R18

Code No: R18A0022

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										

Time: 3 hours **Max. Marks: 70**

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

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1 (a) Determine the Geometrical interpolation of Newton-Raphson Method [7M]
(b) Find the positive root of
$x^4 - x = 10.correct\ three\ decimal\ places, using$ Newton-Raphson Method [7M]

2 The table gives the distances in nautical miles of the visible horizon for the given heights in feet above the earth's surface [14M]

X:Height	100	150	200	250	300	350	400
Y:distance	10.63	13.03	15.04	16.81	18.42	19.90	21.27

Find the value of 'Y' when X=160 ft using Newton's forward interpolation formula

3 Compute the values of $\int_{0.2}^{1.4}(sinx - logx + e^x)dx$
Using (a) Simpson's 1/3 rule [7M]
(b) Simpson's 3/8 rule [7M]

4 Using Taylor's method to obtain an approximate value of y at x=0.2 for the differential equation $\frac{dy}{dx} = 2y + 3e^x, y(0) = 0$. Compare the natural solution obtained with the exact solution [14M]

5 Show that (a) $\Gamma n\Gamma 1 - n = \frac{\pi}{\sin(n\pi)}$. [7M]
(b) Show that $\Gamma\frac{1}{2} = \sqrt{\pi}$ [7M]

6 (a) Prove that $\int_0^{\frac{\pi}{2}} sin^2\theta\, cos^4\theta\ d\theta = \frac{\pi}{32}$ [7M]
(b) Evaluate $\int_0^1 x^7(1-x)^5\,dx$ by using β, γ function [7M]

7 Evaluate the triple integral $\iiint xy^2z\ dx\,dy\,dz$ taken through the positive octant of the sphere $x^2 + y^2 + z^2 = a^2$ [14M]

8 (a) Find $curl\bar{f}$ where $\bar{f} = grad(x^3 + y^3 + z^3 - 3xyz)$ [7M]

(b) Find constants a,b &c if the vector
$\bar{f} = (2x + 3y + az)i + (bx + 2y + 3z)j + (2x + cy + 3z)k$ is Irrotational [7M]

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R18

Code No: R18A0502

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										

Time: 3 hours **Max. Marks: 70**

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

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1	**(a)**	List and explain the Basic concepts of Object Oriented Programming	**[7M]**
	(b)	What is implicit and explicit type conversion? Explain with a program.	**[7M]**
2	**(a)**	Define Abstract data type? What is the significance of it in OOP	**[7M]**
	(b)	What is the significance of flow control in programming? Explain.	**[7M]**
3	**(a)**	Explain the static member and static function with an example program.	**[7M]**
	(b)	Define a class and explain the different access control mechanism in class**.**	**[7M]**
4	**(a)**	List the advantages of Friend Functions? Write a program to demonstrate the object as an argument to a function.	**[7M]**
	(b)	How to define the array of objects? Explain with a sample program.	**[7M]**
5		What is inheritance? Explain the different types of inheritance in C++ with examples.	**[14M]**
6		What is constructor? Explain in detail about the constructor overloading. Write a program for demonstration of the copy constructor.	**[14M]**
7	**(a)**	Write a program for the illustration of two-dimensional dynamic array.	**[7M]**
	(b)	Explain the Runtime polymorphism with an example.	**[7M]**
8	**(a)**	Create a Function template for addition of the input data.	**[7M]**
	(b)	When is a catch(…) handler is used? Explain with a program.	**[7M]**

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Code No: **R18A0002**

R18

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLO

(Autonomous Institution – UGC, Govt. of India)

I B.Tech II Semester Supplementary Examinations, July 2021

Professional English

(Common to all branches)

Roll No										

Time: 3 hours **Max. Marks: 70**

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

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1 .Describe the place of your choice. **[14M]**

2.a) Complete the sentences by choosing the appropriate non-finite verb. **[7M]**

1.The police constable saw a thief _____ on a bicycle.
a. escaping b. escape c. to escape d. escaped

2. I tried _____ a stain left by coffee from my shirt using the new cleaning agent."
a. clean b. to clean c. to cleaning d. to cleaned

3. We can hear the class choir _____ in the hall.
a. to practice b. practiced c. practicing d. to practices

4. _____ a loud sound, the students rushed out of the auditorium."
a. hearing b. hear c. to hear d. heard

5. I watched the mild scolding with a _____ frown.
a. to worry b**.** worry c. worried d. worries

6. _____ faster is dangerous for kids.
a. to go b. to going c. going d. go

7. _____ is good for mind.
a. to read b. to reading c. read d. reading

b) Describe the process of creating an email id or composing an official email. **[7M]**

3. Prepare a write up on Abstract writing. **[14M]**

4. Write about Mock interviews.**[14M**]

5. Write a cover letter applying for the position of a 'Junior Programmer' assuming that you are a fresh B.Tech. graduate. Use 'Full Block Format' for the letter. **[14M]**

6.a) Convert the following sentences as directed. **[7M]**

i. He said to me, "I expect you to attend the function." (into indirect speech)
ii. John asked, "How long will it take to travel from Germany to South Africa?" (into indirect speech)
iii. The father warned his son that he should be beware of him. (into direct speech)
iv. Raj said, "I'm teaching English online" (into indirect speech)
v. He swore in the name of God that he was ignorant of the matter. (into indirect speech)
vi. John's father reminded him to take his umbrella. (into direct speech)
vii. The teacher warned the students that anger is like an acid. (into direct speech)

b) Discuss in detail some of the positive body language features specific to job interviews. **[7M]**

7. Write an elaborate essay on how engineers can play a vital role in nation building. **[14M]**

8. Write an abstract on Covid- 19 [14M]

Code No: R18A0201

R18

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

I B.Tech II Semester Supplementary Examinations, July 2021

Basic Electrical Engineering

(EEE, ECE, CSE & IT)

Roll No										

Time: 3 hours **Max. Marks: 70**

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

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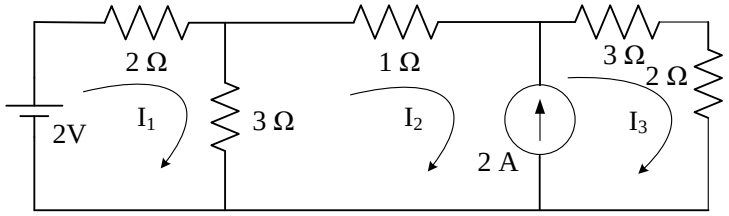
1 *a*) Derive the equation for energy stored in the capacitor and inductor. **[7M]**
b) Distinguish between an independent source and a dependent source. **[7M]**

2 a) What is the difference between Circuit and Network? **[7M]**
b) Explain the source transmission technique? **[7M]**

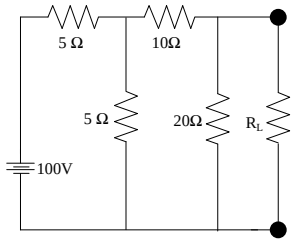
3 a) Determine the three mesh currents in the network shown in figure **[10M]**



b) Define Mesh? What is the difference between Mesh and Loop? **[4M]**

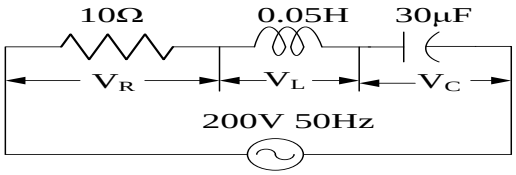
4 a) State and prove maximum power transfer theorem. **[7M]**

b) Find the valve of R_L so that the maximum power is delivered to the load resistance as shown in figure **[7M]**



5 a) A circuit consists of a series connected resistance of 20 ohms and an inductance of 20mH connected across a supply of 230V at 50Hz. Evaluate (a) circuit current (b) power factor and (c) power consumed by the circuit. Draw the phasor diagram. **[10M]**
b) Explain series RL circuit? **[4M]**

6 a) For the circuit shown below calculate Impedance, current, Power-Factor, V_L, V_R, V_C, active power and reactive power. Also draw vector diagram. **[10M]**



b) Define RMS and average values? **[4M]**

7 a) Explain constructional details and principle operation of DC machine? **[10M]**
b) What are the applications of DC machine? **[4M]**

8 a) Explain in detail the types of Batteries? **[7M]**
b) Write short notes on lines and cables? **[7M]**

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Code No: R18A0013 **R18**

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

I B.Tech II Semester Supplementary Examinations, July 2021

Engineering Chemistry

(EEE, ECE, CSE & IT)

Roll No										

Time: 3 hours **Max. Marks: 70**

Answer Any **Five** Questions
All Questions carries equal marks.
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1 a)What is electro chemical cell? explain with an example(galvanic cell). **[7M]**
b)What is secondary cell, explain Lead accumulator (lead-acid battery) with neat diagram. **[7M]**

2 a) Explain wet/electro-chemical theory of corrosion with example. **[7M]**
b)Discuss the following corrosion controlling methods by cathodic protection process with neat diagram. **[7M]**
i) Sacrificial anodic protection ii) impressed current cathodic protection process

3 a) What are the postulates of crystal field theory. **[7M]**
b).Draw the Molecular orbital energy level diagrams of N2 and give their property **[7M]**

4 a) What is linear combination of atomic orbitals(LCAO), discuss about the principles of LCAO. **[7M]**
b) Discuss about the crystal splitting in octahedral geometry **[7M]**

5 a) How do you estimate the total hardness of water by complexometric method? **[7M]**
b) What is potable water? What are the characteristic properties of potable water. **[7M]**

6 a) Discuss Ion-exchange process with neat diagram. **[7M]**
b) What is Disinfectation process? Explain the various stages involved in Disinfectation process with chlorine. **[7M]**

7 a)What is oxidation reaction? Explain the oxidation process of alcohols using KMnO4. **[7M]**
b)What is substitution reaction? Explain Mechanism of SN1 and SN2 reactions **[7M]**

8 a) What is the composition of petrol? Describe the process of fractional distillation with a neat diagram. **[7M]**
b) Explain the proximate analysis of coal and give its significance **[7M]**

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R18

Code No: R18A0301

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

I B.Tech II Semester Supplementary Examinations, July 2021

Engineering Graphics

(ME & AE)

Roll No										

Time: 3 hours **Max. Marks: 70**

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

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1 Construct a epicycloid, rolling circle 50 mm diameter and directing circle 75 mm radius. Draw a tangent to it at a point 50 mm from the centre of the directing circle. **[14M]**

2 A 3.2 cm long line represents a length of 4 metres. Extend this line to measure lengths upto 25 metres and show on it units of metre and 5 metres. Show the length of 17 metres on this line. **[14M]**

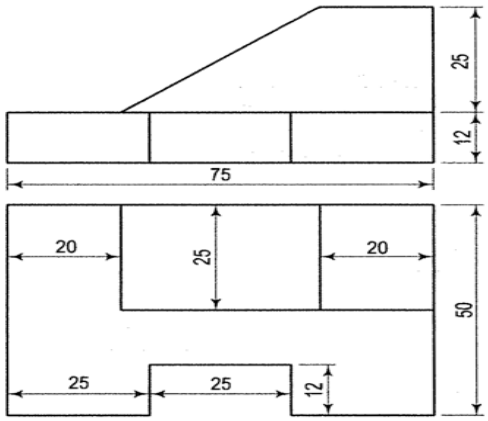
3 Two points A and B are in the H.P. The point A is 30 mm in front of the V.P., while B is behind the V.P. The distance between their projectors is 75 mm and the line joining their top views makes an angle of 45° with XY. Find the distance of the point B from the V.P. **[14M]**

4 Two pegs fixed on a wall are 45 mm apart. The distance between the pegs measured parallel to the floor is 36 mm. If one peg is 15 mm above the floor, find the height of the second peg and the inclination of the line joining the two pegs, with the floor. **[14M]**

5 Draw the projections of a circle of 50 mm diameter, having its plane vertical and inclined at 30° to the V.P. Its centre is 30 mm above the H.P. and 20 mm in front of the V.P. **[14M]**

6 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. **[14M]**

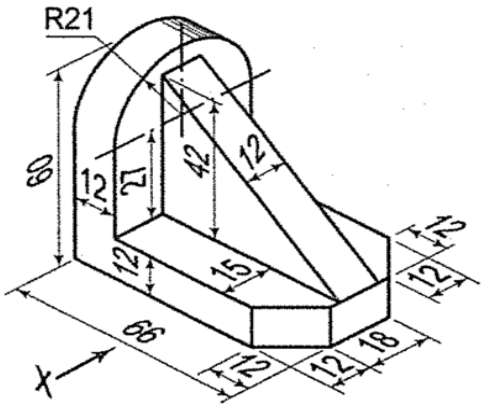
7 Draw the isometric view of the following (All Dimensions are in mm) **[14M]**



8 Draw the following views **[14M]**

(i) Front view. (ii)Top view.

(All Dimensions are in mm)



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Code No: **R18A0015** **R18**

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLO

(Autonomous Institution – UGC, Govt. of India)

I B.Tech II Semester Supplementary Examinations, July 2021

Engineering Physics

(ME & AE)

Roll No										

Time: 3 hours **Max. Marks: 70**

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

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1	a	What are damped oscillators?	**[4M]**
	b	Explain working of damped harmonic oscillator in various conditions like heavy, critical and light damping.	**[10M]**
2	a	What are the characteristics of simple harmonic oscillator?	**[4M]**
	b	Explain energy decay in damped harmonic oscillators.	**[10M]**
3	a	What is meant by interference of light?	**[4M]**
	b	What is a thin film? Obtain an expression for the path difference in case of interference of reflected light in thin transparent film.	**[10M]**
4	a	Write the difference between Fresnel and Fraunhofer diffraction.	**[4M]**
	b	Discuss Fraunhofer diffraction at a single slit.	**[10M]**
5	a	Explain Fermi level.	**[4M]**
	b	Derive an expression for density of states of electrons.	**[10M]**
6	a	What is Bloch theorem?	**[6M]**
	b	Write the conclusions given by Kronig-Penny model.	**[8M]**
7	a	What are dielectric materials?	**[4M]**
	b	Explain electronic polarization and obtain an expression for electronic polarizability.	**[10M]**
8	a	Explain the characteristics of Laser beam.	**[8M]**
	b	Write any four applications of Laser	**[6M]**

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