Hall Ticket Number :										

R-17

Code: 7GC12

I B.Tech. I Semester Supplementary Examinations December 2022

Engineering Chemistry

(Common to CE, ME & CSE)

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) Differentiate temporary and permanent hardness of water. 7M
   b) What is break point chlorination? State its significance? 7M

OR

2. a) Describe the desalination process by reverse osmosis with a neat sketch. 7M
   b) Write a note on internal treatment? 7M

UNIT–II

3. Explain the composition ,applications and advantages of the following cells (i)Ni-Cd cell & (ii) Lithium ion cell. 14M

OR

4. a) What is concentration cell corrosion and galvanic corrosion? 7M
   b) Calculate the standard emf of Ni-Ag cell whose E^0_{Ni} and E^0_{Ag} are -0.25 and +0.83 respectively also write cell representation. 7M

UNIT–III

5. a) Write a note on vulcanization of rubber. 7M
   b) explain the synthesis, mechanism and applications of carbohydrates 7M

OR

6. a) Write a note on compounding of rubber? 7M
   b) Explain with examples the terms: addition polymerization, condensation polymerization and co-polymerization. 7M

UNIT–IV

7. a) What is meant by power alcohol? Write the preparation and properties of power alcohol. 7M
   b) Classify the fuels with examples? 7M

OR

8. a) Write a note on production and uses of producer gas, water gas and Bio gas. 7M
   b) Define knocking? Write about octane number? 7M

UNIT–V

9. Explain the mechanism of (i) thin film lubrication, (ii) thick film lubrication 14M

OR

10. a) What are lubricants? Write any three properties and applications of lubricants. 7M
    b) What are refractories? Discuss any three properties of refractories? 7M

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Hall Ticket Number :										

R-17

Code: 7G111

I B.Tech. I Semester Supplementary Examinations December 2022

Problem Solving Techniques and C Programming

(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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UNIT–I

1. a) Differentiate between computer hardware and software 7M
   b) Write an algorithm to find product of two integers using repetitive addition 7M

OR

2. a) Explain in detail about the software development method. 7M
   b) List and explain various symbols used in flowcharts with figures 7M

UNIT–II

3. a) Discuss about operator precedence in expression evaluation with a suitable example. 7M
   b) Give the format for conditional operator. When is it used? 7M

OR

4. a) Explain different data types supported by C language with their memory requirements. 7M
   b) Describe the structure of a C program with example 7M

UNIT–III

5. a) Write a C Program to check weather given number is Amstrong number or not 7M
   b) Explain the significance of ‘break’ and ‘continue’ statement with a sample program. 7M

OR

6. a) Write ‘C’ program to print the Fibonacci sequence. 7M
   b) In what way a do – while loop differs from while loop. Explain. 7M

UNIT–IV

7. a) Write a program to print an array in reverse order 7M
   b) Write a C Program to delete ‘n’ characters in a given string 7M

OR

8. a) What is an Array? How to declare and initialize a one dimensional array? 4M
   b) Explain different string manipulation functions with example 10M

UNIT–V

9. a) What is the scope of variables of type extern, auto, register and static? Explain with example. 10M
   b) What is meant by user defined function? Explain with an example C program 4M

OR

10. a) What is a function? What are its advantages? Explain various parameter passing techniques. 10M
    b) Write a function that checks whether a given year is leap year or not. 4M

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Hall Ticket Number :										

R-17

Code: 7G513

I B.Tech. I Semester Supplementary Examinations December 2022

Basic Engineering Drawing

(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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UNIT–I

1. The major and minor axes of an ellipse are 120mm and 80mm. Draw an ellipse by Arcs of circles method 14M

OR

2. The major and minor axes of an ellipse are 120mm and 80mm. Draw right half of ellipse by Oblong Method and left side of the ellipse by Concentric Circles Method 14M

UNIT–II

3. A line AB, 50mm long, has its ends A in both the H.P and the V.P. It is inclined at 30^0 to the H.P and at 45^0 to the V.P. Draw the projections 14M

OR

4. A line AB, 65mm long, has its end A 20mm above the H.P. and 25mm in front of the V.P. The end B is 40mm above the H.P. and 65mm in front of the V.P. Draw the projections of AB and show its inclinations with the H.P.and the V.P. 14M

UNIT–III

5. a) A rectangular plane of size 60x30mm is perpendicular to both H.P. and V.P. Draw its projections 7M

   b) A pentagonal plane of side 30mm is perpendicular to H.P. and parallel to V.P. The plane is 30mm infront of V.P. Draw its projections 7M

OR

6. A semicircular plate of 80mm diameter has its straight edge in the VP and inclined at 45^0 to the HP. The surface of the plate makes an angle of 30^0 with the VP. Draw its projections 14M

UNIT–IV

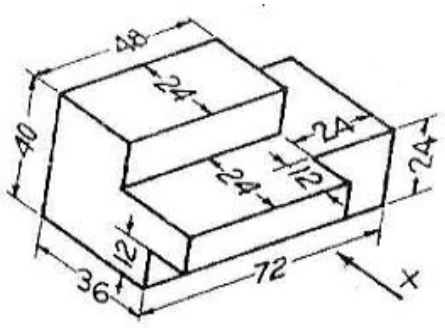
7. A square prism, base 40mm side and height 65mm has its axis inclined at 45^0 to the HP and has an edge of its base, on the HP and inclined at 30^0 to the VP. Draw its Projections 14M

OR

8. Draw the projections of a pentagonal prism, base 25mm side and axis 50mm long, resting on one of its rectangular faces on the HP, with the axis inclined at 45^0 to the VP 14M

UNIT–V

9. Draw the front view, Top view and Side view of the following isometric view



14M

OR

10. Draw the isometric projection of a circular plane of diameter 50mm when the plane is Horizontal 14M

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Hall Ticket Number :										

R-17

Code: 7GC14

I B.Tech. I Semester Supplementary Examinations December 2022

Engineering Mathematics-I

(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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UNIT–I

1. a) Find the eigen values and eigen vectors of $\begin{bmatrix} 5 & 4 \\ 1 & 2 \end{bmatrix}$ 7M

   b) Prove that if $a_1, a_2, a_3, \ldots\ldots a_n$ are eigen values of A then $a_1^2, a_2^2, a_3^2, \ldots\ldots a_n^2$ are the eigen values of A^2. 7M

OR

2. If $A=\begin{bmatrix} 1 & 2 & -1 \\ 2 & 1 & -2 \\ 2 & -2 & 1 \end{bmatrix}$ verify Cayley-Hamilton theorem. Find A^4 and A^{-1} using Cayley-Hamilton. 14M

UNIT–II

3. Show that the matrix $\begin{bmatrix} 0 & i \\ i & 0 \end{bmatrix}$ is Skew-Hermitian and hence find eigen values and eigen vectors. 14M

OR

4. a) Prove that The Eigen values of a Hermitian matrix are all real. 7M

   b) Define Hermitian, skew-Hermitian, Unitary Matrices and give example for each 7M

UNIT–III

5. a) A bacterial culture, growing exponentially, increases from 100 to 400gms in 10 Hrs. How much was present after 3 Hrs. from the initial instant? 7M

   b) Find the orthogonal trajectory of the family of confocal conics

   $\frac{x^2}{a^2}+\frac{y^2}{b^2+a}=1$, where a being the parameter. 7M

OR

6. Find the orthogonal Trajectories of the family of curves $x^2+y^2+2gx+c=0$ where g is parameter. 14M

UNIT–IV

7. Solve $\frac{d^2y}{dx^2}-4\frac{dy}{dx}+4y=8x^2e^{2x}\sin 2x$ 14M

OR

8. Using the Method of variation of Parameters, solve $\frac{d^2y}{dx^2}-y=\frac{2}{1+e^x}$ 14M

UNIT–V

9. Prove that (if 0<a<b<1), $\frac{b-a}{1+b^2}<\tan^{-1}b-\tan^{-1}a<\frac{b-a}{1+a^2}$. Hence show that $\frac{®}{4}+\frac{3}{25}<\tan^{-1}\frac{4}{3}<\frac{®}{4}+\frac{1}{6}$. 14M

OR

10. a) Verify Rolle's theorem for $\frac{\sin x}{e^x}$ in $(0,®)$. 7M

    b) Verify Lagrange's mean value theorem for $f(x)=(x-1)(x-2)(x-3)$ in $[0,4]$ 7M

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