Hall Ticket Number :										

R-17

Code: 7GC32

II B.Tech. I Semester Supplementary Examinations November 2020

Engineering Mathematics – III

(Common to All Branches)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. a) Find a root of the equation $x^3 - x - 11 = 0$ by using Bisection method.

   b) Find a root of the equation $3x = \cos x + 1$ by Newton-Raphson method, correct to three decimal places.

OR

2. a) Apply Euler's method to solve for y when $x = 0.6$ given that $y' = 1 - 2xy,\ y(0) = 0.$

   b) Using Runge-Kutta method of order 4, compute $y(0.2)$ from

$$10\frac{dy}{dx} = x^2 + y^2,\ y(0) = 1,\ h = 0.1.$$

UNIT–II

3. a) Find the missing term in the following table using Lagrange's interpolation

x	1	2	4	5	6
y	14	15	5	-	9

   b) From the following table, estimate the number of students who obtained marks between 40 and 45.

Marks	30-40	40-50	50-60	60-70	70-80
Number of Students	31	42	51	35	31

OR

4. a) Evaluate $\int_0^1 \frac{1}{1+x^2}dx,$ by using Trapezoidal rule with $h = 0.2.$ Hence determine the value of ®.

   b) Compute the value of $\int_{0.2}^{1.4} (\sin x - \log x + e^x)dx$ using Simpson's $3/8^{\text{th}}$ rule.

UNIT–III

5. a) Find the least squares fit of the form $y = a_0 + a_1 x^2$ to the following data

x	-1	0	1	2
y	2	5	3	0

   b) Solve : $xp - yq = y^2 - x^2.$

OR

6. a) Fit a curve of the form $y = ae^{bx}$ to the following data.

x	0	1	2	3
y	1.05	2.10	3.85	8.30

   b) Using method of separation of variables, Solve $\frac{\partial u}{\partial x} = 4\frac{\partial u}{\partial y},$ given that $u(0, y) = 8e^{-3y}.$

UNIT–IV

7. a) If $f(x)=\begin{cases}-x, & -\pi < x < 0\\ x, & 0 < x < \pi.\end{cases}$

then show that $f(x)=\frac{\pi}{2}-\frac{4}{\pi}\left[\frac{1}{1^2}\cos x+\frac{1}{3^2}\cos 3x+\frac{1}{5^2}\cos 5x+\cdots\right]$.

b) Find a Fourier series to represent $f(x)=|\sin x|$ in the interval $-\pi < x < \pi$.

OR

8. a) Obtain the half range sine series for e^x in $0 < x < 1$.

b) Find the Half range cosine series for the function $f(x)=(x-1)^2$ in the interval $0 < x < 1$.

UNIT–V

9. a) Find the Fourier transform of $f(x)=\begin{cases}1 & \text{for } |x|<1\\ 0 & \text{for } |x|>1.\end{cases}$ Hence evaluate $\int_0^\infty \frac{\sin x}{x}dx$.

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

OR

10. a) Find the Fourier sine transform of $\frac{e^{-ax}}{x}$.

b) Show that the inverse finite Fourier sine transform of $F_s(n)=\frac{1}{\pi}\left\{1+\cos n\pi-2\cos\frac{n\pi}{2}\right\}$ is

$f(x)=\begin{cases}1, & 0<x<\pi/2\\ -1, & \pi/2<x<\pi\end{cases}$.

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Hall Ticket Number :										

R-17

Code: 7G135

II B.Tech. I Semester Supplementary Examinations November 2020

Web Programming

(Computer Science and Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. a) List and Differentiate HTML Block and Inline Elements 7M
   b) What is a div element? Discuss about different attributes along with div with example. 7M

OR

2. a) Explain text processing tags with suitable example. 7M
   b) Give an example to create In-Page Links with the <a> Element. 7M

UNIT–II

3. a) Explain Table attributes with suitable example. 7M
   b) How to add a caption and grouping sections of a Table 7M

OR

4. a) Explain image tag in HTML with properties. 7M
   b) Explain how to add Flash or Video Using Images as Links in Web Pages 7M

UNIT–III

5. a) Explain different types of cascading style sheets in HTML with examples 7M
   b) What is a list? Explain different types of lists with example. 7M

OR

6. a) Write the difference between HTML and XML 7M
   b) Create a sample XML document. 7M

UNIT–IV

7. a) What is the need of java script in web page. Create an external java script with an example. 7M
   b) Explain about DOM? 7M

OR

8. a) How can you create user defined functions and pass the arguments in java script explain with an example? 7M
   b) Write a program to validate pin number column in web page 7M

UNIT–V

9. a) What is the need of JQuery in web programming? Explain how to add JQuery with example 7M
   b) How to manage events with JQuery. Explain with example 7M

OR

10. a) How to add JQuert to web page. 7M
    b) How to manage ajax with JQuery. Explain with example 7M

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Hall Ticket Number :										

R-17

Code: 7G132

II B.Tech. I Semester Supplementary Examinations November 2020

Database Management Systems

(Computer Science and Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. a) Define DBMS. Outline the history of database management systems. 7M

   b) List and explain about database languages with examples. 7M

OR

2. a) Explain about the applications of DBMS with suitable examples. 7M

   b) What is transaction management? Discuss about Data Storage and Querying 7M

UNIT–II

3. a) Construct an ER diagram for a University Database. Determine the entities and relationships, participation constraints in the E-R diagram. 7M

   b) Differentiate between specialization and generalization with examples. 7M

OR

4. a) Discuss about cross-product and rename operations with examples. 7M

   b) Define foreign key. State and explain about the conversion from E-R model to relational design. 7M

UNIT–III

5. a) Compare and contrast different DDL and DML commands with examples. 7M

   b) Briefly discuss about types of triggers with examples. 7M

OR

6. a) Illustrate about different types of sub-queries and correlated nested queries. 7M

   b) Briefly discuss about stored functions and stored procedures. 7M

UNIT–IV

7. a) Explain third normal form with a suitable example. 7M

   b) Define functional dependency. Discuss about partial FD and Trivial FD with examples. 7M

OR

8. a) Define transitive dependency. Describe about BCNF with an example. 7M

   b) Outline 2NF. List out the problems caused by redundancy with examples. 7M

UNIT–V

9. a) Summarize ACID properties. Discuss about serializability with an example. 7M

   b) Explain in detail about B+ Trees with examples. 7M

OR

10. a) Define transaction. Explain about the transaction state diagram. 7M

    b) Compare and contrast B+ Trees and ISAM data structures. 7M

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Hall Ticket Number :										

R-17

Code: 7G133

II B.Tech. I Semester Supplementary Examinations November 2020

Digital Logic Design

(Computer Science and Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. a) Perform the subtraction using 1's complement method.
   (i)11010 – 10000.01 (ii)11010 – 1101 (iii)101 - 110000 7M

   b) Solve the following
   i) $(57.125)_{10} = (\ )_8$ ii) $(30.6875)_{10} = (\ )_2$ iii) $(137.75)_8 = (\ )_{10}$ 7M

OR

2. a) Covert (105.1510) to binary, octal, hexadecimal. 7M

   b) Express the Decimal Digits 0-9 in BCD, 2421, 8421 and Excess-3. 7M

UNIT–II

3. a) Prove the following Boolean theorems
   i) AB+A'C = (A+C)(A'+B) ii) AB+A'C+BC = AB+A'C 7M

   b) Simplify the following Boolean expressions
   i) ABC+AB'+ABC' ii) ACD+A'BCD. 7M

OR

4. a) Simplify the expression Y=∑ m(7,9,10,11,12,13,14,15) using the k-map method. 7M

   b) Simplify the following Boolean function, F(A,B,C,D)= ∑ m(1,3,7,11,15) + ∑ d(0,2,5) 7M

UNIT–III

5. a) Explain the differences between a MUX and a DEMUX. Realize 16-input multiplexer by cascading of two 8-input multiplexers. 7M

   b) Describe the operations performed by the following logic circuits with an example i) Comparator ii) Decoder iii) Encoder 7M

OR

6. a) Explain the implementation of 4-input priority encoder with truth table, k-maps, Boolean function and schematic diagrams. 8M

   b) Design a combinational logic circuit that has 3 inputs. The output is required to go HIGH whenever the number of inputs have even number of 1's. Draw the truth table. Minimize the Boolean function using K-map. Draw the circuit diagram. 6M

UNIT–IV

7. a) Design a SR flip flop using NAND gates. Explain the operation of the SR flip flop with the help of characteristic table and characteristic equation. 7M

   b) Convert D flip-flop into T and JK flip-flops. 7M

OR

8. a) Explain with the help of neat diagram the operation of 4-bit universal shift register. 8M

   b) Convert JK flip flop into SR flip flop. 6M

UNIT–V

9. a) Design a modulo-12 up synchronous counter using T- flip flops and draw circuit diagram. 7M

   b) Realize the following Boolean function using PROM f (x, y, z, w) = Σ_m (0, 1, 3, 6, 8, 9, 15). 7M

OR

10. a) Draw the logic diagram for a 4-bit binary ripple down counter using positive edge triggered flip-flops. 7M

    b) Tabulate the PLA programmable table for the four Boolean functions given below: F1(x,y,z) = Σ_m (1,2,4,6) F2(x,y,z) = Σ_m (0,1,6,7)
    F3(x,y,z) = Σ_m (2,6) F4(x,y,z) = Σ_m (1,2,3,5,7). 7M

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Code: 7G134

II B.Tech. I Semester Supplementary Examinations November 2020

Discrete Mathematics

(Computer Science and Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. a) Demonstration that p ∨ (q ∧ r) and (p ∨ q) ∧ (p ∨ r) are logically equivalent. 7M

   b) Show that the following conditional statements is a tautology by using truth tables. (i) $[(p \vee q) \wedge (p \rightarrow r) \wedge (q \rightarrow r)] \rightarrow r$ 7M

OR

2. a) Show that $(\exists_{x)P(x)} \rightarrow (\forall_{x)Q(x)} \Leftrightarrow (\forall_{x)(P(x)} \rightarrow Q(x))$ 7M

   b) Verify the validity of the following arguments using predicates: “Lions are dangerous animals. There are lions. Therefore, there are dangerous animals”. 7M

UNIT–II

3. a) Let $A = \{a, b\}$ and $R = \{(a,b)(b,a)(b,b)\}, S = \{(a,a)(b,a)(b,b)\}$ be a relation in A. Find SoR and RoS, Justify your answer. 7M

   b) If $A = \{1,2,3,4\}$ and $R = \{(1,2),(2,3)(3,4)(4,1)\}$ then find the *transitive closure* of R. 7M

OR

4. a) Let $X = \{1,2,3,\ldots 7\}$ and $R = \{(x,y)|x-y$ is divisible by 3}. Show that R is an equivalence relation. 8M

   b) What is Poset? Draw the Hasse diagram for the “*less than or equal to*” relation on {*0,2,5,10,11,15*}. 6M

UNIT–III

5. a) If S is set of all non-singular matrices of order, $n \times n$ then show that S is a group w.r.t. matrix multiplication. Is (S, *) an abelian group? Justify your answer. 7M

   b) Let R be the set of all real numbers and * is a binary operation defined by a * b = a + b + a b. Show that (R, *) is a monoid. 7M

OR

6. a) A newborn child can be given 2, or 3 names. In how many ways can a child be named if we can choose from 300 names (and no name can be repeated)? 6M

   b) A certain computer center employs 100 computer programmers. Of these 47 can program in FORTRAN, 35 in Pascal and 23 can program in both languages. How many can program in neither of these 2 languages? 8M

UNIT–IV

7. a) Find the coefficient value of x^{27} in $(x^4 + x^5 + x^6 + \cdots)^5$. 4M

   b) Solve the recurrence relation $a_n - 7a_{n-1} + 10a_{n-2} = 0$ for $n \geq 2$. 6M

   c) Find the generating function for the sequence 1, 1, 1, 1. 4M

OR

8. a) Find the general solution for the recurrence relation $a_n - 4a_{n-1} - 12a_{n-2} = 0$ for $n \geq 2$. Using generating functions. 7M

   b) Compute the general solution to the recurrence relation $a_n - 5a_{n-1} + 6a_{n-2} = 4^n \; for \; n \geq 2.$ 7M

UNIT–V

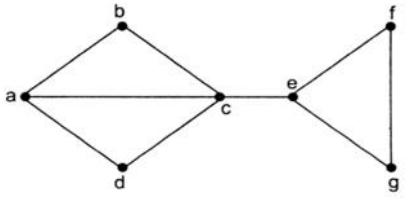
9. a) State and prove Euler's formula for a connected planar graph 7M

   b) Suppose that G is a simple graph with $|V| = n$. Prove that G must be connected if $|E| > (1/2)(n-1)(n-2)$. 7M

OR

10. a) Prove that a complete bipartite graph $K_{m,n}$ is planar? If $m \leq 2$ or $n \leq 2$ 7M

    b) Describe how to obtain all possible spanning trees for the following graph and list the total number of different spanning trees.



7M

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