Hall Ticket Number :										

R-17

Code: 7G134

II B.Tech. I Semester Supplementary Examinations May/ June 2022

Discrete Mathematics

(Computer Science and Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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Marks

UNIT–I

1. a) Define rules of inference. And Show that R→S can be derived from the premises P →(Q → S), ~R V P and R. 8M

   b) Write short notes on Quantifiers 6M

OR

2. Define rules of inference. And Show that R→S can be derived from the premises P →(Q → S), ~R V P and R. 14M

UNIT–II

3. a) Let A={1,2,3,4,6,12} and A defines the relation R aRb iff **"a divides b"**. Prove that R is Partial Order on A. Draw the Hasse diagram. 10M

   b) Explain compatibility relation with examples. 4M

OR

4. a) Draw the Hasse diagram for the positive divisors for 36. 8M

   b) Let f and g be the two functions defined by f(x)=3x+2,g(x)=2x-1.Find i)fog^{-1} ii) gof 6M

UNIT–III

5. Let G be the set of all non-zero real numbers and let a*b=1/2ab. Show that <G,*> is an abelian group. 14M

OR

6. Consider a set of integers from 1 to 250. Find how many of these numbers are divisible by 3 or 5 or 7.Also indicate how many are divisible by 3 or 7 but not by 5 and divisible by 3 or 5. 14M

UNIT–IV

7. Find a generating function for the recurrence relation $a_{n+1}-a_n=3^n, n>=0, a_0=1$.Find the general solution 14M

OR

8. Solve the recurrence relation $a_n + 4a_{n-1} + 4a_{n-2} = 8, n>=2$, with $a_0=1, a_1=2$ 14M

UNIT–V

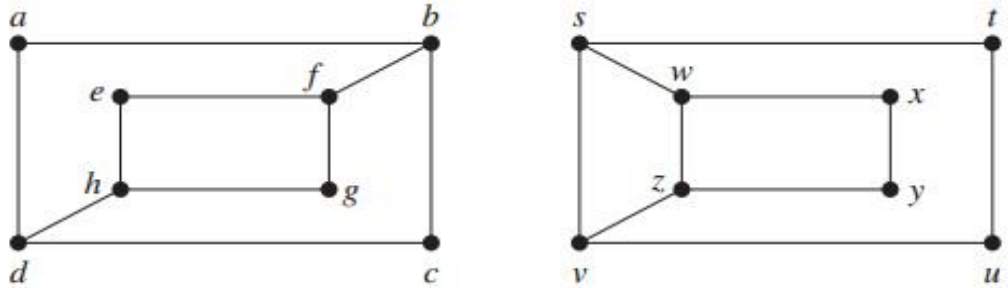
9. a) What is Hamiltonian graph? Explain with an example. 8M

   b) Explain the following terms with examples.

      i) Complete graph ii) Dual graph 6M

OR

10. Define Isomorphism. Verify the two graphs are isomorphic or not.



G H 14M

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Hall Ticket Number :										

R-17

Code: 7GC32

II B.Tech. I Semester Supplementary Examinations May/June 2022

Engineering Mathematics-III

(Common to All Branches)

Max. Marks: 70 Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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Marks

UNIT–I

1. a) Using Taylor's series method, compute the value of y at x=0.2 from $\frac{dy}{dx} = x + y$; $y(0) = 1$. 7M

   b) Using the bisection method, find a real root of the equation $\cos x = x e^x$ correct to three decimal places. 7M

OR

2. a) Apply fourth order Runge-Kutta method to $\frac{dy}{dx} = 3x + \frac{1}{2}y$, $y(0) = 1$ determine $y(0.1)$ correct to four decimal places. 7M

   b) Find a real root of the equation $3x = \cos x + 1$ by Newton-Raphson's method correct to four decimal places. 7M

UNIT–II

3. a) Evaluate $\int_0^1 \frac{1}{1+x}\,dx$ by Simpson's 1/3 rule. 7M

   b) Using Lagrange formula find $f(4)$. Given 7M

x	0	2	3	6
y	-4	2	14	158

OR

4. The following table of values of x and y is given.

x	0	1	2	3	4	5	6
y	6.9897	7.4036	7.7815	8.1291	8.4510	8.7506	9.0309

Find $\frac{dy}{dx}$ *and* $\frac{d^2y}{dx^2}$ at x=6 14M

UNIT–III

5. a) Fit a straight line $y = a + bx$ to the data by the method of least squares 7M

x	0	1	3	6	8
y	1	3	2	5	4

   b) Form the partial differential equation by eliminating a, b from $ax^2 + by^2 + z^2 = 1$ 7M

OR

6. a) Form a partial differential equation by eliminating the arbitrary functions from $z = f(x+at)+g(x-at)$. 7M

   b) Form a partial differential equation by eliminating the arbitrary functions $f(x)$ and $g(y)$ from $z = y\,f(x)+x\,g(y)$. 7M

UNIT–IV

7. a) Express $f(x)=x$ as half range sine in $0<x<2$ 7M

   b) Find the Fourier series to represent $f(x)=®\ x$ in $0\le x\le 2$ 7M

OR

8. a) Find the half range cosine series for $f(x)=x(2-x)$ in $0\le x\le 2$ and hence find prove that $\frac{1}{1^2}-\frac{1}{2^2}+\frac{1}{3^2}-\frac{1}{4^2}+\frac{1}{5^2}-\frac{1}{6^2}+\ldots=\frac{®^2}{12}$ 7M

   b) Find the Fourier series to represent $f(x)=|x|$ when $-® < x < ®$ and deduce that $\frac{1}{1^2}+\frac{1}{3^2}+\frac{1}{5^2}+\ldots=\frac{®^2}{8}$ 7M

UNIT–V

9. a) Find the Fourier sin and cosine transform of $f(x)=\frac{e^{-ax}}{x}, a>0$ 7M

   b) Find the Fourier cosine transform of $f(x)=\begin{cases} x, & 0<x<1 \\ 2-x, & 1<x<2 \\ 0, & x>2 \end{cases}$ 7M

OR

10. Find the Fourier transform of $e^{-|x|}$. Hence show that $\int_0^{\infty}\frac{x\sin mx}{1+x^2}dx=\frac{®}{2}e^{-m}, m>0$ 14M

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Hall Ticket Number :										

R-17

Code: 7G135

II B.Tech. I Semester Supplementary Examinations May/June 2022

Web Programming

(Computer Science and Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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Marks

UNIT–I

1. a) Explain block-level elements in HTML with example 7M
   b) Write any two Core attributes in HTML. 7M

OR

2. Why you need links in html? Explain the with an example to create a Link to different page 14M

UNIT–II

3. a) Describe basic table element and attributes with example 7M
   b) What is video tag? Write any five video tag attributes. 7M

OR

4. Write a html form to manage personal details of a student like name, class, qualification, photo, address etc., using suitable tags and send Form Data to the Server. 14M

UNIT–III

5. Explain about different types of CSS with example programs 14M

OR

6. What are Pseudo-classes? Explain with examples. 14M

UNIT–IV

7. a) How to create a external JavaScript file? Explain. 7M
   b) What is Document Object Model discuss the various DOM methods used? 7M

OR

8. What are operators? Explain operators in java script 14M

UNIT–V

9. a) What is selector in jQuery. Explain with example? 7M
   b) Write a basic code for adding jquery library to pages? 7M

OR

10. a) Is jQuery front end or backend? Explain with example. 7M
    b) Write about AJAX get() and post() Methods 7M

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Hall Ticket Number :										

R-17

Code: 7G132

II B.Tech. I Semester Supplementary Examinations May/June 2022

Database Management Systems

(Computer Science and Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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Marks

UNIT–I

1. a) Explain about types of database languages with syntax and example? 10M
   b) What are the different types of user interface designed for database users? Discuss the main activities of each. 4M

OR

2. a) Describe about the three levels of data abstraction 7M
   b) Explain the advantages of using a query language instead of custom programs to process data. 7M

UNIT–II

3. a) What is an E-R model? Explain with suitable examples, entity, entity sets, and attributes. 6M
   b) What are integrity constraints? Define the terms primary key constraint and foreign key constraint. How are these constraints expressed in SQL? 8M

OR

4. a) What is a relation? Differentiate between a relation schema and a relation instance. 7M
   b) With examples, explain enforcing integrity constraint. 7M

UNIT–III

5. a) What are Sub Queries how they are implemented in SQL? 7M
   b) Compare the stored procedures with stored functions? 7M

OR

6. a) What are Correlated Queries how they are applied in SQL? 7M
   b) What is a trigger? What are its parts? How they are created? 7M

UNIT–IV

7. What is Normalization? Explain briefly 1NF, 2NF & 3NF with suitable examples. 14M

OR

8. a) Suppose you are given a relation R = (A, B, C, D, E) with the following functional dependencies: BD→E, A→C Show that the decomposition into R1 = (A, B, C) and R2 = (D, E) is lossy. 7M
   b) When is a de composition said to be dependency-preserving? why is this property Useful? 7M

UNIT–V

9. a) Illustrate concurrent execution of transaction with examples? 6M
   b) Discuss briefly about the dynamic index structure with one example? 8M

OR

10. a) Discuss about lock-based concurrency control. 7M
    b) How data organized in a hash-based index. When would you use a hash-based index? 7M

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Hall Ticket Number :										

R-17

Code: 7G133

II B.Tech. I Semester Supplementary Examinations May/June 2022

Digital Logic Design

(Computer Science and Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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Marks

UNIT–I

1. a) Prove that the sum of all min-terms of a Boolean function of three variables is equal to 1. 7M
   b) Reduce the following Boolean expression to 3 literals. (CD' +A)'+ A+CD+AB 7M

OR

2. a) Explain subtraction using r-1's complements with an example. 7M
   b) Show that the dual of the Ex-OR is equal to its complement? 7M

UNIT–II

3. a) Simply the Boolean function F(W,X,Y,Z)= Σ(1,3,7,11,15) Which has the don't care conditions d(W,X,Y,Z)= Σ(0,2,5) using k-map 7M
   b) Obtain the minimal SOP expression for Σ*m*(2,3,5,7,9,11,12,14,15) and implement using NAND gates. 7M

OR

4. a) Implement the following Boolean expression with exclusive-OR and AND gates:
   F = AB^{l}CD^{l} +A^{l}BCD^{l} + AB^{l}C^{l} D +A^{l} BC^{l} D 7M
   b) Implement the Boolean function F(A,B,C,D)=A'B'+C'D'+B'C' using the following two level gates i) NAND-AND ii) NOR-OR 7M

UNIT–III

5. a) Design 4-bit binary to Gray code converter? 7M
   b) Construct a 4-to-16 line decode with five 2-to-4 line decoders with enable? 7M

OR

6. Implement a full adder circuit using NOR gates; implement a full adder using 8x1 multiplexers. Explain both the circuits and compare their efficiency? 14M

UNIT–IV

7. a) Draw the circuit diagram of S-R Flip-Flop with NAND gates and explain its operation with the help of a truth table? 7M
   b) Explain with the help of neat diagram, the operation of 4-bit register with parallel load? 7M

OR

8. a) Draw the circuit diagram of clocked D Flip-Flop with NAND gates and explain its operation using truth table? 7M
   b) What is difference between latch and flip flop? Explain about clocked RS Flip-Flop using NAND gates? 7M

UNIT–V

9. Derive the PLA programming table for the combinational circuit that squares a 3-bit number? 14M

OR

10. Implement the following functions using PLA.
    A (x,y,z)= Σm (1,2,4,6)
    B (x,y,z) = Σm (0,1,6,7)
    C (x,y,z) = Σm (2,6) 14M

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