Q.P. Code: 917012 | **SET - 1**

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

B. Tech. I Sem. (R15) Supple. Examinations of October/November 2019

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)	Describe the environmental effects of extracting and using mineral resources.	7M
	(b)	How soil erosion happens? What are the 4 types of soil erosion?	7M
		(OR)	
2.	(a)	What are the different types of alternative energy? Why do we need alternative sources of energy?	7M
	(b)	What are the uses and over exploitation of forest?	7M

UNIT – II

3.	(a)	Write in detail about structure and function of an ecosystem.	7M
	(b)	What efforts are being made to restore ecosystem damaged by human activities?	7M
		(OR)	
4.	(a)	How are food chains food webs and tropic levels related?	7M
	(b)	Why is the desert important to the ecosystem? What does a desert ecosystem contain?	7M

UNIT – III

5.	(a)	What activities and characters of human endanger wildlife?	7M
	(b)	What are the strategies of conservation of biodiversity?	7M
		(OR)	
6.	(a)	Which of the following are methods of in situ conservation of biodiversity?	7M
	(b)	Elaborate the Hot-spots of Biodiversity	7M

UNIT – IV

7.	(a)	What are the causes, effect and control measures of air pollution?	7M
	(b)	Write down the causes and effects of Nuclear hazards on environment.	7M
		(OR)	
8.	(a)	What are the control measures of thermal pollution? Explain in detail.	7M
	(b)	How can you as an individual prevent environmental pollution?	7M

UNIT-V

9.	(a)	What do you mean by social sustainability? What are some examples of social sustainability?	7M
	(b)	How you can stop global warming? Explain in detail.	7M
		(OR)	
10.	(a)	Explain the need for rain water harvesting and also discuss the advantages of rain water harvesting.	7M
	(b)	Write a detailed report on agriculture and its importance?	7M

Q.P. Code: 917212 | **SET - 1**

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

B. Tech. I Sem. (R15) Supple. Examinations of October/November 2019

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 about System Development Life Cycle with neat Diagram?	7M
	(b)	Define Algorithm, Flowchart with example?	7M
		(OR)	
2.	(a)	Write short note on Input & Output functions used in C with any Example Program?	7M
	(b)	Explain in brief structure of C programming with example program?	7M

UNIT – II

3.	(a)	Write a program to find out biggest among three numbers with flowchart?	7M
	(b)	Write a short note precedence & order of evaluation?	7M
		(OR)	
4.	(a)	Explain the difference between '=' and '==' operator explain with example?	7M
	(b)	Write a program to find out student results by using if-else-if?	7M

UNIT – III

5.	(a)	Define a loop? Write a C Program to find sum of digits in a given number?	7M
	(b)	Explain difference between while and do-while? Write a C Program to find out factorial of a given number?	7M
		(OR)	
6.	(a)	What is function? How function is defined? Give one example program?	7M
	(b)	Explain the difference between Call by Value and Call by Reference?	7M

UNIT – IV

7.	(a)	Explain about Two Dimensional Array with example program?	7M
	(b)	Write a program to find out multiplication of Two matrixes with size mXn, pXq?	7M
		(OR)	
8.	(a)	Explain about String Manipulation Functions?	7M
	(b)	Write a program to find out the given string is Palindrome or not?	7M

UNIT-V

9.	(a)	What is structure? Why structure is needed? Differentiate between structure and array?	7M
	(b)	Write a note on Pointer? Explain pointer to pointer?	7M
		(OR)	
10.	(a)	Describe the uses and limitations of getc and putc?	7M
	(b)	Explain the concept of pointers in detail with any example program?	7M

Q.P. Code: 917412 | **SET - 1**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. I Sem. (R15) Supple. Examinations of October/November 2019
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. The major axis of an ellipse is 150 mm long and the minor axis is 90 mm long. Find the foci and draw the ellipse by Arcs of circles method. Draw a tangent and a normal to the ellipse at a point on it 25 mm above the major axis. 14M

(OR)

2. Construct an ellipse of 120 mm major axis and 80 mm minor axis using concentric circles method. 14M

UNIT – II

3. A line AB, inclined at 40^0 to the V.P, has its ends 50 mm and 20 mm above the H.P. The length of its front view is 65 mm and its V.T. is 10 mm above the H.P. Determine the true length of AB, its inclination with the H.P and its H.T. 14M

(OR)

4. A line AB is inclined at 40^0 to H.P. Its one end A is 25mm above H.P and 30mm in front of V.P. The top view of the line is 70mm and is inclined at 30^0 to XY. Draw its projections. Also find its true length and the inclination of the line with V.P. 14M

UNIT – III

5. A square ABCD of 50mm side has its corner A in the H.P, its diagonal AC inclined at 30^0 to H.P and the diagonal BD inclined at 45^0 to V.P and parallel to H.P. Draw its projections. 14M

(OR)

6. A tetrahedron of 40mm 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

UNIT – IV

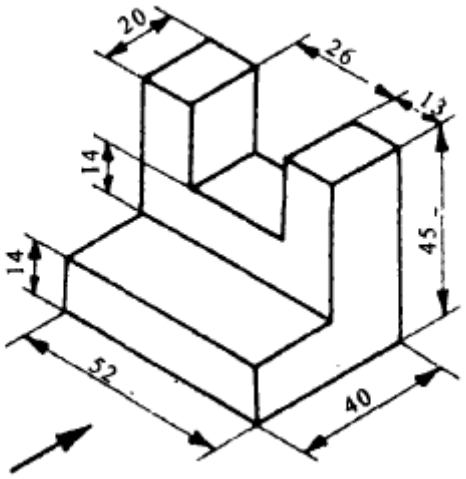
7. A hexagonal prism of base side 30 mm and axis length 60 mm is resting on HP on one of its bases with two of the vertical faces perpendicular to VP. It is cut by a plane inclined at 60^0 to HP and perpendicular to VP and passing through a point at a distance 12 mm from the top base. Draw its front view, sectional top view and true shape of section. 14M

(OR)

8. A cylinder of base diameter 40 mm and height 60 mm rests on its base on HP. It is cut by a plane perpendicular to VP and inclined at 30° to HP and meets the axis at a distance 30 mm from base. Draw the front view, sectional top view, and the true shape of section. 14M

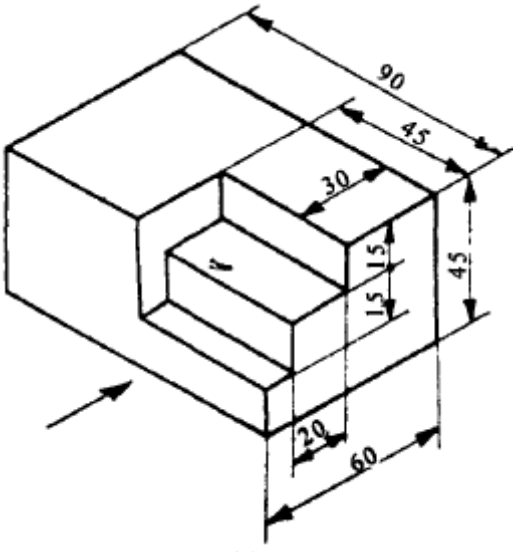
UNIT-V

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 - 1**

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

B. Tech. I Sem. (R15) Supple. Examinations of October/November 2019

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 $Crul\,\bar{f}$ where $\bar{f} = grad\left(x^3 + y^3 + z^3 - 3xyz\right)$. 7M

   (b) Find the work done in moving a particle in the force field $\bar{f} = 3x^2\bar{i} + \bar{j} + z\bar{k}$ along the straight line from $(0,0,0,)$ to $(2,1,3)$. 7M

(OR)

2. Verify Green's Theorem for $\int_c \left(3x^2 - 8y^2\right)dx + \left(4y - 6xy\right)dy$ where 'c' is the region bounded by $x = 0, y = 0$ and $x + y = 1$. 14M

UNIT – II

3. Find the Laplace Transform of $te^{-t}\sin t$ 14M

(OR)

4. Find the Laplace Transform of the function $f(t) = \begin{cases} E\sin wt, & 0 < t < \pi/w \\ 0, & \pi/w < t < 2\pi/w \end{cases}$. 14M

UNIT – III

5. Apply Convolution Theorem to Evaluate $L^{-1}\left[\frac{1}{\left(s^2+1\right)\left(s^2+9\right)}\right]$. 14M

(OR)

6. Use Laplace Transform Technique, Solve the equation $y''' + 2y'' - y' - 2y = 0$, given that $y(0) = y'(0) = 0$ and $y''(0) = 6$. 14M

UNIT – IV

7. Obtain the Fourier Series for the function e^{-x} in the interval $0 < x < 2\pi$. 14M

(OR)

8. Express the function $f(x) = x$ as a half range Sine and Cosine series in $0 < x < 2$. 14M

UNIT-V

9. (a) Form a Partial Differential Equation by eliminating the arbitrary function from the relation $z = f\left(x^2 - y^2\right)$. 7M

   (b) Use by the method of Separation of variable Technique, Solve $2x\frac{\partial z}{\partial x} - 3y\frac{\partial z}{\partial y} = 0$. 7M

(OR)

10. A tightly Stretched String with fixed end points $x = 0 \& x = l$ is initially in a position given by $y = y_0 \sin^3\left(\frac{\pi x}{l}\right)$. It is released from rest from this position, find the displacement $y(x,t)$. 14M

Q.P. Code: 917812 | **SET - 1**

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

B. Tech. I Sem. (R15) Supple. Examinations of October/November 2019

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. Discuss in detail about Kohlherg's stages of moral development.

(OR)

2. (a) What is enquiry? Explain different types of inquiry?
   (b) Briefly explain the importance of engineering ethics to become an ideal engineer in the society?

UNIT – II

3. Discuss in detail about Research ethics in Engineering.

(OR)

4. Explain the role of engineers as responsible experimenters.

UNIT – III

5. Define risk? Explain what are the different types of risk.

(OR)

6. Write in detail about risk-benefit analysis.

UNIT – IV

7. Explain the relationship between professional responsibility and loyalty to company.

(OR)

8. Briefly explain the following:
   i) Collective Bargaining ii) Conflicts of interests iii) Professional Rights

UNIT-V

9. 'Weapon development needs a stipulated system of ethical values'. Give your Comments on this statement.

(OR)

10. (a) How do you internalize the costs of environmental degradation?
    (b) Explain engineers as expert witnesses and advisors.

Q.P. Code: 918012 | **SET - 1**

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

B. Tech. I Sem. (R15) Supple. Examinations of October/November 2019

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. The distance between a fixed straight line and a fixed point is 50. Trace the path of a point 'p' moving in such a way that the ratio of its distance from the fixed point, to its distance from the straight line is '1'. Name the curve. Draw a tangent and normal to the curve at a point on it 70 from the directrix. 14M

(OR)

2. Draw a hypocycloid of rolling circle 50 diameter, which rolls inside another circle of diameter 150, for one complete revolution counter clockwise. Draw a tangent to it at a point 50 from the center of the directing circle. 14M

UNIT – II

3. A room is 6 m x 5 m x 3.5 m high. An electric light is above the center of the longer wall and lm below the ceiling. The bulb is 35 cm from the longer wall. The switch for the light is 1.25 m above the floor on the center of an adjacent wall. Determine graphically the shortest distance between bulb and switch. 14M

(OR)

4. A line AB is 75 mm long. A is 50 mm in front of V.P and 15 mm above H.P. B is 15 mm in front of V.P. and is above H.P. Top view of AB is 50 mm long. Draw and measure the front view. Find the true inclinations. Also locate traces. 14M

UNIT – III

5. A rhombus has its diagonals 100 and 60 long. Draw the projections of the rhombus, when it is so placed that its top view appears to be a square of diagonal 60 long and the vertical plane through the longer diagonal makes 30^0 with V.P. 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 front view of the diagonal through the corner which is in the V.P. makes 45^0 with xy. 14M

UNIT – IV

7. A cube of edge 50 has a corner on the ground and one of the body diagonals perpendicular to the V.P. Draw its front view and top view. 14M

(OR)

8. A hexagonal Pyramid, side of base 25 long and height 75 has one of its triangular faces perpendicular to H.P and inclined at 30^0 to V.P. The base side of this triangular face is in the H.P. Draw the projections. 14M

UNIT-V

9. A tetrahedron of 65 long edges is lying on the ground on one of its faces, with an edge perpendicular to the V.P. It is cut by a section plane, which is perpendicular to the V.P so that the true shape of the section is an isosceles triangle of base 45 and altitude 35. Find the inclination of the section plane with H.P and draw the front view, sectional top view and true shape of the section. 14M

(OR)

10. A cube of side 60 stands vertically on H.P such that its vertical faces are equally inclined to V.P. A section plane, perpendicular to the V.P and inclined to the H.P, cuts the solid in such a way that the true shape of the section is an equilateral triangle of side 60. Determine the inclination of the section plane with the H.P. 14M

Q.P. Code: 918212 | **SET - 1**

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

B.Tech. I Sem (R15) Supple Examinations of October/November 2019

SUB: ENGLISH – I (Common to All Branches)

Time : 3 hours | Max Marks : 70

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

1. Consider Visvesvarayya the father of technologically independent India. 14M
2. What situation is the story based on in 'The Astrologer's Day'? 14M
3. Why does Kipling advise against making "thoughts" your aim ? 14M

4. Read the following passage and answer the questions given below. 7X2=14M

Network is the new buzz-word in computers. It is now possible for computers at different computers at different locations to function together as a single system.

Computer networks can be used to coordinate activities in distant places without the delays that distances create.

Airlines will offer instant information on bookings for flights originating in other countries. From Delhi, for instance, you will get a confirmed ticket or an emphatic 'No' for a Bombay-Pune flight.

Banks can clear outstation cheques in minutes, instead of the days they currently take.

One more widespread scale, computers are now talking to one another on the telephone (with the help of a common device know as 'modem'). This opens the road to all kinds of miracles. For instance, you feed a letter into a computerized Xerox machine in Madras and comes out a copy from Xerox machine in Delhi!

Homes, too, are fast becoming better place with computers. Housewives use them to plan their monthly budget. Some even use them to store recipes. You can ask the computer: "what can I cook with capsicum but without mustard"? The computer will scan all the recipes in few seconds, and recommend a dish. Versatility. That's one of the most wonderful things about the computers.

a. How can computer networks be used?
b. "Computers are talking to one another on the telephone". What does it mean?
c. There are many things mentioned in the paragraph, which might be possible through networking. Did all of them happen?
d. How are homes becoming a better place because of networking?
e. How would computer networks be helpful to the airlines industry?
f. Give an example of computer network usage in daily life.
g. What does 'buzz-word' mean?

5. Expand any **two** of the following into a paragraph. 2X7=14M
   a. Make hay while sun shines.
   b. Necessity is the mother of invention.
   c. Time and tide waits for none.

6. (a) Write the phonetic transcription of the following sentences. 2X2=4M
   (i) He is a doctor.
   (ii) I love my country.

(b) Write the meanings of any **five** of the following using them in sentences of your own. 2X5=10M

i) Beat about the bush.
ii) Take off

iii) Perception
iv) overwhelmed
v) venture
vi) Tightrope walk
vii) Perish
viii) To win laurels

7. Answer any **fourteen** of the following. 14X1=14M

i. The girl tore the book. (change into passive)
ii. The house was painted green by the owner (change into active voice)
iii. Did she invite you to the party? (change into passive)
iv. The cat was hit by the ball. (change into active voice)
v. Asha said, " why are you not studying "?(change into indirect speech)
vi. ''I am very happy" she said to her son. (change into indirect speech)
vii. The woman said, "I have been to Paris". (change into indirect speech)
viii. The old man enquired where I lived. (change into direct speech)
ix. She is the tallest girl in the class. (change into comparative degree)
x. This house is the biggest one. (change into comparative)
xi. No other test is as easy as this one.(change into comparative)
xii. Although he was extremely wealthy, he was not satisfied. (change into simple sentence)
xiii. If you do not prepare well, you cannot pass the examination. (change to simple)
xiv. I have two pens and a pencil. (write an interrogative sentence for this answer)
xv. Sure. You can borrow my book. (write an interrogative sentence for this answer)
xvi. My home is nearer to the temple than yours. (change into positive degree)
xvii. Juliet is the fairest of all. (change into positive degree)

8. Correct any **fourteen** of the following sentences. 14X1=14M

i. He is my cousin brother.
ii. Each boy play a different sport.
iii. Childrens are always happy.
iv. Alcohol has a bad affect on health.
v. I have an box full of toys.
vi. This books are very heavy.
vii. They gone out to play football.
viii. My friend complemented me for looking great.
ix. They all had books in there bags.
x. My teacher said, "you're a very good boy".
xi. Raju and karan where sitting on the bench.
xii. I prefer coffee than tea.
xiii. He returned the money back to me.
xiv. The laptop have many special features.
xv. The work undertaken is completing yesterday.
xvi. She is suffering from cold.
xvii. I and my friend played cricket yesterday.

Q.P. Code: 918412 | **SET - 1**

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

B. Tech. I Sem. (R15) Supple. Examinations of October/November 2019

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 hardness by EDTA method.	8M
	(b)	i) Sources of water ii) Impurities in water	6M
		(OR)	
2.	(a)	Write notes on i) Scale & Sludge ii) Priming & Foaming	8M
	(b)	Write notes on Reverse Osmosis	6M

UNIT – II

3.	(a)	Explain addition polymerization with suitable examples	7M
	(b)	Explain condensation polymerization with suitable examples	7M
		(OR)	
4.	(a)	Write a short note on preparation, properties and applications of Bakelite	6M
	(b)	Write a short note on preparation, properties and applications of i) Polyethylene ii) Teflon	8M

UNIT – III

5.	(a)	Explain various factors influencing the rate of corrosion based on nature of metal.	8M
	(b)	Write a short note on sacrificial anode cathodic protection	6M
		(OR)	
6.	(a)	Write notes on H_2-O_2-fuel cell with neat diagram	7M
	(b)	Write a short note on wet corrosion	7M

UNIT – IV

7.	(a)	Explain the refining of petroleum with neat diagram	9M
	(b)	Define the fuel & explain the characteristics of good fuel	5M
		(OR)	
8.	(a)	Define lubricant& explain properties of lubricants	9M
	(b)	Describe the method employed for manufacture of synthetic petrol	5M

UNIT-V

9.	(a)	Define Green chemistry and explain the significance of Green chemistry	5M
	(b)	Write a short note on i) Fluorescence ii) Solar cells	9M
		(OR)	
10.	(a)	Write a short note on Laws of photo chemistry	5M
	(b)	Explain action of catalyst & applications of catalyst	9M

Q.P. Code: 918612 **SET - 1**

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

B. Tech. I Sem. (R15) Supple. Examinations of October/November 2019

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)	Derive the condition for principle maxima and minima in the Fraunhofer diffraction pattern obtained for a single slit.	10M
	(b)	What is grating equation? Evaluate the terms involved.	4M
		(OR)	
2.	(a)	Explain the construction and working of He-Ne laser using energy level diagram.	10M
	(b)	Define numerical aperture of an optical fibre and mention the expression to determine the numerical aperture of the fibre	4M

UNIT – II

3.	(a)	Define atomic packing factor of a cubic crystal systems. Obtain the relation between the atomic packing factor of SC, BCC and FCC crystal systems	10M
	(b)	Explain the different lattice parameters of the unit cell	4M
		(OR)	
4.	(a)	Explain the construction and working of piezoelectric method used in the production of ultrasonics.	8M
	(b)	Derive the Bragg's condition. Explain how this condition helpful in understanding the crystal structures.	6M

UNIT – III

5.	(a)	Derive Schrodinger's time independent wave equation and explain the significance of wave function.	10M
	(b)	Explain the sources of Electrical resistance using Matthiessen's rule.	4M
		(OR)	
6.	(a)	Derive an expression for the electrical conductivity using Drude-Lorentz theory.	8M
	(b)	Discuss the failures of Classical free electron theory and also explain how it overcomes using quantum free electron theory.	6M

UNIT – IV

7.	(a)	Explain phenomena of hysteresis in ferromagnetic materials in detail.	8M
	(b)	Discuss the classification of superconductors based on the influence of magnetic field.	6M
		(OR)	
8.	(a)	Classify the magnetic materials based on the influence of external magnetic filed	10M
	(b)	Explain the Meissner effect in superconductors.	4M

UNIT-V

9.	(a)	Differentiate Drift and Diffusion currents and obtain the relation between these two independent phenomena happens in the semiconductors.	10M
	(b)	Discuss the optical properties of nanomaterials	4M
		(OR)	
10.	(a)	State and explain Hall effect? Mention the advantages of Hall effect.	10M
	(b)	Discuss the magnetic properties of nanomaterials	4M

Q.P. Code: 918812 | **SET - 1**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. I Sem. (R15) Supple. Examinations of October/November 2019
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 $(x^2y-2xy^2)dx - (x^3 - 3x^2y)dy = 0$ — 7M
   (b) Solve $\sin 2x\frac{dy}{dx} - y = \tan x$ — 7M

(OR)

2. (a) Find the orthogonal trajectories of a system of con-focal and coaxial parabolas. — 7M
   (b) The number N of bacteria in a culture grew at a rate proportional to N. The value of N was initially 100 and increased to 332 in one hour. What was the value of N after $1\frac{1}{2}$ hour — 7M

UNIT – II

3. (a) Solve $\left(D^2 - 4D + 4\right)y = 100$ — 5M
   (b) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = 2\cos(2x+3) + 2e^x + x^2$ — 7M

(OR)

4. Solve $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} + y = e^x \log x$ by the method of variation of parameters — 14M

UNIT – III

5. (a) Using Maclaurin's series, $\tan x$ expand upto the terms containing x^5 — 7M
   (b) If $u = \frac{yz}{x}, v = \frac{zx}{y}, w = \frac{xy}{z}$ then show that $\frac{\partial(u,v,w)}{\partial(x,y,z)} = 4$ — 7M

(OR)

6. Examine for minimum and maximum values of $\sin x + \sin y + \sin(x+y)$. — 14M

UNIT – IV

7. (a) Find the radius of curvature at the point $(-2a,-2a)$ of the curve $x^2y = a\left(x^2 + y^2\right)$ — 7M
   (b) Find the coordinates of the centre of curvature at any point of the parabola $y^2 = 4ax$ — 7M

(OR)

8. Trace the curve $y^2(x - a) = x^2(x + a)$ — 14M

UNIT-V

9. By changing into polar coordinates, evaluate $\iint \frac{x^2y^2}{x^2+y^2}dxdy$ over the annular region between the circles $x^2 + y^2 = a^2$ and $x^2 + y^2 = b^2 (b > a)$ — 14M

(OR)

10. Evaluate $\int_0^1 \int_0^{\sqrt{1-x^2}} \int_0^{\sqrt{1-x^2-y^2}} xyz \; dz\, dy\, dx$ — 14M