

Code No: **R15A0012****MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY**

(Autonomous Institution – UGC, Govt. of India)

I B.Tech II Semester Supplementary Examinations, July 2021**Engineering Physics-II****(Common to all branches)**

Roll No									
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Time: 3 hours**Max. Marks: 75**

Answer Any **Five** Questions
All Questions carries equal marks.

- 1 Calculate atomic packing factor for SC, BCC and FCC structures [15M]
- 2 Derive an expression for the cohesive energy of a diatomic molecule [15M]
- 3 Discuss how X-ray powder method can be used for the determination of crystal parameters [15M]
- 4 Derive an expression for concentration of Schottky defects in an ionic crystal [15M]
- 5 Derive expressions for electronic and ionic polarizabilities [15M]
- 6 Describe with a neat diagram about the generation of ultrasonic wave by piezoelectric method [15M]
- 7 Explain the properties of Dia, Para, Ferro, Anti Ferro, Ferri Magnetic properties [15M]
- 8 Describe the process of “sol-gel” method in the fabrication of Nano materials [15M]

Code No: R15A0022

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

I B.Tech II Semester Supplementary Examinations, July 2021

Mathematics-II

(Common to all branches)

Roll No									
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Time: 3 hours

Max. Marks: 75

Answer Any **Five** Questions
All Questions carries equal marks.

- 1 a) Using Regula- falsi method, find approximate root of the equation $x^3 - x - 4 = 0$ [7M]
b) Find $y(1.6)$ using Newton's forward interpolation formula from the table [8M]

x	1	1.4	1.8	2.2
y	3.49	4.82	5.96	6.5

- 2a) Find a real root of the equation $x \log_{10}(x) = 1.2$ which lies between 2 and 3 [8M]
by Bisection method.

- b) Using Gauss backward difference formula, find $y(8)$ from the following [7M]
data:

x	0	5	10	15	20	25
y	7	11	14	18	24	32

- 3 Evaluate $\int_0^1 \frac{1}{1+x} dx$ [15M]
i) By Trapezoidal Rule ii) By Simpson's 1/3rd Rule iii) By Simpson's 3/8th Rule

- 4 Solve $dy/dx = x + y$, given $y(1) = 0$. Find $y(1.1)$ and $y(1.2)$ by Taylor's [15M]
series method

- 5 Expand $f(x) = x \sin x$, as a Fourier series in $(0, 2\pi)$ [15M]

- 6 Find the half range sine series for $f(x) = x(\pi - x)$ in $0 < x < \pi$ and deduce [15M]
that
 $1/1^3 - 1/3^3 + 1/5^3 - 1/7^3 + \dots = \pi^3 / 32$

- 7 Solve a) $p^2 + q^2 = x + y$ [7M]
b) $x(y-z)p + y(z-x)q = z(x-y)$ [8M]

- 8 Verify Green's theorem for $\oint (3x^2 - 8y^2) dx + (4y - 6xy) dy$ where C is [15M]
bounded by $y = \sqrt{x}$ and $y = x$

Code No: R15A0502**MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY****(Autonomous Institution – UGC, Govt. of India)****I B.Tech II Semester Supplementary Examinations, July 2021****Object Oriented Programming****(Common to all branches)**

Roll No										
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Time: 3 hours**Max. Marks: 75**

Answer Any **Five** Questions
All Questions carries equal marks.

- 1 List the drawbacks of conventional programming. Explain how object oriented programming overcome them. **[15M]**
- 2 Explain structure of a C++ Program with suitable example? **[15M]**
- 3 What is an object? How is it different from an ordinary variable and a class? Explain with an example. **[15M]**
- 4 Write a program for calculating the total marks and Grade of the 60 students in a class. **[15M]**
- 5 How will you destroy the objects initialized by the constructor in the program? Explain? **[15M]**
- 6 What are different types of inheritance supported by C++? Give an example for each. **[15M]**
- 7 Explain Run time polymorphism with suitable example? **[15M]**
- 8 Define template. What is the need for templates in programming? Write C++ code that declares a Template class. **[15M]**

Code No: R15A0201

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

I B.Tech II Semester Supplementary Examinations, July 2021

Electrical Circuits

(ECE, CSE & IT)

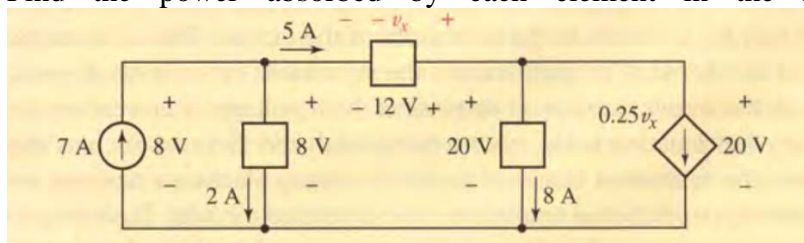
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Time: 3 hours

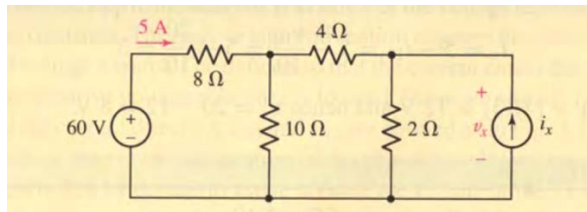
Max. Marks: 75

Answer Any **Five** Questions
All Questions carries equal marks.

- 1 Find the power absorbed by each element in the following circuit. [15M]

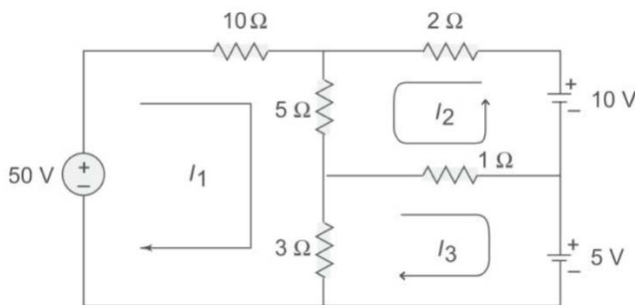


- 2 Use Kirchoff's laws to determine 'v_x' in the following circuit [15M]

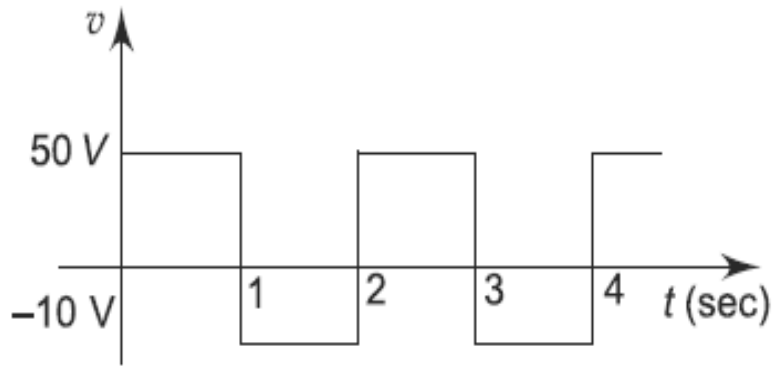


- 3 Derive the necessary equations for star to delta and delta to star transformation [15M]

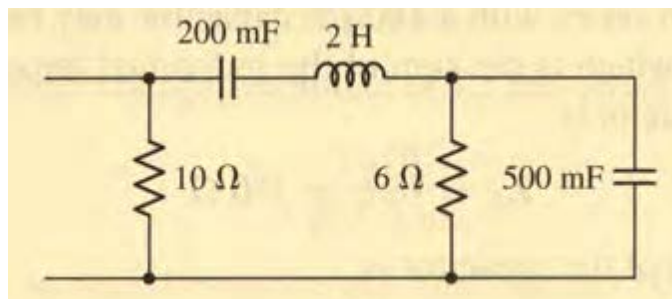
- 4 Determine the mesh currents in the following circuit [15M]



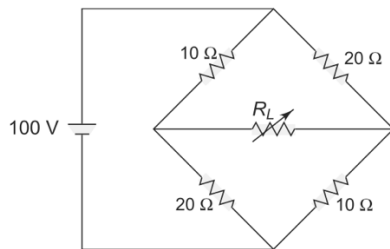
- 5 Calculate effective values and average value of the following voltage waveform shown in Figure. [15M]



- 6 Find the equivalent impedance for a given network at an operating frequency of 5 rad/sec. [15M]



- 7 Find the maximum power transferred to load in the following circuit. [15M]



- 8 Explain the working of transformer and derive the emf equation of a transformer. [15M]

Code No: **R15A0013****MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY**

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I B.Tech II Semester Supplementary Examinations, July 2021**Engineering Chemistry****(ME & AE)**

Roll No									
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Time: 3 hours**Max. Marks: 75**

Answer Any **Five** Questions
All Questions carries equal marks.

- 1 Derive the Nernst equation for single electrode. [15M]
- 2 Discuss about construction, functioning, advantages and applications of Hydrogen
-Oxygen fuel cell [15M]
- 3 What are the factors affecting the rate of corrosion with respect to nature of metal
and environment? [15M]
- 4 Describe
 - (a) sacrificial anodic protection [7M]
 - (b) impressed current cathodic protection [8M]
- 5 Explain the preparation, properties and uses of PVC in detail [15M]
- 6 Write about preparation and applications of Poly vinylacetate and Poly lactic acid [15M]
- 7 How is the softening of water carried out using the Zeolite process? Explain with a
neat labelled diagram. [15M]
- 8 Give the significance of ultimate analysis and proximate analysis. [15M]

Code No: **R15A0302****MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY**

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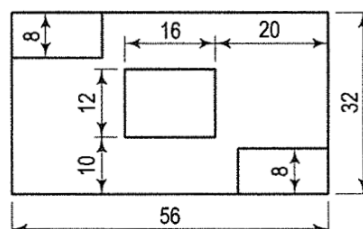
I B.Tech II Semester Supplementary Examinations, July 2021**Engineering Drawing****(ME & AE)**

Roll No									
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Time: 3 hours**Max. Marks: 75**Answer Any **Five** Questions

All Questions carries equal marks.

- 1 Construct parabola when the distance of the focus from the directrix is equal to 50 mm, using general method and also draw normal and tangent at convenient location. [15M]
- 2 Draw a cycloid of a circle of radius 30 mm. Also draw tangent and normal of the cycloid. [15M]
- 3 A point P is 50 mm from both the reference planes. Draw its projections in all possible positions. [15M]
- 4 A line PQ of length 80 mm is 15 mm above **HP** and 20 mm in front of **VP**. The line is inclined at angle of 30° to **HP** and 45° to **VP**. Draw the projections of the line and find the final views. [15M]
- 5 A regular hexagon of 25 mm side has one side on the ground. Its plane is inclined at 30° to the H.P and perpendicular to the V.P. Draw its projections. [15M]
- 6 Draw the projections of a square pyramid, base 30 mm side and axis 60 mm long, having its base on the H.P. and one of the edges of the base inclined at 30° to the V.P. [15M]
- 7 Draw the isometric view of the following (All Dimensions are in mm) [15M]



- 8 Draw the following views
(i) Front view. (ii) Top view.
(All Dimensions are in mm)

[15M]

