R15

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
I B.Tech II Semester Advance Supplementary Examinations, June 2019
Engineering Chemistry
(ME & AE)

Roll No									

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

Note: This question paper contains two parts A and B
Part A is compulsory which carriers 25 marks and Answer all questions.
Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions,
Choosing ONE Question   from each SECTION and each Question carries 10 marks.
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PART-A (25 Marks)

1). a	What is concentration cell?	**[2M]**
b	Define the conductance, equivalent, molar conductance and their unit?	**[3M]**
c	What is electrochemical series oxidation corrosion?	**[2M]**
d	What is galvanic and tinning?	**[3M]**
e	Write notes about the viscosity, cloud point and pour point?	**[2M]**
f	What are biodegradable polymers? Give examples.	**[3M]**
g	Define scales and sludges.	**[2M]**
h	Differentiate between primary and secondary batteries	**[3M]**
i	Write a short note about the coal analysis and significance.	**[2M]**
j	Define the knocking, octane and cetane rating.	**[3M]**

PART-B (50 MARKS)
SECTION-I

2	a)	Explain construction and working Galvanic cell with neat diagram..	**[5M]**
	b)	Explain the construction and functioning of Calomel electrode	**[5M]**

OR

3	Write a short note on the emf of electrode and electrode potentials in the cell reaction. Briefly explain the Nernst equation and its applications.	**[10M]**

SECTION-II

4	Explain cathodic protection by sacrificial anoidic and impressed current cathodic method.	**[10M]**

OR

5	(a) Explain Chemical corrosion.	**[5M]**
	(b) Give a brief note on galvanic corrosion.	**[5M]**

SECTION-III

6	Give the briefly introduction of thermoplastic and thermosetting resins? Explain with examples.	**[10M]**

OR

7	Write a briefly note on the fiber reinforced plastics (FRP) and its applications.	**[10M]**

SECTION-IV

8	Explain the following methods: i) Phosphate conditioning ii) Zeolite process.	**[10M]**

OR
9   a)   What is the reason for hardness of water? Explain the types of hardness of   **[7M]**
water with units and determination of hardness of water by EDTA method.
      b)   What is the potable water and its specifications?   **[3M]**

SECTION-V

10   a)   Discuss the synthetic petrol process by Fischer-Tropsch's process?   **[5M]**
      b)   Define cracking. Explain fixed bed catalytic cracking.   **[5M]**

OR

11   Explain the analysis of coal by proximate analysis. Give its importance.   **[10M]**

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Code No: R15A0201
MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
I B.Tech II Semester Advance Supplementary Examinations, June 2019
Electrical Circuits
(ECE, CSE & IT)

Roll No									

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

**Note:** This question paper contains two parts A and B
Part A is compulsory which carriers 25 marks and Answer all questions.
Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions,
Choosing ONE Question from each SECTION and each Question carries 10 marks.
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PART-A (25 Marks)

1). a   State the principle of source transformation.   **[2M]**
   b   Draw the v-i characteristics of ideal and practical voltage and current sources.   **[3M]**

   c   A network has 10 nodes and 17 branches in all. What is the number of twigs and   **[2M]**
       links?
   d   Illustrate delta to star conversion.   **[3M]**
   e   What is the mean value of a sinusoidal alternating e.m.f. which has a maximum   **[2M]**
       value of 100V?
   f   Define (i) Average value (ii) R.M.S. value and (iii) form factor   **[3M]**
   g   State Thevenin's theorem.   **[2M]**
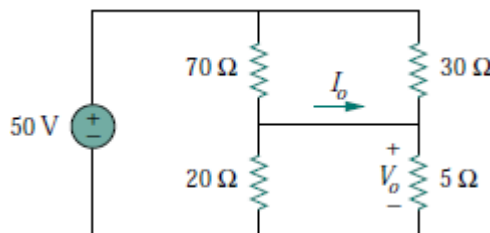   h   Find the Norton resistance, that is R_N, for the circuit given below.   **[3M]**
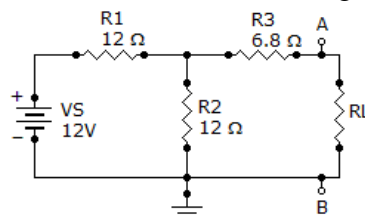
   i   Draw the equivalent circuit of transformer under load   **[2M]**
   j   Derive the emf equation of a Transformer   **[3M]**
PART-B (50 MARKS)
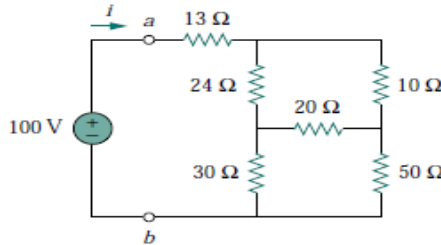### SECTION-I
2(a)   Calculate V_o and I_o in the circuit shown below   **[5M]**
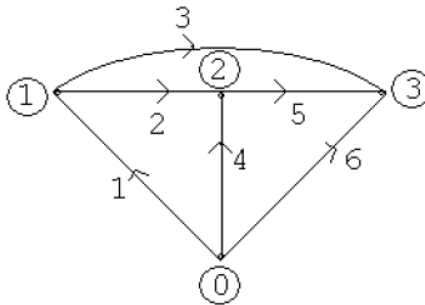
(b)   Define Inductance and Capacitance. Also derive the V-I relations in L and C.   **[5M]**

OR

3   State and Explain Kirchhoff's laws with an example.   **[10M]**

SECTION-II

4(a)   For the bridge network shown in Fig., find R_{ab} and i.   **[5M]**
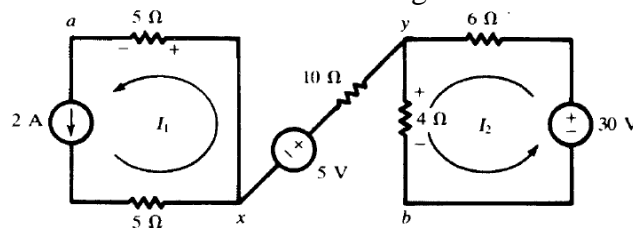

(b)   Write basic cut-set and basic tie set matrices for the following graph by taking   **[5M]**
1,2,3 as three branches as shown in Fig.

OR

5(a)   Find the voltage Vab in the network shown in Fig.   **[5M]**

(b)   Describe the series and parallel connection of resistors and   also derive the   **[5M]**
expressions for voltage and current division rules.

SECTION-III

6(a)   A coil of resistance 5 Ω and inductance 120 mH in series with   **[5M]**
a 100 μF capacitor, is connected to a 300 V, 50 Hz supply.
Calculate (i) the current flowing, (ii) the phase difference
Between the supply voltage and current(iii) the voltage across
the coil and (iv) the voltage across the capacitor.

(b)   In an A.C circuit, define real power, reactive power and apparent power. Also   **[5M]**
develop relation between them.

OR

7(a)   The voltage of a circuit is v = 200 sin (ωt + 30^0) and the current is i = 50 sin(ωt +   **[5M]**
90°). Calculate
i. The average power, reactive volt-amperes and apparent power.
ii. Find the circuit elements if ω=50π rad /sec.

(b)   Calculate the RMS value of the current wave form shown below.   **[5M]**
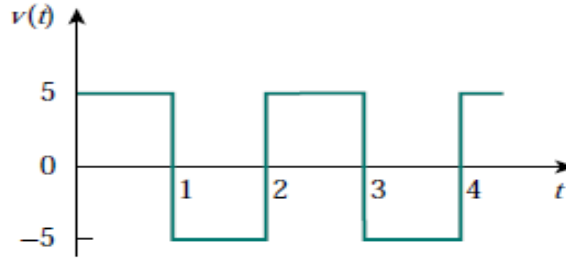
SECTION-IV
8(a)   State and discuss milliman's and compensation theorem.   **[5M]**
 (b)   For the circuit shown below in calculate i_x and the power dissipated by the 10-Ω   **[5M]**
         resistor using superposition.
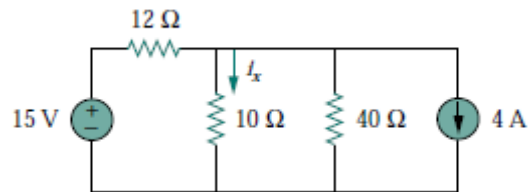
OR
9   State and Explain Thevenin's Theorem with an example.   **[10M]**
SECTION-V
10(a)   Why hysterisis and eddy current losses occur in a transformer.   **[5M]**
 (b)   When a transformer is supplied at 400 V 50 Hz the hysterisis loss is found to be   **[5M]**
         310 watts and eddy current loss is found to be 260 watts. Determine the hysterisis
         and eddy current loss when the transformer is supplied at 800 V 100 Hz.
                                        OR
11   Determine the efficiency and regulation of a single phase transformer by **[10M]**
         conducting (a) open circuit test and (b) short circuit test. And the equivalent
         diagram of a single phase transformer.
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MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
I B.Tech II Semester Advance Supplementary Examinations, June 2019
Engineering Drawing
(ME & AE)

Roll No										

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

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 15 marks.

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SECTION-I

1   A circle of 50 mm diameter rolls on the circumference of another circle of 175 **[15M]** mm diameter and outside it. Trace the locus of the point on the circumference of the rolling circle for one complete revolution. Name the curve. Draw normal and tangent to the curve at a point 125 mm from the center of the directing circle

OR

2   On a map the distance between two points is 14 cm. the real distance between **[15M]** them is 20 km. Draw a diagonal scale of this map to read Km and Hm, and to measure up to 20 Km show a distance of 17.6 Km on this scale.

SECTION-II

3   A line AB, 65 mm long, has its end A 20 mm above the H.P. and 25 mm in front **[15M]** of the V.P. The end B is 40 mm above the H.P. and 65 mm in front of the V.P. Draw the projections of AB and show its inclinations with the H.P. and the V.P.

OR

4 (a)   A point P is 20 mm below H.P and lies in the third quadrant. Its shortest distance **[8M]** from XY is 40 mm. Draw its projections

(b)   A point Q is situated in the first quadrant. It is 40 mm above H.P and 30 mm in **[7M]** front of V.P. Draw its projections and find its shortest distance from the intersection of H.P, V.P and auxiliary plane

SECTION-III

5   Draw the projections of a regular pentagon of 25 mm side, having its surface **[15M]** inclined at 30^0 to the HP and a side parallel to the HP and inclined at an angle of 60^0 to the VP.

OR

6   A hexagonal prism of 35mm edge of base and 70mm length of axis is having an **[15M]** edge of base in the HP and the rectangular face containing that edge is inclined 30° to HP and perpendicular to VP. Draw the projections

SECTION-IV

7   Draw the isometric view of a hexagonal pyramid of side of base 30 mm and height **[15M]** 75 mm, when it is resting on HP such that an edge of the base is parallel to VP
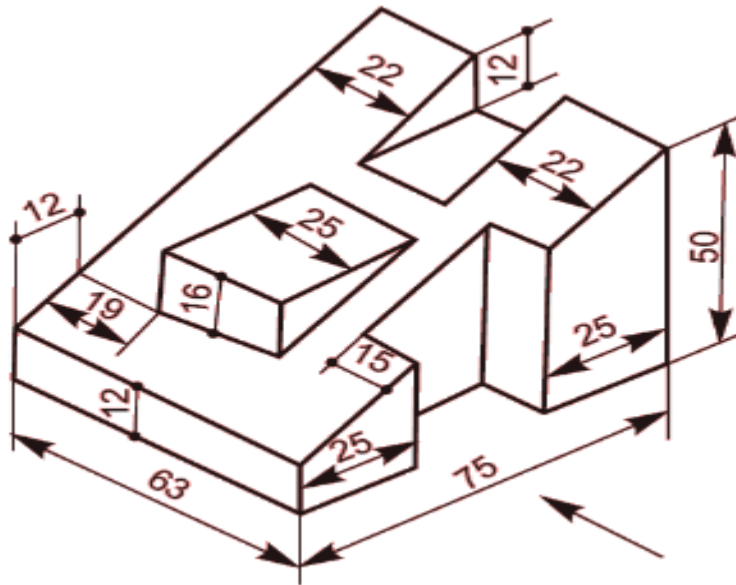
OR

8   Draw the isometric drawing of a cone of base diameter 30 mm and axis 45 mm **[15M]** long. Use the offset method

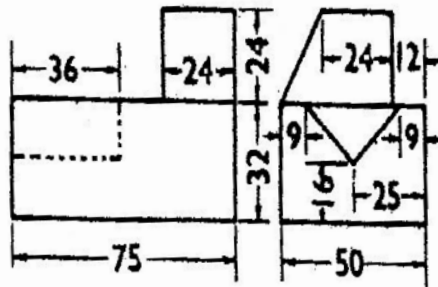**9** Draw the orthographic views for the solid given below **[15M]**

OR

10 Draw the isometric view of the given orthographic projection **[15M]**

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MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
I B.Tech II Semester Advance Supplementary Examinations, June 2019
Engineering Physics-II
(Common to all branches)

Roll No										

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

Note: This question paper contains two parts A and B
Part A is compulsory which carriers 25 marks and Answer all questions.
Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions,
Choosing ONE Question from each SECTION and each Question carries 10 marks.
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PART-A (25 Marks)

1). a	Define space lattice, basis, unit cell and lattice parameters	**[2M]**
b	Discuss about lattice planes.	**[3M]**
c	Write short notes on point defects.	**[2M]**
d	What are the draw backs of Laue method.	**[3M]**
e	Write any four properties of ultrasonic waves.	**[2M]**
f	Write short notes on piezo-electricity.	**[3M]**
g	Define magnetic moment, magnetic susceptibility, magnetic field intensity and permeability	**[2M]**
h	Write the properties of para magnetic materials.	**[3M]**
i	Compare bottom up and down fabrication methods of nanomaterials	**[2M]**
j	Explain basic principle of sol-gel method.	**[3M]**

PART-B (50 MARKS)
SECTION-I

2 a)	Discuss in detail about primary and secondary bonds between the atoms	**[5M]**
b)	Calculate the packing fraction of simple cube.	**[5M]**

OR

3 a)	Derive an expression for inter planar distance in cubic crystal.	**[5M]**
b)	Discuss about salient features of miller indices and their significance.	**[5M]**

SECTION-II

4 a)	Define atomic number, coordination number and packing fraction.	**[3M]**
b)	Explain determination of lattice parameters using Laue method of X-ray diffraction.	**[7M]**

OR

5 a)	Calculate the concentration of Frenkel defects at a given temperature.	**[7M]**
b)	Write short notes on line defects.	**[3M]**

SECTION-III

6 a)	Define oriental polarization.	**[3M]**
b)	Derive an expression for internal fields in dielectric materials.	**[7M]**

OR

7 a)	Discuss about the production of ultrasonic waves using piezoelectric methods.	**[6M]**

b)   Describe detection and properties of ultrasonic waves.   **[4M]**

SECTION-IV
8 a) Give an account of properties of superconductors.   **[4M]**
  b) Discuss about domain theory of ferromagnetism.   **[6M]**

OR

9 a) Give an account of soft and hard magnetic materials   **[6M]**
  b) Discuss about Meissner effect.   **[4M]**

SECTION-V
10 a) Explain synthesis of nanomaterials using physical vapour deposition.   **[5M]**
   b) Discuss about the effect of surface to volume ratio on nano materials.   **[5M]**

OR

11 a) Explain principle and working of scanning electron microscopy.   **[6M]**
   b) Discuss about the determination of crystal parameters using XRD   **[4M]**

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Code No: **R15A0014**

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MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
I B.Tech II Semester Advance Supplementary Examinations, June 2019
Environmental Studies
(ECE, CSE & IT)

Roll No										

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

Note: This question paper contains two parts A and B
Part A is compulsory which carriers 25 marks and Answer all questions.
Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions,
Choosing ONE Question from each SECTION and each Question carries 10 marks.
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PART-A (25 Marks)

1). a	What are the components of Ecosystem?	**[2M]**
b	Write the significance of biogeochemical cycle in pollution abatement.	**[3M]**
c	Write about Hydrogen as a fuel.	**[2M]**
d	Write the importance of forests.	**[3M]**
e	What is meant by species diversity?	**[2M]**
f	Define Hotspot and write about Hotspots in India.	**[3M]**
g	What are the impacts of Climate change?	**[2M]**
h	Identify the sources of noise pollution in rural areas. List out the health hazards of noise pollution.	**[3M]**
i	What is Ecological Foot print?	**[2M]**
j	What are the salient features of wildlife protection act?	**[3M]**

PART-B (50 MARKS)
SECTION-I

2   A) Explain the terms "Food Chain" and "Food Web" with suitable   **[4+3+3M]**
         examples?
         B) What are Bio-geochemical cycles?
         C) What is an ecological pyramid?

<div align="center">OR</div>

3   Explain the mechanism involved in the energy flow between various   **[10M]**
         components of an ecosystem

SECTION-II

4   What are non-conventional energy resources? Write their merits.   **[10M]**

<div align="center">OR</div>

5   A) Explain the causes and effects of deforestation.   **[5+5M]**
         B) What are the benefits and problems of big dams?

SECTION-III

6   A) Enumerate the reasons and need for: genetic diversity and ecosystem   **[7+3M]**
         diversity.
         B) With examples, discuss the social values of biodiversity.

OR

7 Briefly explain Biogeographical classification of India and write about the conservation of Biodiversity. **[10M]**

SECTION-IV

8 Describe the mechanism of polluting the soil by: excess use of fertilizer, pesticides and excess salts. **[10M]**

OR

9 A) Define Air Pollution. What are the sources of air pollution? **[5+5M]**
   B) Write the impacts of modern agriculture.

SECTION-V

10 A) Write an essay on the National Environment Policy of India. **[3+4+3M]**
    B) Explain different Constitutional measures and legislative measures taken by Govt of India for environmental protection.
    C) Write short notes on Environmental Ethics.

OR

11 Explain the characteristics, structure, stages and techniques used for Environmental Impact Assessment (EIA). **[10M]**

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MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
I B.Tech II Semester Advance Supplementary Examinations, June 2019
Mathematics-II
(Common to all branches)

Roll No										

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

Note: This question paper contains two parts A and B
Part A is compulsory which carriers 25 marks and Answer all questions.
Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions,
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PART-A (25 Marks)

1). a   What are the demerits of Newton-Raphson Method.   **[2M]**
   b   Show that $(1 + \Delta)(1 - \nabla) = 1$ **[3M]**

   c   Write normal equations for to fit the straight line $y = a + bx$ **[2M]**
   d   Evaluate $\int_0^1 \frac{1}{1+x} dx$, by Simpson's one-third rule.   **[3M]**
   e   Define periodic function.   **[2M]**
   f   Write the Dirichlet condition for existence of fourier series of a function   **[3M]**
   g   Form partial differential equation by eliminating arbitrary constants a and b from   **[2M]**
       $z = ax^3 + by^3$
   h   Solve partial differential equation $pqz = p^2(qx + p^2) + q^2(py + q^2)$ **[3M]**
   i   Find the unit normal vector to the   **[2M]**
       surface $x^2y + 2xz = 4$ $at\ the\ point$ $(2, -2, 3)$
   j   Find the work done in a moving in the force field $\bar{F} = 3x^2\bar{\imath} + \bar{\jmath} + z\bar{k}$ along the   **[3M]**
       straight line from (0,0,0) to (2,1,3).

PART-B (50 MARKS)
SECTION-I

2   Find the roots of the equation $x \sin x + \cos x = 0$ using Newton Raphson method.   **[10M]**

OR

3   Find the interpolating polynomial f(x) from the table and also find f(3)   **[10M]**

x	0	1	4	5
f(x)	4	3	24	39

SECTION-II

4   Fit a second degree polynomial to the following data by method of least squares   **[10M]**

x	0	1	2	3	4
y	1	1.8	1.3	2.5	6.3

OR

5   Find y(0.1),y(0.2) by Runge -Kutta method of fourth order for the differential   **[10M]**
    equation$\frac{dy}{dx} = xy + y^2, y(0) = 1$

6   Obtain the fourier series for $f(x) = \pi - |x - \pi|$ in $[0, 2\pi]$. Hence deduce that **[10M]**
$\frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + \cdots . = \frac{\pi^2}{8}$

OR

7   Find the half range sine series for $f(x) = x(\pi - x)$ in $0 < x < \pi$. Deduce that **[10M]**
$\frac{1}{1^3} - \frac{1}{3^3} + \frac{1}{5^3} - \frac{1}{7^3} + \cdots = \frac{\pi^2}{32}$

SECTION-IV

8   a) Solve $px - qy = y^2 - x^2$ **[5M]**
     b) Solve $px + qy = pq$ **[5M]**

OR

9   Solve by method of separation of variables   **[10M]**
$u_x = 2u_t + u$, $where$ $u(x, 0) = 6e^{-3x}$

SECTION-V

10   Verify Green's theorem for $\oint(y - \sin x)dx + \cos x dy$ where C is the triangle **[10M]**
enclosed by the lines $y = 0, x = \frac{\pi}{2}, \pi y = 2x$

OR

11   a. Find the angle between the surfaces x²+y²+z² =9, and z = x²+y²- 3 at point   **[5M]**
             (2,-1,2).   **[5M]**

         b. Find constants a,b and c if the vector $\bar{f} =$

             $(2x + 3y + az)\bar{i} + (bx + 2y + 3z)\bar{j} + (2x + cy + 3z)\bar{k}$ is Irrotational

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R15

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
I B.Tech II Semester Advance Supplementary Examinations, June 2019
Object Oriented Programming
(Common to all branches)

Roll No									

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

Note: This question paper contains two parts A and B
Part A is compulsory which carriers 25 marks and Answer all questions.
Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE
Questions, Choosing ONE Question from each SECTION and each Question carries 10
marks.

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PART-A (25 Marks)

1). a   How does a main() function in C++ differ from main in C?   **[2M]**
   b   What is a reference variable in C++?   **[3M]**

   c   Is it possible to have a recursive inline function?   **[2M]**
   d   What is volatile keyword?   **[3M]**
   e   How do we invoke a constructor function ?   **[2M]**
   f   Can I use malloc() function of C language to allocate dynamic memory in C++? **[3M]**
   g   Why it is necessary to overload an operator?   **[2M]**
   h   What is a virtual base class?   **[3M]**
   i   Write a template function to multiply by a scalar value.   **[2M]**
   j   When do we use multiple catch handlers?   **[3M]**

PART-B (50 MARKS)
SECTION-I

2   a) What is the use of Manipulators? Show with an example   **[3M]**
        b) Write the structure of C++ program.   **[3M]**
        c) List few areas of applications of OOP technology.   **[4M]**

OR

3   a) Differentiate between class and structure? Explain the syntax for defining a   **[5M]**
    class.
    b) Write a C++ Program to Accept a Matrix and Interchange the Diagonals   **[5M]**

SECTION-II

4   a) Demonstrate how a Friend function works as bridge in between two   **[5M]**
            classes.
        b) Define a inline function with an example? Write the limitations of it.   **[5M]**

OR

5   a) Discuss briefly about static data members and static member function.   **[5M]**
        b) Write a program to demonstrate objects as arguments to function.

                                                                                     [5M]

SECTION-III

6   a) What is inheritance? Give the different types of inheritance in C++ with **[7M]**
            example programs.

		b)	Write a program to demonstrate a copy constructor.	**[3M]**
			OR	
7		a)	Explain in detail about the Constructor overloading.	**[5M]**
		b)	Write a program to overload a binary operators.	**[5M]**

SECTION-IV

8		a)	Write a program to demonstrate arithmetic operations on pointers	**[5M]**
		b)	Explain the Runtime polymorphism with an example.	**[5M]**
			OR	
9	a)		Write a program to demonstrate array of pointers.	**[4M]**
		b)	Differentiate between compile time and run time polymorphism with example.	**[6M]**

SECTION-V

10		a)	Write a template function to demonstrate the arithmetic operations.	**[5M]**
		b)	Discuss in detail about File Streams	**[5M]**
			OR	
11		a)	Write a program for swapping of generic data.	**[5M]**
		b)	What is a file mode? Describe the various file mode options available.	**[5M]**

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