R15

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
I B.Tech II Semester Supplementary Examinations, June 2022
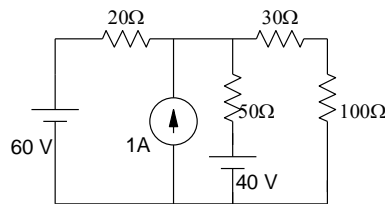### Electrical Circuits
(CSE)

Roll No										

**Time: 3 hours**   **Max. Marks: 75**

Answer Any **Five** Questions
All Questions carries equal marks.
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1   Discuss about Resistance , Inductance and capacitance with neat diagrams.   **[15M]**

2   Explain source transformation techniques with examples.   **[15M]**

3   Find the current in 100Ω resistor for the network given nodal analysis.   **[15M]**

4   Find the current supplied by the source using star delta transformation   **[15M]**
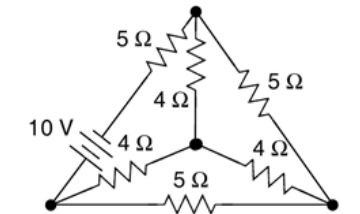
5   A 220V, 3-phase voltage is applied to a balanced delta-connected load of phase impedance $(15+j20)\Omega$. Determine a) phase current, b) line current, c) power factor of the load and c) power consumed per phase.   **[15M]**

6   A R-C series circuit with R=30 Ω and C=79.5 µF is supplied from a 100V, 50Hz supply. Find the (i) Impedance (ii) Current (iii) phase angle and (iv) equation for instantaneous value of current.   **[15M]**

7   Find the current through the 2Ω resistor using Superposition theorem.   **[15M]**
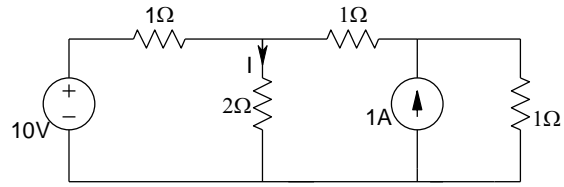
8   Derive the EMF equation of a transformer. Also, draw the equivalent circuit.   **[15M]**

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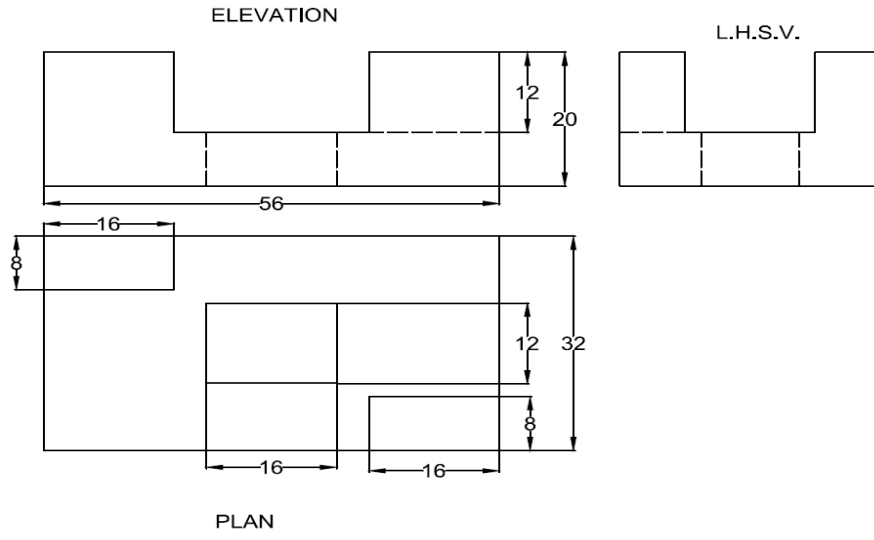### I B.Tech II Semester Supplementary Examinations, June 2022
Engineering Drawing
(ME)

Roll No										

Time: 3 hours   **Max. Marks: 75**
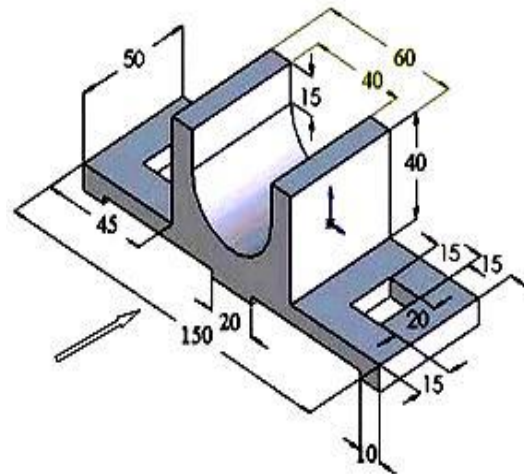
Answer Any **Five** Questions
All Questions carries equal marks.
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1   Construct a hyperbola, when the distance of the focus from the directrix is 65 mm   **[15M]**
    and eccentricity is 3/2 by using general method

2   Draw an epicycloid having a generating circle of diameter 50 mm and a directing   **[15M]**
    curve of radius 100 mm. Also draw a normal and a tangent at any point M on the
    curve.

3   Draw the projections of the following points, keeping the distance between the   **[15M]**
    projectors as 20 mm on the same reference line:
    (i) Point 'A' on HP and 25 mm behind VP.
    (ii) Point 'B' 25 mm below HP and 30 mm behind VP.

4   A 50 mm long line is parallel to V.P and inclined at 45^0 to H.P. It's one end is 10   **[15M]**
    mm above H.P. and 25 mm in front of V.P. Draw the projections.

                                                                               [15M]
5   Draw the projections of a pentagonal pyramid, base 30 mm edge and axis 50 mm
    long, having its base on the H.P. and an edge of the base parallel to the V.P. Also
    draw its side view.

6   Draw the projections of a hexagonal pyramid, base 30 mm side and axis 60 mm   **[15M]**
    long, having its base on the H.P. and one of the edges of the base inclined at 45° to
    the V.P

7   Draw the isometric view of the following figure. All dimensions are in mm.   **[15M]**

ELEVATION   L.H.S.V.

12
20
56
16
8
12 32
8
16
16

PLAN

8   Draw the orthographic views of the following figure. All dimensions are in mm.   **[15M]**

50
60
40
15
40
45
15 15
150 20
20
15
10

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MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
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I B.Tech II Semester Supplementary Examinations, June 2022
Engineering Chemistry
(ME)

Roll No										

Time: 3 hours   **Max. Marks: 75**

Answer Any **Five** Questions
All Questions carries equal marks.
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1	a.	Describe the construction and working of a Daniel cell	**[7M]**
	b.	Derive the Nernst equation of single electrode potential.	**[8M]**
2	a.	Describe the experimental method for the determination of the pH of a solution using glass electrode.	**[7M]**
	b.	Explain the principle of working of hydrogen-oxygen fuel	**[8M]**
3	a.	Explain the electrochemical theory of corrosion of metals with a special reference to mechanism of rusting of iron in acidic medium.	**[7M]**
	b.	Explain the process of Electroplating with an example.	**[8M]**
4	a.	Explain the protection of buried pipe lines and ship hulls from corrosion by using sacrificial anodic method diagrammatically.	**[7M]**
	b.	Explain the process of galvanizing in hot dipping method with diagram.	**[8M]**
5	a.	Differentiate between Thermoplastic and Thermosetting plastics with examples.	**[7M]**
	b.	Explain the criteria of a good refractory material.	**[8M]**
6	a.	Explain the synthetic method of preparation, properties and applications of Buna-S rubber and Butyl rubber	**[8M]**
	b.	Write the preparation, properties and engineering uses of Bakelite.	**[7M]**
7	a.	Explain the following boiler troubles along with the preventive methods i. Sludge and scale formation ii. Caustic embrittlement	**[8M]**
	b.	Explain the break point chlorination with its significance.	**[7M]**
8	a.	Describe the process of manufacture of Gasoline by Fischer-Tropsch's process.	**[8M]**
	b.	Write a short note on natural gas.	**[7M]**

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MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
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I B.Tech II Semester Supplementary Examinations, June 2022
Engineering Physics-II
(Common to all branches)

Roll No										

Time: 3 hours   **Max. Marks: 75**

Answer Any **Five** Questions
All Questions carries equal marks.
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1	A. Write the differences between Primary and secondary bonds	**[5M]**
	B . Derive an expression for cohesive energy in solids.	**[10M]**
2	A. What is Miller Indices and write their important features.	**[6M]**
	B . Derive an expression for interplanar spacing in Cubic crystal system.	**[9M]**
3	Describe Laue method for the study of crystal structure. What are its limitations?	**[15M]**
4	Obtain an expression for concentration of Schottky defects.	**[15M]**
5	Discuss various polarization mechanisms in dielectrics and derive an expression for electronic polarizability.	**[15M]**
6	What are Ultrasonic waves? Explain how ultrasonics can be produced by Magnetostriction method with neat diagram.	**[15M]**
7	A. What is Bhor Magneton? Derive Expression for Bhor Magneton.	**[7M]**
	B. Classify magnetic materials on the basis of magnetic moment and explain their properties.	**[8M]**
8	A. Explain one of the top-down approaches for the fabrication of Nano materials in detail.	**[10M]**
	B. Write any five applications of nano particles.	**[5M]**

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MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
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I B.Tech II Semester Supplementary Examinations, June 2022
Mathematics-II
(Common to all branches)

Roll No										

Time: 3 hours **Max. Marks: 75**

Answer Any **Five** Questions
All Questions carries equal marks.
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1 Find a real root of the equation $xe^x - \cos x = 0$ using Newton Raphson method **[15M]**

2 Find the interpolating polynomial f(x) from the table and also find f(2) **[15M]**

x	0	1	3	6
f(x)	18	15	-18	90

3 Fit a second degree polynomial to the following data by method of least squares **[15M]**

x	1	2	3	4	5
y	15	12	8	15	14

4 Find y(0.1),y(0.2) using Euler's modified formula given that **[15M]**
$$\frac{dy}{dx} = x^2 - y, y(0) = 1$$

5 Obtain the Fourier series expansion for $f(x) = \left(\frac{\pi-x}{2}\right)^2$ in$[0, 2\pi]$. **[15M]**

   Hence deduce that $\frac{1}{1^2} - \frac{1}{2^2} + \frac{1}{3^2} - \frac{1}{4^2} + \cdots . = \frac{\pi^2}{12}$

6 Find the half range sine series expansion for $f(x) = x(\pi - x)$ in $0 < x < \pi$. **[15M]**

   Deduce that $\frac{1}{1^3} - \frac{1}{3^3} + \frac{1}{5^3} - \frac{1}{7^3} + \cdots = \frac{\pi^3}{32}$

7 a) Solve the PDE $x(y - z)p + y(z - x)q = z(x - y)$ **[6M]**
   b) Solve PDE by method of separation of variables **[9M]**
   $$u_x = 2u_t + u , where\ u(x, 0) = 6e^{-3x}$$

8 Verify Green's theorem in plane for $\oint(3x^2 - 8y^2)\,dx + (4y - 6xy)dy$ where **[15M]**
   C is the region bounded by $x = 0, y = 0$ and $x + y = 1$.

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MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
I B.Tech II Semester Supplementary Examinations, June 2022
Object Oriented Programming
(Common to all branches)

Roll No [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]

Time: 3 hours   **Max. Marks: 75**

Answer Any **Five** Questions
All Questions carries equal marks.
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1 Write a program to make a simple calculator to perform the basic operations using **[15M]** switch case.

2 What is the need of type conversion? Discuss different types of type conversion in **[15M]** C++.

3 Define function overloading. Write a C++ program to define three overloaded **[15M]** functions to swap two integers, swap two floats and swap two doubles.

4 Define constructor. Summarize the various types of constructors with an example. **[15M]**

5 Develop three classes named student, exam and result, where result is inherited **[15M]** from exam and exam is inherited from student. Write possible constructors to initialize the values. Write a main function to test the constructor execution by creating objects.

6 Explain the various types of inheritance with suitable examples. **[15M]**

7 Explain the virtual and pure virtual functions with suitable examples. **[15M]**

8 Define exception handling. Explain the use of try, catch and throw for exception **[15M]** handling in C++.

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