Code No: **R17A0021**

R17

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

I B.Tech I Semester Supplementary Examinations, May 2019

Mathematics-I

(Common to all Branches)

Roll No										

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

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

Q. No. 1 a) Reduce the matrix A into Echelon form and hence find its rank. **(4M)**

$$A=\begin{bmatrix}-1 & -3 & 3 & -1\\ 1 & 1 & -1 & 0\\ 2 & -5 & 2 & -3\\ -1 & 1 & 0 & 1\end{bmatrix}$$

b) Solve the system of equations $27x + 6y - z = 85$ **(10M)**

$$6x + 15y + 2z = 72$$

$$x + y + 54z = 110$$

OR

Q. No. 2 Find the Eigen values and Eigen vectors of the matrix $A=\begin{bmatrix}\mathbf{-9} & \mathbf{4} & \mathbf{4}\\ \mathbf{-8} & \mathbf{3} & \mathbf{4}\\ \mathbf{-16} & \mathbf{8} & \mathbf{7}\end{bmatrix}$ **(14M)**

SECTION-II

Q. No. 3 a) Verify Cauchy mean value theorem for the function $f(x) = e^x and\ g(x) = e^{-x}$ in [a,b] **(10M)**

b) Obtain the Maclaurin's series expansion of $f(x) = \log(1 + x)$ **(4M)**

OR

Q. No. 4 Find the maximum and minimum of $f(x, y) = x^3 + y^3 - 63(x + y) + 12xy$ **(14M)**

SECTION-III

Q. No. 5 a) Solve $x^2\frac{dy}{dx} = 3x^2 - 2xy + 1$ (7M)

b) Find the Orthogonal trajectories of the family of curves $r = acos\theta$. **(7M)**

Q. No.6 a) If the surround are maintained at 30^0C and the temperature of body cools from 80^0C To 60^0C in 12 min., find the temperature of the body after 24mints. **(7M)**

b) Solve $\frac{dy}{dx}(x^2y^3 + xy) = 1$. (7M)

SECTION-IV

Q. No. 7 a) Solve $(D^2 + 4D + 3)y = e^x$ **(6M)**

b) Solve $(D^3 - 7D^2 + 14D - 8)y = e^x cos2x$ **(8M)**

OR

Q. No. 8 a) Solve $(D^2 + 4)y = sin2x$ (7M)

b) Solve $(D^2 - 2D)y = e^x sinx$ by the method of variation of parameters **(7M)**

SECTION-V

Q. No. 9 Verify Stokes theorem for $\bar{F} = (2xy - x^2)i - (x^2 - y^2)j$ and c is the boundary of the region enclosed by the parabolas $x = y^2 \; and \; y = x^2$ **(14M)**

OR

Q. No. 10 Verify Greens theorem for $\int_c (x^2 + y^2)dx - 2xydy$ where c is the rectangle bounded by $x = 0 \, , x = a, y = o \; and \; y = a$ **(14M)**

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Code No: **R17A0013**

R17

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

I B.Tech I Semester Supplementary Examinations, May 2019

Engineering Chemistry

(EEE, ECE, CSE & IT)

Roll No										

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

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1 a) Define the electrode, electrolyte and electrochemical reaction. Explain the construction and functioning of Calomel and Quinhydrone. **[10M]**

b) Determination of pH using in the glass electrode? **[4M]**

OR

2 a) Give brief details about the fuel cells? Explain the construction, functioning, advantages and applications of H_2O_2 fuel cells . **[10M]**

b) Explain the electrochemical series and its applications. **[4M]**

SECTION-II

3 a) What is the overvoltage of chemical reaction? Write anodic and cathodic protection metohds for prevention of corrosion in the metal. **[7M]**

b) What is the chemical corrosion of metals? Explain the mechanism of chemical corrosion by evolution of H_2 and absorption of O_2 with suitable examples **[7M]**

OR

4 a) What is electroless plating? Explain the role of hot dipping, nickel (Ni) and copper (Cu) electroplating with its applications and advantages in corrosion control? **[10M]**

b)) Write is the differences between electroplating and electroless plating?

[4M]

SECTION-III

5 a) What are the preparations, characteristics and applications of Nylon-6,6, PVC, Teflon in the engineering chemistry? **[7M]**

b) What are the differences between the thermoplastic and thermosetting resins? Explain briefly. **[7M]**

OR

6 a) Define the conducting polymers with examples? Explain the mechanism of conduction and doping of polyacetylene with applications. **[7M]**

b) Write a brief detail for classification of refractories with examples? Explain the characteristics of a good refractory and its applications. **[7M]**

SECTION-IV

7 a) Explain the following methods: **[7M]**

i) Boiler troubles ii) Scales and Sludges iii) Priming and Foaming

b) What is osmosis and reverse osmosis and discuss an importance of reverse osmosis method in purification of water. **[7M]**

OR

8 a) Explain the external treatment processes: i) Zeolite process ii) Ion exchange process with merits and demerits. **[7M]**

b) What is Breakpoint chlorination? Write its significance? **[7M]**

SECTION-V

9 a) What are the fuel and good fuel? Explain the characteristics of a good fuel. **[7M]**

b) Write a brief note about the classification of solid fuels. **[7M]**

OR

10 a) What is the definition of calorific value of HCV, LCV fuel? Determination of calorific value by Junker's gas calorimeter. **[7M]**

b) Explain the characteristics and applications of Natural gas, LPG and CNG (7 **[7M]**

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Code No: **R17A0014**

R17

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

I B.Tech I Semester Supplementary Examinations, May 2019

Environmental Studies

(ME & AE)

Roll No										

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

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1 a) Define environment and describe. [4M]
b) Explain about food chain and ecological pyramid. [10M]

OR

2 a) Write the structure and function of an ecosystem. [7M]
b) Explain biogeochemical cycles of carbon and nitrogen [7M]

SECTION-II

3 a) Write about types of water resources. [3M]
b) Explain the benefits and problems of dams. [8M]
c) Write about alternative energy resources. [3M]

OR

4 a) Write about natural resources. [3M]

b) Explain the functions, causes and effects of deforestation. [8M]

c) Explain the types of energy resources. [3M]

SECTION-III

5 a) Define biodiversity with examples. [3M]

b) Explain about hot spots of biodiversity. [8M]

c) Write about man-wildlife conflicts. [3M]

OR

6 a) Write about value of biodiversity. [7M]

b) Write about the threats on biodiversity. [7M]

SECTION-IV

7 a) Write about primary and secondary pollutants sources, effects of air pollution. [7M]

b) How the modern agriculture impacts on soil pollution and sources. [7M]

OR

8 a) Write about water pollution sources, causes and effects. [8M]

b) What is Green house effect? [3M]

c) Write on Ozone depletion. [3M]

SECTION-V

9 a) Explain about Environment impact assessment (EIA). [7M]

b) Write the strategies of environment sustainable development. [7M]

OR

10 a) Write a note on earth summit 1992. [4M]

b) Explain about Kyoto protocol. [5M]

c) What are the threats on sustainable environment? [5M]

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Code No: **R17A0501**

R17

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

I B.Tech I Semester Supplementary Examinations, May 2019

Computer Programming with C

(Common to all branches)

Roll No										

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

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1 a) Explain about Software Development Life Cycle? **[7M]**

b) Briefly explain about Structure of C Program? **[7M]**

OR

2 a) Explain in detail about Repetitive Statements? **[10M]**

b) Write a C program to display Reverse of a number. **[4M]**

SECTION-II

3 a) Explain the following **[7M]**

i)Function Declaration ii)Function Calling iii)Function Definition. **[7M]**

b) Define Recursion. Write a C Program to find GCD of 2 numbers using Recursion.

OR

4 a) Define Function. Explain types of function and scope of a variable? **[7M]**

b) Write a C Program to print Fibonacci series using Recursion. **[7M]**

SECTION-III

5 a) List different types of Arrays. Explain one Dimensional and two Dimensional Arrays in detail? **[7M]**

[7M]

b) Write a C program to find maximum and minimum element from an Array.

OR

6 a) Explain String Input/ Output functions in detail? **[7M]**

b) Write a C Program to accept a string of any characters and display the number of Vowels, words and characters in a String. **[7M]**

SECTION-IV

7 a) Write the Syntax to declare and initialize a Pointer. **[2M]**

b) Explain Pointer Arithmetic with an example program? **[6M]**

c) Write about Pointer to Pointer with an example program. **[6M]**

OR

8 a) Write short note on Pointer with String. **[4M]**

b) Write the difference between Static memory allocation and Dynamic memory allocation. **[4M]**

c) Write a C program to illustrate realloc (). **[6M]**

SECTION-V

9 a) Define Structure .Explain Nested Structure with example program? **[7M]**

b) Write a C Program to read and print Employee details using Structures through pointer. **[7M]**

OR

10 a) Explain different modes of a file? **[7M]**

b) Discuss about Error Handling Functions with an example program. **[7M]**

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Code No: **R17A0302**

R17

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

I B.Tech I Semester Supplementary Examinations, May 2019

Engineering Drawing

(EEE, ECE, CSE & IT)

Roll No										

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

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

****

SECTION-I

1 Draw a hyperbola when the distance of its focus from the directrix as 50 mm and eccentricity is 3/2 also draw the tangent and normal to the curve at a point 25 mm from the directrix. **[14M]**

OR

2 Draw the vernier scale of R.F = 1/20 to read centimeters up to 3m and on it show length representing 2.39 m and 0.58 m. **[14M]**

SECTION-II

3 a) A point 15 mm above H.P and 20 mm in front of V.P Another point B is 25 mm behind the V.P. and 40 mm below H.P. Draw the projections of A and B, keeping the distance between the projectors equal to 90 mm. **[14M]**
b) A point is 40 mm above H.P. and 60 mm in front of V.P. Another point B is in H.P. and 70 mm behind the V.P. The distance between their projectors is 100 mm. Draw the projections of the points. Also draw the straight lines joining their Top view and Front views.

OR

4 A line AB of 70 mm long has its end A at 10 mm above H.P and 15 mm in front of V.P. Its front view and Top view measure 50 mm and 60 mm respectively. Draw the projections of the line and determine its inclinations with H.P and V.P. **[14M]**

SECTION-III

5 A circular plate of 60 mm diameter resting on HP on a point of its circumference with its surface inclined at 30^0 to the HP. Draw the projections of the plane. **[14M]**

OR

6 Draw the projections of a pentagonal prism of base 25 mm side and axis 50 mm long, when it is resting on one of its rectangular faces on H.P. The axis of the solid is inclined at 45^0 to V.P **[14M]**

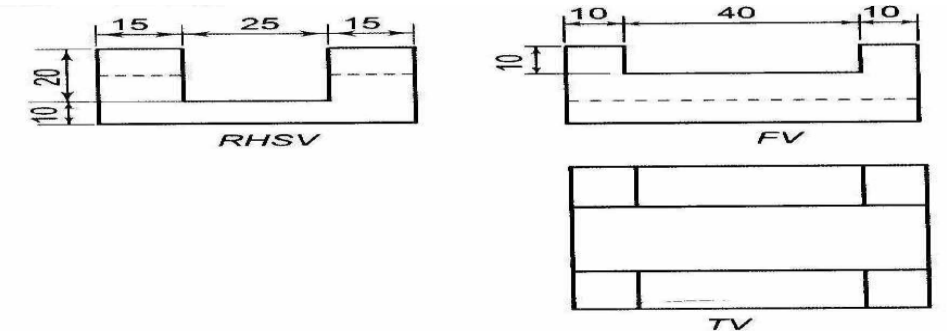
SECTION-IV

7 Draw the isometric view of a hexagonal prism, with side of base 25 mm and axis 60 mm long. The prism is resting on its base on H.P, with an edge of the base parallel to V.P. Use the box method. **[14M]**

OR

[14M]

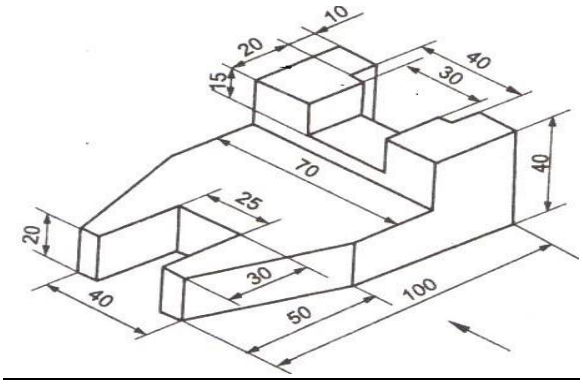
8 Draw the isometric view from the views of the object given in figure. All the dimensions are in mm



SECTION-V

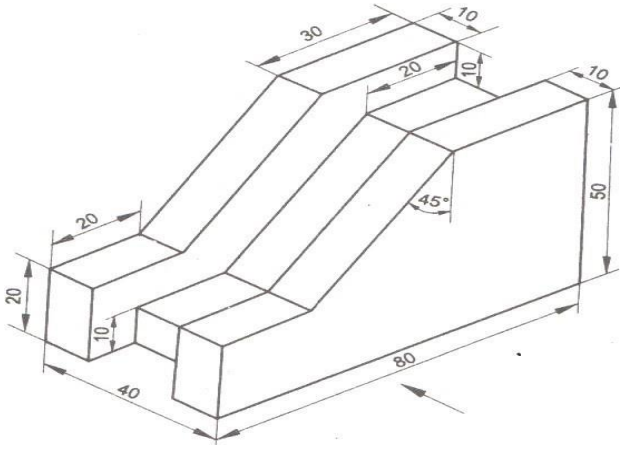
9 **[14M]**

Figure below shows a guide block. Draw its i) Front view ii) Top view and iii) Right side view. All Dimensions are in mm.



OR

10 **[14M]**



Draw its i) Front view ii) Top view and iii) side view of the object shown in figure. All Dimensions are in mm

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Code No: **R17A0301**

R17

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

I B.Tech I Semester Supplementary Examinations, May 2019

Engineering Mechanics

(ME & AE)

Roll No										

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

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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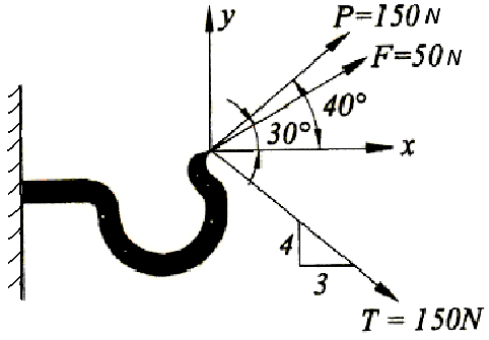
SECTION-I

1 The hook shown in figure is connected to three cables. Find the resultant force? **[14M]**

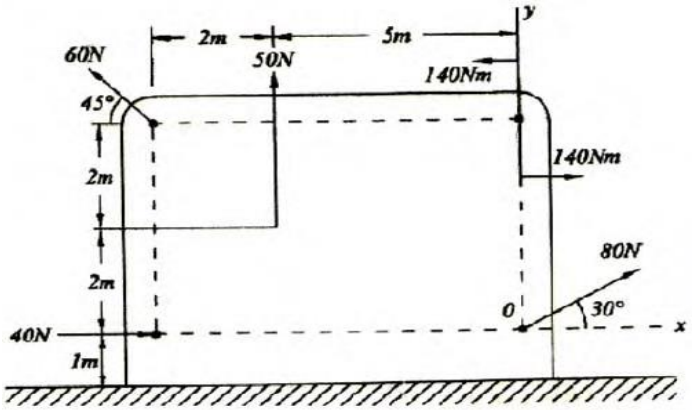


OR

2 a)What is a couple? Explain with neat diagram. **[4M]**

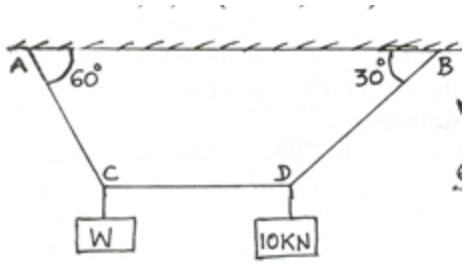
b)Determine the resultant of the four forces and one couple that act on the plate as shown in the figure

[10M]



SECTION-II

3 A cord supported at A and B carries a load of 10 kN at D and a load of W at C as shown in fig (1a). Find the value of W so that CD remains horizontal. **[14M]**



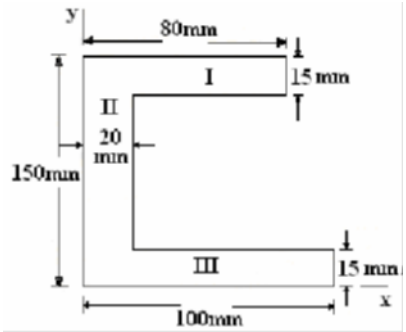
OR

4 a) State the laws of kinetic friction. **[4M]**

b) A square threaded screw jack having 50mm mean diameter and 10mm pitch raises a load of 40kN. Calculate the force required at the end of a lever 400mm long measured from the axis of the screw if μ = 0.12 when: (i) the load is ascending (ii) the load is descending **[10M]**

SECTION-III

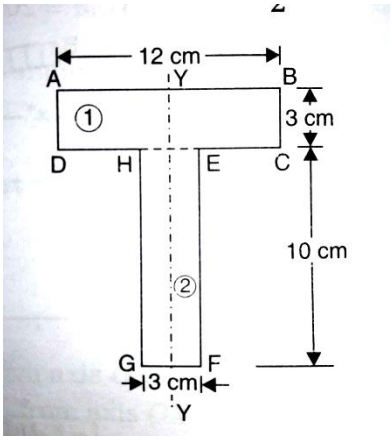
5 Find the centroid of the plane lamina shown in figure **[14M]**



OR

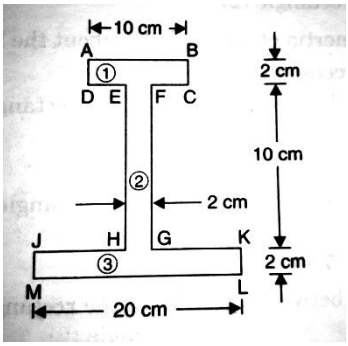
6 a) Define the terms centroid and centre of gravity? **[4M]**

b)Find the centre of gravity of the T-Section shown in fig **[10M]**



SECTION-IV

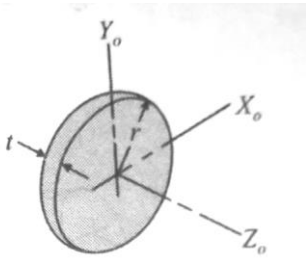
7 Find the moment of inertia of the section shown in fig about the centroidal axis. **[14M]**



OR

8 a)Define parallel and perpendicular axis theorems. **[4M]**

b)Fig shows a circular plate of radius r and thickness t, calculate the mass moment of inertia of the circular plate **[10M]**



SECTION-V

9 a) Explain the motion curve for velocity-time. **[4M]**

b) A small steel ball is shot vertically upwards from the top of a building 25m above the ground with an initial velocity of 18m/sec. **[10M]**

i) In what time it will reach the maximum height?

ii) How high above the building will the ball rise?

iii) Compute the velocity with which it will strike the ground and the total time it is in motion?

OR

10 a)What do understand by Rectilinear and curvilinear motions? **[4M]**

b)A particle starting from rest, moves in a straight line whose equation of motion is given by: $s= t^3 – 2t^2 + 3$. Find the velocity and acceleration of the particle after 5 seconds. **[10M]**

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