Q.P. Code: 917012 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. I Sem. (R15) Supple. Examinations of October 2020

SUB: Environmental Studies (EEE, ECE & CSE)

Time : 3 Hours | Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.	(a)	What does the excessive use of groundwater lead to?	7M
	(b)	Define and differentiate between food chain and food web with a diagram	7M
		(OR)	
2.	(a)	What is the importance of conservation of natural resources?	7M
	(b)	What are the effects of dams on forest and tribal people?	7M

UNIT – II

3.	(a)	Write about function of producers, consumers and decomposers in an ecosystem.	7M
	(b)	What is the difference between food chains food webs and energy pyramids?	7M
		(OR)	
4.	(a)	Define ecological succession. Describe the process of ecological succession.	7M
	(b)	What do you mean by Grassland ecosystem and explain in detail.	7M

UNIT – III

5.	(a)	List out the different services that are contributed in various ways by biodiversity?	7M
	(b)	What is illegal wildlife poaching? Explain in detail.	7M
		(OR)	
6.	(a)	Discuss about the Hot-spots of Biodiversity.	7M
	(b)	What are the main differences between consumptive use and productive use?	7M

UNIT – IV

7.	(a)	What are the three stages of disaster management? Explain in detail.	7M
	(b)	What are the causes and effects of water pollution?	7M
		(OR)	
8.	(a)	What do you understand about by Noise pollution? Write the effects of noise pollution	7M
	(b)	How is life style related to our growing municipal solid waste problem?	7M

UNIT-V

9.	(a)	How does information technology affect the environment?	7M
	(b)	What are the effects of Acid rain? Explain in detail.	7M
		(OR)	
10.	(a)	What role does the status of woman plays in determining population growth rates?	7M
	(b)	Write a detailed report on local polluted site nearby your town or city.	7M

Q.P. Code: 917212 **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. I Sem. (R15) Supple. Examinations of October 2020

SUB: Programming in C (EEE, ECE & CSE)

Time : 3 Hours Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.	(a)	Explain different types of Computer Programming Languages?	7M
	(b)	How to Create a C program and Running a program in Editor?	7M
		(OR)	
2.	(a)	What is data type explain the any four data types used in C language?	7M
	(b)	What is variable? What are the rules for defining variables? Give some examples?	7M

UNIT – II

3.	(a)	Explain Bitwise operators with suitable example?	7M
	(b)	Write a program to find out Roots of Quadratic Equation?	7M
		(OR)	
4.	(a)	Explain different types of Conditional Statements in C?	7M
	(b)	Explain logical operators and expressions used in C?	7M

UNIT – III

5.	(a)	Write a C Program to find out whether the given number is Palindrome or not?	7M
	(b)	Explain what are the Applications of Loops?	7M
		(OR)	
6.	(a)	Explain the difference between User defined functions and Built-in Functions?	7M
	(b)	Explain Call by value and Call by Reference with example program?	7M

UNIT – IV

7.	(a)	Define a Array? Write a program to find out sorting of an array by using Bubble sort?	7M
	(b)	Write a program to find out multiplication of Two matrixes with size mXn, pXq?	7M
		(OR)	
8.	(a)	Write a program to find out the given string is Palindrome or not?	7M
	(b)	Explain different types of Sting Input/output Functions?	7M

UNIT-V

9.	(a)	Write a note on Pointer? Explain pointer to pointer?	7M
	(b)	Write the similarities between structure and union with their syntax?	7M
		(OR)	
10.		Explain all input output functions of file handling. Explain each with example. (fopen(), fclose(), getc(), putc(), fprintf(), fscanf(), getw(), putw(), fseek(), ftell(), rewind())	14M

Q.P. Code: 917412 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. I Sem. (R15) Supple. Examinations of October 2020

SUB: Engineering Graphics (EEE, ECE & CSE)

Time: 3 Hours Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. Two fixed points A and B are 120mm apart. Trace the complete path of the point P moving in such a way that the sum of its distances from A and B is always the same and equal to 150mm.Name the curve. Draw a tangent and a normal to the curve at any convenient location. 14M

(OR)

2. Take a plot of ground is in the shape of a rectangle 110m x 50m and inscribe an elliptical lawn in it by assuming a suitable scale. 14M

UNIT – II

3. A line CD of length 65 mm is inclined at 450 to H.P and 300 to V.P. The end D is 50 mm above H.P and 45mm infront of V.P. Draw the projections of the line and locate its traces. 14M

(OR)

4. A line AB of 70mm long, has its end A, 10mm above H.P and 15mm in front of V.P. Its front view and top view measure 50mm and 60mm respectively. Draw its projections. Also find the inclinations of the line with H.P and V.P. 14M

UNIT – III

5. A semi-circular plate of 80mm diameter, has its straight edge on V.P and inclined at 30^0 to H.P; while the surface of the plate is inclined at 45^0 to V.P. Draw its projections. 14M

(OR)

6. Draw the projections of a cube (hexahedron) of side 40 mm when it rests on the ground on one of its corners and a face containing that corner is inclined at 30^0 to the ground and perpendicular to V.P. 14M

UNIT – IV

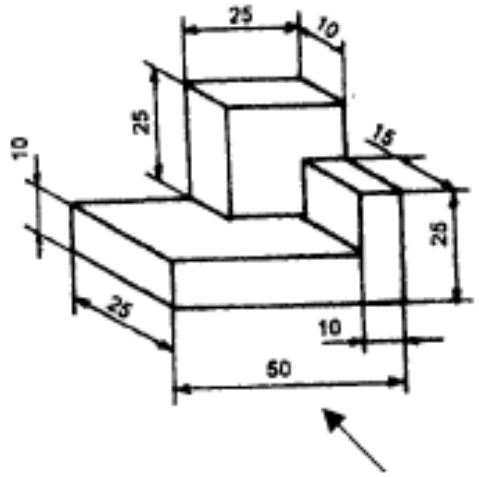
7. A cone of base diameter 50 mm and axis length 75 mm, resting on HP on its base is cut by a plane in lined at 45° to HP and perpendicular to VP and is bisecting the axis. Draw the front view and sectional top view and true shape of this section. 14M

(OR)

8. A pentagonal prism of base side 30 mm and axis length 60 mm is resting on HP on one of its rectangular faces, with its axis perpendicular to VP. It is cut by a plane inclined at 50° to VP and perpendicular to HP and passing through a point 25 mm from rear base of the prism. Draw its top view, sectional front view and true shape of section. 14M

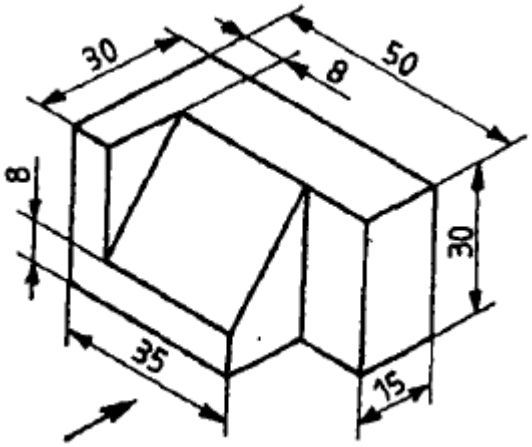
UNIT-V

9. Draw the front view, top view and side view of the following figure 14M



(OR)

10. Draw the front view, top view and side view of the following figure 14M



Q.P. Code: 917612 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. I Sem. (R15) Supple. Examinations of October 2020
SUB: Mathematics-II (Common to EEE, ECE and CSE)

Time : 3 Hours | Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. (a) Find the directional derivative of $f(x,y,z)=xy^3+yz^3$ at the point $(2,-1,1)$ in the direction of the vector $\bar{i}+2\bar{j}+2\bar{k}$. 7M

   (b) If $\bar{f}=(x+3y)\bar{i}+(y-2z)\bar{j}+(x+pz)\bar{k}$ is Solenoidal then find 'p' 7M

(OR)

2. Verify Green's Theorem for $\int_c (xy+y^2)dx+(x^2)dy$ where 'c' is the region bounded by $y=x$ and $y=x^2$. 14M

UNIT – II

3. Find the Laplace Transform of the function $f(t)=\begin{cases}\sin t, & 0<t<\pi\\ 0, & t>\pi\end{cases}$. 14M

(OR)

4. Using Laplace Transform, Evaluate $\int_0^\infty \left(\frac{\cos 2t-\cos 3t}{t}\right)dt$. 14M

UNIT – III

5. Apply Convolution Theorem to Evaluate $L^{-1}\left[\frac{s}{(s^2+a^2)^2}\right]$. 14M

(OR)

6. Use Laplace Transform Technique, Solve the equation $\frac{d^2x}{dt^2}+9x=\cos 2t$, where $x(0)=1, x\left(\frac{\pi}{2}\right)=-1$. 14M

UNIT – IV

7. Find the Fourier Series to represent the function $x-x^2$, from $x=-\pi$ to $x=\pi$ 14M

(OR)

8. Find the Half range Cosine Series for $f(x)=x(2-x)$ in $0\le x\le 2$ and hence find the sum of the series $\frac{1}{1^2}-\frac{1}{2^2}+\frac{1}{3^2}-\frac{1}{4^2}+.....$ 14M

UNIT-V

9. (a) From the Partial Differential Equation by eliminating the arbitrary constants a and b from $z=a\log\left[\frac{b(y-1)}{1-x}\right]$. 7M

   (b) Use the method of Separation of variable Technique, Solve $\frac{\partial u}{\partial x}=\frac{\partial u}{\partial t}+u$ where $u(x,0)=6e^{-3x}$. 7M

(OR)

10. Solve the Laplace Equation $\frac{\partial^2 u}{\partial x^2}+\frac{\partial^2 u}{\partial y^2}=0$, subject to the conditions $u(0,y)=u(l,y)=u(x,0)=0$ and $u(x,a)=\sin\left(\frac{n\pi x}{l}\right)$. 14M

Q.P. Code: 917812 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. I Sem. (R15) Supple. Examinations of October 2020

SUB: Human Values and Professional Ethics (CE & ME)

Time : 3 Hours | Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. (a) What is meant by engineering ethics? What is the need for engineering ethics?
   (b) Write the concept and types of Moral Dilemmas.

(OR)

2. (a) Briefly explain about Moral Autonomy.
   (b) Write brief note on professional ideals and virtues.

UNIT – II

3. Define code of ethics? Explain role of code of ethics in promoting professionalism?

(OR)

4. "Engineers are responsible experimenters". Justify your answer with suitable example.

UNIT – III

5. Write the role of engineers in reducing risk and designing for safety.

(OR)

6. Explain the Government Regulator's Approach to Risk.

UNIT – IV

7. Define Collegiality. Write different techniques for achieving Collegiality.

(OR)

8. Discuss in detail about Intellectual Property Rights.

UNIT-V

9. Discuss the importance of Eco-centric Ethics that protect the Environment.

(OR)

10. Discuss the pros and cons of multinational companies from the ethical point of view.

Q.P. Code: 918012 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. I Sem. (R15) Supple. Examinations of October 2020

SUB: Engineering Drawing - I (CE & ME)

Time : 3 Hours | Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. ABC is an equilateral triangle of side 70. Trace the loci of vertices A, B and C when the circle circumscribing ABC, rolls without slipping along a fixed straight line for one complete revolution. 14M

(OR)

2. Draw a semi circle with diameter AB equal to 60. Draw a line AC 95 long and tangent to the circle. Trace the path of both ends of line AC when it rolls on the circle without slipping. 14M

UNIT – II

3. Two oranges on a tree are respectively 12 m and 3 m above the ground and 1.5 m and 2.5 m from the central plane of the wall but on opposite sides. The distance between the oranges measured along the ground and parallel to the wall is 2.5 m. Determine the true distance between the oranges and the angles of inclinations of the line joining the oranges (a) with the ground (b) with the wall. 14M

(OR)

4. Top view and front view of a line AB 80 long, measure 60 and 72 respectively. End A of the line is in H.P and end B in V.P. Draw its projections. Also locate the traces. 14M

UNIT – III

5. An isosceles triangle having base 60 mm long and altitude 80 mm long appears as an equilateral triangle of 60 mm sides with one side 30^0 inclined to XY in top view. Draw its projections. 14M

(OR)

6. A regular hexagon of side 50 has a corner in the V.P. Its surface is inclined at 30^0 to V.P. Draw the projection of the hexagon using auxiliary plane method when the diagonal makes 45^0 with the H.P. 14M

UNIT – IV

7. A tetrahedron of 40 mm side rests with one of its edges on H.P and perpendicular to V.P. The triangular face containing that edge is inclined at 30^0 to H.P. Draw its projections. 14M

(OR)

8. Draw the projections of a regular pentagonal pyramid side of base 45 and altitude 65, when
(i) one of its triangular faces is perpendicular to H.P.
(ii) one of its sloping edges is vertical. 14M

UNIT-V

9. A square prism of base 50 side and 100 height stands with its base on the ground such that all the rectangular faces are equally inclined to the V.P. It is cut by a section plane perpendicular to the V.P such that the true shape of the section is a rhombus of longer diagonal 90. Find the inclination of the section plane with the H.P and draw the front view, sectional top view and true shape of the section. 14M

(OR)

10. A triangular prism of side of base 60 and height 90 standing with its axis at 60^0 to the H.P is cut by a section plane such that the true shape of the section is an isosceles triangle of sides 60, 75 and 75. Draw the sectional front and top views. 14M

Q.P. Code: 918212 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B.Tech. I Sem (R15) Supple Examinations of October 2020

SUB: ENGLISH – I (Common to All Branches)

Time : 3 hours | Max Marks : 70

Answer any **five** questions. All questions carry equal marks.

1. Explain the challenge faced by the astrologer with his last client and give reasons why the astrologer was proved to be lucky in the story. 14M
2. Describe the versatile genius of Viswesvarayya . 14M
3. Summarize Rudyard Kipling's poem ' If-'. 14M
4. Why was Kalam filled with a sense of disapproval at the Bokaro Steel Plant? 14M
5. (i) Fill in the blanks with the homophones of the words in brackets. (4x1=4M)
   a. The fever left me _____ . (week)
   b. Can I have a _____ (peace) of paper please?
   c. Mrs. Margarette has gone to visit her _____ (sun).
   d. I need to _____ (toe) the car

   (ii) Write the phonetic transcription for the following sentences. (2x2=4M)
   a. Honey is sweet.
   b. Ice is cold.

   (iii) Write the meaning s of any **Three** of the following using them in sentences of your own.
   a. Morgue b. industrious c. gasp d. marvelous e. out of work. (3x2=6M)

6. Read the passage and answer the questions given below. (7x2=14M)

Being stupid and having no imagination, animals often behave far more sensibly than men. Efficiently and by instinct they do the right thing at the right moment – eat when they are hungry, look for water when they feel thirsty, rest or play when they have leisure.

Men are intelligent and imaginative; they look ahead and backward; they invent ingenious explanation, or observed phenomena; they devise elaborate round about means for achievement of remote ends. Their intelligence, which has made the masters of the world, often causes them to act like imbeciles. No animal, for example, is clever and imaginative enough to suppose that an eclipse is the work of a serpent devouring the sun. That is the sort of explanation that could occur only to the human mind. And only a human a human being would dream of making ritual gestures, in the hope of influencing, for his own benefit, the outside world. While the animal, obedient to his instinct, goes quietly about its business, man being endowed with reason and imagination, Wastes half his time and energy in doing things that are completely idiotic. In time, it is true, experience teaches him that magic formulas and ceremonial gestures do not give him what he wants. But until experience has taught him and he takes a surprisingly long time to learn, man's behavior is in many respects far sillier than that of the animal.

i. Why are animals more sensible?
ii. What causes human beings to act as imbeciles?
iii. Which popular belief is being mentioned in the passage?
iv. What does experience teach man?
v. Why does human beings make ritual gestures?
vi. Does the gestures give humans what they want?
vii. Why are human beings completely idiotic?

7. Expand **any two** of the following into a paragraph. (7x2=14M)
   i. Failures are stepping stones to success.
   ii. A bad workman always blames his tools.
   iii. Rome was not built in a day.

8. Answer any **fourteen** of the following as directed. (14x1=14M)

i. Jane looked pretty in the white dress, isn't it?
ii. We will grow Maize AND Wheat, will we?
iii. Jogging is the aerobic exercise .
iv. The kite flew high, lift by the wind.
v. She avoided to go to crowded places.
vi. The boy wash the car.
vii. Keerthi love driving.
viii. Is the guests comfortable?
ix. He returned the keys back to me.
x. I prefer vegetarian meals than non vegetarian meals.
xi. I shall meet you tomorrow.
xii. He is a new beginner.
xiii. The typing is alright.
xiv. If you will come with me, I shall give you Coffee.
xv. I shall meet you tomorrow.
xvi. She has passed the test last month.
xvii. Everyone call him a good man.

Q.P. Code: 918412 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. I Sem. (R15) Supple. Examinations of October 2020
SUB: Engineering Chemistry (CE & ME)

Time : 3 Hours | Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.	(a)	Write notes on estimation of dissolved oxygen by Winklers method	8M
	(b)	Internal treatment of water i) Calgon conditioning ii) Phosphate conditioning	6M
		(OR)	
2.	(a)	Explain the softened of water by Ion-exchange process and explain the advantages over other methods.	9M
	(b)	Define hardness and explain types of hardness	5M

UNIT – II

3.	(a)	Define addition polymerization & explain cationic addition polymerization with mechanism	8M
	(b)	Differences between Thermo plastics & Thermo setting plastics	6M
		(OR)	
4.	(a)	Write a short note on Vulcanization of rubber	5M
	(b)	Write a short note on i) Compounding of rubber ii) Buna-S	9M

UNIT – III

5.	(a)	Explain Electro chemical cell with neat diagram.	5M
	(b)	Write a short note on lead acid battery.	9M
		(OR)	
6.	(a)	Write notes on electro plating.	5M
	(b)	Define corrosion and explain the mechanism of the dry corrosion.	9M

UNIT – IV

7.	(a)	Describe the manufacture of metallurgical coke by Otto Haffman's oven method.	9M
	(b)	Describe the method employed for manufacture of synthetic petrol	5M
		(OR)	
8.	(a)	Define lubricants and explain the functions of lubricants.	5M
	(b)	Define calorific value & determine the calorific value of solid fuels by bomb Calorimetry.	9M

UNIT-V

9.	(a)	Define catalyst. Explain types of catalysis and its applications.	9M
	(b)	Write a short note on phosphorescence.	5M
		(OR)	
10.	(a)	Write 12 principles of green chemistry and its applications.	7M
	(b)	(i) Laws of Photochemistry (ii) solar cells	7M

Q.P. Code: 918612 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. I Sem. (R15) Supple. Examinations of October 2020

SUB: Engineering Physics (CE & ME)

Time : 3 Hours | Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1.	(a)	Explain the construction and working of Newton's rings experiment. Derive an expression for the wavelength of light using Newton's rings experiment.	10M
	(b)	Differentiate the types of optical fibres based on refractive index profiles.	4M
		(OR)	
2.	(a)	Distinguish between spontaneous and stimulated emission.	4M
	(b)	Discuss the construction and working of Nd-YAG laser with energy level diagram.	10M

UNIT – II

3.	(a)	Discuss the properties of ultrasonic waves and explain four different detection methods.	7M
	(b)	Derive an expression for interplanar spacing of a cubic crystal. X-rays of unknown wavelength give first order Bragg reflection at glancing angle 20° with (212) planes of copper having FCC structure. Find the wavelength of X-rays, if the lattice constant for copper is 3.615Å	7M
		(OR)	
4.	(a)	What are Miller indices? Find the Miller indices for a crystal plane with an example. Draw crystal planes having Miller indices (111), (110) and (211).	6M
	(b)	Deduce Bragg's law. A crystal primitives 1.2 Å, 1.8 Å and 2 Å has a plane (231) which cuts an intercept 1.2 Å along x-axis. Calculate the intercepts along y- and z-axes	8M

UNIT – III

5.	(a)	Explain the duality of matter waves. Deduce an expression for the de-Broglie wavelength.	6M
	(b)	What is Fermi energy level? Discuss its importance. Explain the Fermi-Dirac distribution function.	8M
		(OR)	
6.	(a)	If an electron is in a one-dimensional potential well, discuss the solution of Schrodinger's equation and hence show that electron's energy is quantized and also find the wave functions, probability densities and energy levels for a particle in a box	10M
	(b)	Find the de Broglie wavelength of an electron accelerated through a potential difference of 182 volts.	4M

UNIT – IV

7.	(a)	Differentiate Soft and Hard magnetic materials using hysteresis curve with suitable examples.	6M
	(b)	Explain the following (i) Meissner effect (ii) London penetration depth (iii) Type-II Superconductors	8M
		(OR)	
8.	(a)	Discuss the origin of magnetic moments.	6M
	(b)	Explain the BCS theory of superconductors. Discuss the application of superconductors in engineering field.	8M

UNIT-V

9.	(a)	Differentiate Direct and indirect bandgap semiconductors with suitable examples.	6M
	(b)	Explain the formation of p-n junction in a diode and discuss its current-voltage characteristics in forward and reverse bias.	8M
		(OR)	
10.	(a)	Discuss the synthesis of nanomaterials using the following methods (i) Ball mill (ii) Sol-gel method	10M
	(b)	Derive the Einstein's equation relating drift and diffusion mechanism in semiconductors	4M

Q.P. Code: 918812 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. I Sem. (R15) Supple. Examinations of October 2020

SUB: Mathematics-I (Common to all Branches)

Time : 3 Hours | Max. Marks: 70

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. (a) Solve $x^2 ydx - \left(x^3 + y^3\right)dy = 0$ 7M

   (b) Solve $\left(1+y^2\right)dx = \left(\tan^{-1} y - x\right)dy$ 7M

(OR)

2. (a) Find the Orthogonal Trajectories of the family of curves $x^2 + y^2 = a^2$ 7M

   (b) A body originally at 800 c cools down to 600 c in 20 minutes, the temperature of the air being 400 c. What will be the temperature of the body after 40 minutes from the original? 7M

UNIT – II

3. Solve $(D-2)^2 y = 8(e^{2x} + \sin 2x + x^2)$ 14M

(OR)

4. (a) Solve $\left(D^3 - 1\right)y = e^{2x}$ 5M

   (b) Solve $\left(D^2 - 2D\right)y = e^x \sin x$ by the method of variation of parameters 9M

UNIT – III

5. (a) Find the Taylor's series expansion of $\sin 2x$ about $x = \frac{\pi}{4}$ 7M

   (b) If $x = r\cos\theta, y = r\sin\theta$ then show that $\frac{\partial r}{\partial x} = \frac{\partial x}{\partial r}$ and $\frac{1}{r}\frac{\partial x}{\partial \theta} = r\frac{\partial \theta}{\partial x}$ 7M

(OR)

6. Find the maximum and minimum values of $x^3 + y^3 - 3axy$ 14M

UNIT – IV

7. (a) Show that the radius of curvature at any point on the curve $x = a(\cos t + t\sin t), y = a(\sin t - t\cos t)$ 7M

   (b) Find the coordinates of the centre of curvature at any point of the rectangular hyperbola $xy = c^2$ 7M

(OR)

8. Graph the curve $r = a\sin 2\theta$ 14 M

UNIT-V

9. Change the order of integration and hence evaluate $\int_0^{4a}\int_{\frac{x^2}{4a}}^{2\sqrt{ax}} dydx$ 14M

(OR)

10. Evaluate the triple integral $\iiint xy^2 z dxdydz$ taken through the positive octant of the sphere $x^2 + y^2 + z^2 = a^2$ 14M