPPLEMENTARY / IMPROVEMENT / ARREAR EXAMINATIONS
Second Semester

Computer Science and Information Technology

Elective — RESOURCE MANAGEMENT TECHNIQUE

(CBCS – 2017 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** questions.

1.   Write the Canonical form of LPP.

2.   Define slack variable.

3.   Define a model in O.R.

4.   What is a replacement problem?

5.   Write the Maximin-Minimax principle.

6.   Define two-person zero-sum games.

7.   Define total float.

8.   Define optimistic time.

9.   Define a transportation problem.

10.   What are the methods used to find an initial basic feasible solution for a transportation problem.

Part B $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Solve graphically the following LPP :

Minimize : $Z = 20x_1 + 40x_2$

Subject to the constraints : $36x_1 + 6x_2 \geq 108$

$$3x_1 + 12x_2 \geq 36$$
$$20x_1 + 10x_2 \geq 100$$
$$x_1, x_2 \geq 0.$$

Or

(b) Rewrite in standard form the following LPP :

Maximize : $Z = 3x_1 + 4x_2 + 6x_3$

Subject to the constraints :

$2x_1 + x_2 + 2x_3 \geq 6$
$3x_1 + 2x_2 = 8$
$7x_1 - 3x_2 + 5x_3 \geq 9$
$x_1 \geq 0, x_2 \geq 0$ and x_3 unrestricted in sign.

12. (a) Write the features of O.R.

Or

(b) The cost of a machine is Rs. 6,100 and its scrap value is Rs. 100. The maintenance costs found from experience are as follows :

Year :	1	2	3	4	5	6	7	8
Maintenance cost (Rs.) :	100	250	400	600	900	1200	1600	2000

When should the machine be replaced?

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13. (a) Solve the game whose payoff matrix is given by :

Player B

$$\begin{array}{c} & B_1 \quad B_2 \quad B_3 \\ \text{Player A} \quad \begin{array}{c} A_1 \\ A_2 \\ A_3 \end{array} \left(\begin{array}{ccc} 1 & 3 & 1 \\ 0 & -4 & -3 \\ 1 & 5 & -1 \end{array} \right) \end{array}$$

Or

(b) Solve the following game and determine the value of the game :

$$\begin{array}{c} & Y \\ X & \left(\begin{array}{cc} 4 & 1 \\ 2 & 3 \end{array} \right) \end{array}$$

14. (a) Draw the network for the data given below :

Activity :   A B C D E F   G   H   I

Predecessor : – – – A B C D, E B H, F

Or

(b) Explain critical path analysis.

15. (a) Obtain an initial basic feasible solution to the following transportation problem using the north-west corner rule :

				Available
11	13	17	14	250
16	18	14	10	300
21	24	13	10	400

Requirement   200   225   275   250

Or

(b) Explain Vogel's Approximation Method.

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Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Use simplex method to solve the following L.P.P. :
     Maximize : $Z = 4x_1 + 10x_2$

     Subject to the constraints : $2x_1 + x_2 \le 50$
     $$2x_1 + 5x_2 \le 100$$
     $$2x_1 + 3x_2 \le 90$$
     $$x_1 \ge 0 \text{ and } x_2 \ge 0.$$

17. Machine A costs Rs. 9,000. Annual operating costs are
     Rs. 200 for the first year and then increase by Rs. 2,000
     every year. Determine the best age at which to replace
     the machine. If the optimum replacement policy is
     followed, what will be the average yearly cost of owning
     and operating the machine?

18. Solve the following game graphically :

                        Player B

                    B_1 B_2 B_3 B_4
          A_1 $\begin{pmatrix} 2 & 1 & 0 & -2 \\ 1 & 0 & 3 & 2 \end{pmatrix}$
     Player A
          A_2

19. Given the following information :

     Activity : 0-1 1-2 1-3 2-4 2-5 3-4 3-6 4-7 5-7 6-7
     Duration
     (in days) :   2   8   10   6   3   3   7   5   2   8

     (a) Draw the arrow diagram
     (b) Identify critical path and find the total project
          duration.

20. Solve the following transportation problem :

                                        Available

                   | 50   30   220 | 1
                   | 90   45   170 | 3
                   | 250 200 50 | 4
     Requirement   4   2   2

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F-3081	Sub. Code
	7MCI2E5

M.Sc. DEGREE EXAMINATION, APRIL 2021 &
SUPPLEMENTARY / IMPROVEMENT / ARREAR EXAMINATIONS
Second Semester

Computer Science and Information Technology

Elective-FUNDAMENTALS OF GRID AND CLOUD COMPUTING

(CBCS – 2017 onwards)

Time : 3 Hours　　　　　　　　Maximum : 75 Marks

Part A　　　　　(10 × 2 = 20)

Answer **all** questions.

1. Define: Grid Computing.

2. What is the functional role of grid computing?

3. Differentiate between authorization and authentication.

4. What are the basic services of OGSA?

5. Define: Distributed Computing.

6. Who benefits from cloud computing?

7. What are the disadvantages of cloud development?

8. What is a web service?

9. Write down any two web services provided by Amazon.

10. List out any two problems related to cloud computing.

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the application of Grid Computing.

Or

(b) What are the four basic principles of basic automatic computing systems? Explain.

12. (a) What are the CMM-defined relationship types? Explain.

Or

(b) Explain the technical details of OGSI specification.

13. (a) Explain the short history of cloud computing.

Or

(b) What are the six key properties of cloud computing from Google's Perspective? Explain

14. (a) Why develop web –based application? Explain.

Or

(b) Write down features of IBM.

15. (a) Explain the problems and future directions of Cloud Computing.

Or

(b) What are the five core services of Windows Live? Describe.

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Part C (3 × 10 = 30)

Answer any **three** questions.

16. Discuss the core information projected in web- service architechture.

17. Explain the five layers of OGSA architectural organization.

18. How cloud computing works? Explain.

19. Explain the cloud service development tools.

20. Discuss the features of Google App Engine.

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F–5516	Sub. Code
	7MCI2C2

M.Sc. DEGREE EXAMINATION, APRIL 2021 &

Supplementary/Improvement/Arrear Examinations

Second Semester

Computer Science and Information Technology

JAVA PROGRAMMING

(CBCS – 2017 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1. Enumerate the rules for creating identifiers in java. .

2. What is type casting?

3. Find the value of 20% 3.

4. What is an empty statement?

5. What do you mean by method overloading?

6. When do we declare a member of a class static?

7. List out any four HTML Tags.

8. Differentiate between local applet and remote applet.

9. What is the goal of JDBC?

10. What is SQL?

Part B   (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) What is World Wide Web? What is the contribution of java to the World Wide Web?

Or

(b) What are command line arguments? How are they useful?

12. (a) What are the different types of if statements available in Java? Illustrate with an example

Or

(b) Write a Java program to find the factorial of a number.

13. (a) What is a constructor? What are its special properties?

Or

(b) Describe the various forms of implementing interface. Give examples of Java code for each case.

14. (a) Write an applet that displays the date and time.

Or

(b) Explain the method of developing and executing a simple applet.

15. (a) What is RMI? Explain the architecture of RMI.

Or

(b) What is JSP? Explain about the JSP tags.

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Part C (3 × 10 = 30)

Answer any **three** questions.

16. What are the data types supported by Java? Explain with examples.

17. Compare in terms of their functions, the following pairs of statements:

    (a) while and do.... while

    (b) while and for

18. Write a Java program which will read a string and rewrite it in the alphabetical order. For example, the word STRING should be written as GINRST.

19. Describe the different stages in the life cycle of an applet.

20. Explain the various commands for creating and updating data in SQL.

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F–5517	Sub. Code
	7MCI2C3

M.Sc. DEGREE EXAMINATION, APRIL 2021 &

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Second Semester

Computer Science and Information Technology

COMPUTER NETWORKS

(CBCS – 2017 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1.   What are the goals of computer network?

2.   Differentiate between broadcast and point-to-point links.

3.   How do guided media differ from unguided media?

4.   Distinguish between analog and digital signals.

5.   Compare Pure ALOHA and Slotted ALOHA.

6.   How does a single bit error differ from a burst error?

7.   Define: Transport Entity.

8.   What is the function of a router?

9.   Define: Cryptography.

10.   What is Virtual Terminal?

Part B $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a)   What are the categories of networks? Explain briefly.

Or

(b)   Explain the six different types of services.

12. (a)   Describe the theoretical basis for data communication.

Or

(b)   Compare analog and digital transmission.

13. (a)   Write a procedure for simplex stop-and-wait protocol.

Or

(b)   Describe the design issues of Data Link Layer.

14. (a)   What is Congestion Control? Describe the principles of congestion control.

Or

(b)   What are the duties of the Transport layer? Explain.

15. (a)   What are the five basic functions of E-mail? Explain.

Or

(b)   Describe the design issues of presentation layer.

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Answer any **three** questions.

16. Explain about the ISO OSI reference model.

17. Discuss about the ISDN system architecture.

18. Explain the simplex protocol for a noisy channel.

19. Describe any two routing algorithms with example.

20. Discuss about the data compression techniques.

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F–5518		Sub. Code
		7MCI2E1

M.Sc. DEGREE EXAMINATION, APRIL 2021 &

Supplementary/Improvement/Arrear Examinations

Second Semester

Computer Science and Information Technology

Elective: COMPUTER ORIENTED NUMERICAL METHODS

(CBCS – 2017 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** questions.

1.   What is the demerit of the bisection?

2.   What is the principle of Regula-Falsi method?

3.   Distinguish between direct and iterative methods of solving simultaneous equations.

4.   Write a sufficient condition for Gauss-Seidel iteration method to convergence.

5.   State Newton's backward interpolation formula. When is it used?

6.   What are the advantages of central differences interpolation formulae?

7.   What is the order of error in Trapezoidal formula?

8. What do you mean by numerical differentiation?

9. Write the demerits of the Taylor method of solution.

10. Write down the Runge-Kutta formula of fourth order to $dy/dx = f(x, y)$ with $y(x_0) = y_0$.

Part B   (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Find, by Newton-Raphson method, the real root of $3x - \cos x - 1 = 0$ correct three decimal places.

Or

(b) Apply Horner's method to find the cube root of 36.

12. (a) Solve by Gauss Elimination method.

$$2x + y + 4z = 12$$
$$8x - 3y + 2z = 20$$
$$4x + 11y - z = 33$$

Or

(b) Using Crout's method, solve the system of equations

$$2x - 6y + 8z = 24$$
$$5x + 4y - 3z = 2$$
$$3x + y + 2z = 16$$

13. (a) Using Newton's formula, find the value of f(1.5) from the following data:

x :	0	1	2	3	4
$f(x)$:	858.3	869.6	880.9	892.3	903.6

Or

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(b)   Using Lagrange's interpolation formula, find the form of the function $y(x)$ from the following table.

x :	0	1	3	4
y :	−12	0	12	24

14.   (a)   Use the trapezoidal rule to evaluate $\int_{1}^{2} \frac{dx}{x}$ by dividing the interval into 4 equal parts.

Or

(b)   Explain about the Trapezoidal and Simpson's rule.

15.   (a)   Use Taylor series solution to solve numerically $dy/dx = x^2 - y, y(0) = 1$. Tabulate y for $x = 0.1, 0.2, 0.3$ and 0.4.

Or

(b)   Solve by Euler's method, $Y' = -Y$ given $Y(0) = 1$ and find $Y(0.04)$.

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16.   Find a real root of the equation $x^3 - 2x - 5 = 0$, correct to 3 places of decimals, using Bisection method.

17.   Solve the following system of equations by Gauss Seidel's iteration method.

$10x_1 - 2x_2 - x_3 - x_4 = 3$
$-2x_1 + 10x_2 - x_3 - x_4 = 15$
$-x_1 - x_2 + 10x_3 - 2x_4 = 27$
$-x_1 - x_2 - 2x_3 + 10x_4 = -9$

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18. Using Newton's forward interpolation formula, find the value of y when $x = 21$ from the following tabulated values of the function :

x :	20	23	26	29
y :	0.3420	0.3907	0.4384	0.4848

19. From the following table of values of x and y, find dy/dx and d^2y/dx^2 for $x = 1.25$.

x :	1.00	1.05	1.10	1.15	1.20	1.25	1.30
y :	1.00	1.02470	1.04881	1.07238	1.09544	1.11803	1.14017

20. Given $dy/dx = x*x*x + y, y(0) = 2$. Compute $y(0.2), y(0.4)$ and $y(0.6)$ by Runge-Kutta method of fourth order.

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	7MCI2E6

M.Sc. DEGREE EXAMINATION, APRIL 2021 &

Supplementary/Improvement/Arrear Examinations

Second Semester

Computer Science and Information Technology

Elective : COMPUTER GRAPHICS

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is the primary goal of standardized graphics software?

2. What are the disadvantages of DDA algorithm?

3. What is the need of homogeneous coordinates?

4. Define: Bundled Attributes.

5. What is the purpose of stroke device?

6. What is grid?

7. What do you mean by Perspective projection?

8. What is depth cueing?

9. What are the limitations of the depth buffer?

10. Differentiate between object-space and image-space methods.

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain how computer graphics is used in the field of art and image processing.

Or

(b) What is CRT? Explain the basic construction of the CRT.

12. (a) Explain the matrix representation of two-dimensional rotation.

Or

(b) What are the attributes of line? Explain briefly.

13. (a) Derive window to view port transformations.

Or

(b) What is a segment? Explain about the attributes of segment.

14. (a) What is shearing in 3D? Explain.

Or

(b) Explain the three dimensional reflection transformations.

15. (a) Write the back-face detection algorithm

Or

(b) Explain the implementation of viewing operations.

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Part C   (3 × 10 = 30)

Answer any **three** questions.

16. Write a Bresenham's approach for line drawing and explain it.

17. Describe the translation and scaling two-dimensional transformations.

18. Explain the functions of any two physical input devices.

19. Discuss any two three dimensional display techniques.

20. Explain any two hidden surface elimination algorithms.

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