Hall Ticket Number :										

R-15

Code: 5GC22

I B.Tech. II Semester Supplementary Examinations June 2022

Engineering Chemistry

(Common to EEE & ECE)

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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UNIT–I

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

OR

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

UNIT–II

3. Give reasons for the following
   (i) Corrosion of water-filled tank occurs below the waterline
   (ii) A Copper equipment should not possess a small Steel bolt

OR

4. On dilution Equivalent Conductance of an electrolyte increases whereas Specific Conductance decreases. Explain.

UNIT–III

5. a) Describe the method of preparation, properties of Bakelite
   b) Write a brief notes on Vulcanization and compounding of rubber

OR

6. Describe the synthesis and conducting mechanism of polyacetylene

UNIT–IV

7. a) What are the characteristics of a good fuel?
   b) Write short note on octane number and cetane number.

OR

8. The percentage composition of a sample of coal by weight was found to be: C = 76%, H=5.2%, O = 12.8%, N = 2.7%, S = 1.2%, the remaining being ash. Calculate the minimum weight of air necessary for complete combustion of 1 kg of coal and percentage composition by weight of dry products, if 50% excess air supplied.

UNIT–V

9. What is meant by Lubrication Process? Describe thick-film Lubrication and thin-film Lubrication.

OR

10. a) How are lubricants classified? Give examples
    b) Describe the analysis of cement

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Hall Ticket Number :										

R-15

Code: 5GC24

I B.Tech. II Semester Supplementary Examinations June 2022

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)

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Marks

UNIT–I

1. Evaluate $\int_0^5 \int_0^{x^2} x\left(x^2+y^2\right) dy\, dx$

OR

2. Show that the area between the parabolas $y^2 = 4a\,x$ and $x^2 = 4a\,y$ is $\frac{16}{3}a^2$

UNIT–II

3. a) Write the Laplace Transforms of some standard functions

   b) Find the Laplace Transform of i) $\mathrm{Cos}\,2t$ ii) $\sin 2t \sin 3t$

OR

4. Evaluate $\int_0^\infty t\, e^{-2t} \mathrm{Cos}\, t dt$

UNIT–III

5. Solve the differential equation $y'' + y = t,\ y(0) = 1,\ y'(0) = 2$ 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. Find $div\,\bar{F}$ and $curl\,\bar{F}$ where $\bar{F} = grad\left(x^3 + y^3 + z^3 - 3xyz\right)$

OR

8. Evaluate $divergence\, of\left(2x^2z\,\bar{i} - xy^2z\,\bar{j} + 3yz^2\,\bar{k}\right)$ at the point $(1,1,1)$.

UNIT–V

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

OR

10. Verify by Gauss Divergence theorem for $\bar{F} = x^3\bar{i} + y^3\,\bar{j} + z^3\,\bar{k}$ taken over the cube bounded by $x = 0, x = a; y = 0,\ y = a; z = 0, z = a$

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Hall Ticket Number :										

R-15

Code: 5G121

I B.Tech. II Semester Supplementary Examinations June 2022

C Programming and Data Structures

(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) Define pointer? How pointer variables are initialized.
   b) Write a c program to access elements of an array using pointers.

OR

2. a) Write a short note on void pointer.
   b) Discuss about any two dynamic memory allocation functions.

UNIT–II

3. a) Differentiate structures and unions.
   b) Explain any one sorting technique with example program.

OR

4. a) List and explain any four functions related to file handling in c.
   b) Differentiate linear search and binary search.

UNIT–III

5. What is Queue? Explain the operations of a Queue with an example program.

OR

6. a) Convert the following infix expression to post fix expressions
      i) A + B * C +D ii) (A + B) * (C+D)
   b) What is stack? Write the applications of stack.

UNIT–IV

7. Discuss the operations of a single linked list with proper diagrams.

OR

8. How to represent doubly linked list? Write the algorithm to insert and delete operations in double linked list.

UNIT–V

9. What is Binary Search Tree? Construct the BST for the nodes 15, 6, 3, 7, 45, 50

OR

10. What is Di-graph? Explain different representation of graphs.

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