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R-15

Code: 5G121

I B.Tech. II Semester Supplementary Examinations August 2021

C Programming and Data Structures

(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)

UNIT-I

1. a) What is the use of command line arguments
- b) Write a program using pointers to compute the sum of all elements stored in an array.

OR

2. a) How pointers permit inter function communication.
- b) How do you simulate arrays using pointers? Illustrate.

UNIT-II

3. a) How to copy and compare structure variables? Illustrate with example.
- b) Write and Explain syntax of the following functions: (i) fopen() (ii) fclose() (iii) fread() (iv) fwrite() (v) rewind() (vi) fprintf() (vii) fscanf() (viii) feof().

OR

4. a) Explain the following:
i. Nested structures ii. Array of structures
- b) Define union. List out the differences between unions and structures

UNIT-III

5. a) What is Data Structure? Explain in detail about different type of data structures.
- b) Write the steps for evaluating postfix expression

OR

6. Show the stack after each operation of the following sequence that starts with the empty stack: push(a), push(b), pop, push(c), push(d), pop.

UNIT-IV

7. What is a Singly Linked List.? Explain different operations of a singly linked list with suitable examples.

OR

8. Write a C function to insert and delete a node from the front end in case of doubly linked list.

UNIT-V

9. Define and describe the terms: Tree, Binary Tree, Complete Binary Tree and Degree of a tree.

OR

10. Define Graph and describe various representations of a graph with suitable examples.

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R-15

Code: 5GC22

I B.Tech. II Semester Supplementary Examinations August 2021

Engineering Chemistry

(Common to EEE & ECE)

Max. Marks: 70

Time: 3 Hours

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

UNIT-I

1. a) What is break point chlorination? State its significance. 7M
b) Write brief account on Priming and foaming. 7M

OR

2. a) What is hardness of water? How do you classify and express hardness? 7M
b) With the help of neat diagram, describe the reverse osmosis method for the desalination of brackish water. 7M

UNIT-II

3. Give reasons for the following
i) Pin holes on tin coated Iron are more prone to corrosion of Iron than those of Zinc coated Iron.
ii) Iron corrodes faster than Aluminium though Al is above Iron in EMF series.
iii) Corrosion of specimen can be controlled by using impressed current 14M

OR

4. Differentiate chemical and electrochemical corrosion 14M

UNIT-III

5. Write a note on processing of raw rubber? Explain the draw backs of raw rubbers. 14M

OR

6. Why silicones are called inorganic polymers? Discuss their synthesis. Write their applications 14M

UNIT-IV

7. a) Write a note on synthesis of petrol by Fischer Tropsch's method. 7M
b) What are the characteristics of a good fuel? 7M

OR

8. a) Write short note on octane number and cetane number. 7M
b) Compare the liquid fuels with gaseous fuels. 7M

UNIT-V

9. a) Describe the analysis of cement 7M
b) Write a note on the classification of refractories with examples. 7M

OR

10. a) Write a note on the composition of Portland cement 8M
b) Explain the importance of refractories and their applications. 6M

Code: 5GC24

I B.Tech. II Semester Supplementary Examinations August 2021

Engineering Mathematics-II

(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)

UNIT-I

1. Evaluate the integral by changing the order of integration $\int_0^a \int_{\frac{x^2}{a}}^{2a-x} x y^2 dy dx$

OR

2. Evaluate the double integral $\iint_R \sqrt{x^2 + y^2} dx dy$ by changing into polar coordinates, where 'R' is the region in the xy plane bounded by the circles $x^2 + y^2 = 4$

UNIT-II

3. Find the Laplace Transform of $\int_0^t \frac{e^{-t} \sin t}{t} dt$

OR

4. Find $L^{-1} \left\{ \frac{1}{(s-1)(s+3)} \right\}$

UNIT-III

5. Solve $y'' + 2y' - 3y = \sin t$, $y(0) = 0$, $y'(0) = 0$ Using Laplace Transform

OR

6. Solve the differential equation $\frac{d^2x}{dt^2} - 4\frac{dx}{dt} - 12x = e^{3t}$ given that $x(0) = 1$, $x'(0) = -2$ using Laplace Transform

UNIT-IV

7. Show that $\nabla^2 \left(\frac{1}{r} \right) = 0$

OR

8. Evaluate the line integral of $\int_c (xy + y^2) dx + x^2 dy$ where 'c' is the square formed by the lines $y = \pm 1$ and $x = \pm 1$

UNIT-V

9. Evaluate by stoke's theorem for a vector field $\vec{F} = (2x - y)\vec{i} - yz^2\vec{j} - y^2z\vec{k}$ over the upper half surface of $x^2 + y^2 + z^2 = 1$ bounded by projection on xy-plane.

OR

10. Verify Green's Theorem in the plane for $\int_c [(3x^2 - 8y^2) dx + (4y - 6xy) dy]$ where 'c' encloses the region bounded by $y = \sqrt{x}$ and $y = x^2$
