

S1 CSE A QUESTION BANK
COMPUTER SCIENCE & ENGINEERING



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GAMAT101 Mathematics for Computer and Information Science – I

MODULE 1			
Sl. No.	Questions	Marks	KTU Year
1	Evaluate the limit: $\lim_{x \rightarrow 1} \frac{x^2-1}{x-1}$.	3	Model QP
2	Differentiate the function $f(x) = \sqrt{x^2 + 2x + 1}$ with respect to x .	3	Model QP
3	Determine the derivative of the function $f(x) = \ln(x^2 + 1)$ at $x = 1$.	3	Model QP
4	Determine the concavity of the function $f(x) = x^3 - 3x^2 + 4$ and find the points if inflection.	5	Model QP
5	Differentiate the function $f(x) = \cos(x^2)$ using chain rule	4	Model QP
6	Find the equation of tangent line to the curve $y = \sqrt{2x + 1}$ at $x = 2$	5	Model QP
7	Determine the point of inflection for the function $f(x) = x^4 - 4x^3 + 6x^2 - 4x + 1$.	4	Model QP
8	Find the equation of normal line to the curve $y = x^3 + 3x^2 - 4x$ at the point where $x = 1$.	5	Model QP
9	Evaluate the limit $\lim_{x \rightarrow 0} \frac{1-\cos x}{x^2}$	4	Model QP
10	Differentiate the function $f(x) = \sin x^2 \cdot \cos x$	5	Model QP
MODULE 2			
1	Find the partial derivatives $\frac{\partial f}{\partial x}$ and derivatives $\frac{\partial f}{\partial x}$ for $f(x, y) = \sin(xy) + x^2y^3$	3	Model QP
2	Determine whether the function $f(x, y) = \frac{xy}{x^2+y^2}$ is continuous at $(0, 0)$.	3	Model QP
3	Identify the local maxima, minima and saddle points for the function $f(x, y) = x^2 - 2xy + y^2$	3	Model QP
4	Evaluate the limit: $\lim_{(x,y) \rightarrow (1,1)} \frac{x^2-y^2}{x^2+y^2}$	4	Model QP
5	Compute the second order partial derivatives of the function $f(x, y) = x^2 + y^2x$ and verify mixed derivative theorem.	5	Model QP
6	Use the Chain rule to find $\frac{\partial z}{\partial t}$ for $z = \cos(xy)$, where $x = t$ and $y = t^2$	4	Model QP
7	Determine the continuity and differentiability of the function $f(x, y) = \sqrt{x^2 + y^2}$ at the point $(0, 0)$.	5	Model QP
8	Use the Chain Rule to find $\frac{\partial z}{\partial t}$ for $z = \ln(x^2 + y^2)$, where $x = t^2$ and $y = \sqrt{t}$	4	Model QP

9	Find the gradient of $f(x, y) = x^2 + y^2$ at the point (1, 2).	4	Model QP
10	Verify the Mixed Derivative Theorem for the function $f(x, y) = x^2y + 3xy^2$	5	Model QP
MODULE 3			
1	Find the gradient of $f(x, y) = 3x^2 + 2xy + y^2$ at the point (1,1)	3	Model QP
2	Identify local maxima, minima, and saddle points for the function $f(x, y) = x^2 - 2xy + y^2$	3	Model QP
3	Compute the gradient of the function $f(x, y) = x^2 - 3xy + y^2$ at the point (2, -1)	3	Model QP
4	Find the directional derivative of $f(x, y) = x^2 + y^2$ at the point (2,1) in the direction of the vector $v = \langle 1, 2 \rangle$	4	Model QP
5	Determine the relative extrema for the function $f(x, y) = x^2 + y^2 - 4xy$	5	Model QP
6	Classify the critical points of the function $f(x, y) = x^4 + y^4 - 4xy$ using the second derivative test.	4	Model QP
7	Find the absolute maximum and minimum values of the function $f(x, y) = x^2 + y^2$ on the region bounded by the ellipse $\frac{x^2}{4} + \frac{y^2}{9} = 1$	5	Model QP
8	Find the critical points of the function $f(x, y) = x^2 + y^2 - 4xy$ and classify them.	4	Model QP
9	Find the absolute maximum and minimum values of the function $f(x, y) = 4x + 3y$ on the region bounded by the triangle with vertices (0, 0), (2, 0) and (0, 2).	5	Model QP
10	Find the absolute maximum and minimum values of $f(x, y) = x^2 + y^2$ on the region bounded by $x + y \leq 2, x, y \geq 0$	5	Model QP
MODULE 4			
1	Solve the following LPP graphically: Maximize $z = 10x + 8y$ subject to $x + y \leq 6, 2x + y \leq 8, x, y \geq 0$	3	Model QP
2	Use the method of Lagrange Multipliers to find the maximum value of $f(x, y) = xy$ subject to the constraint $x^2 + y^2 = 9$	3	Model QP
3	Use the method of Lagrange Multipliers to find the maximum value of $f(x, y) = x^2y$ subject to $x + y = 3$	3	Model QP
4	Solve LPP: Maximize $z = 4x + 3y$ subject to $x + y \leq 7, x \leq 5, y \leq 3, x, y \geq 0$	4	Model QP
5	Apply the method of steepest descent to minimize the function $f(x, y) = x^2 + y^2 + 4xy$ starting from the point (1, -1)	5	Model QP
6	Use the method of Lagrange Multipliers to find the maximum value of $f(x, y) = x^2 + y^2$ subject to the constraint $x^2 + y^2 = 4$	4	Model QP
7	Solve the LPP: Maximize $z = 5x + 6y$ subject to $x + y \leq 4, y \leq 2, x, y \geq 0$	5	Model QP

8	Formulate and solve the following LPP using the graphical method :Maximize $z = 2x + 3y$ subject to $x + 2y \leq 8, 2x + y \leq 6, x, y \geq 0$	5	Model QP
9	Use the method of Lagrange Multipliers to find the maximum value of $f(x, y) = x^2 + y^2$ subject to the constraint $x - y = 2$	4	Model QP
10	Formulate and solve the following LPP using the graphical method :Maximize $z = 3x + 5y$ subject to $2x + y \leq 10, x + 2y \leq 8, x, y \geq 0$	5	Model QP

GX CYT122 ENGINEERING CHEMISTRY

MODULE 1			
Sl. No.	Questions	Marks	KTU Year
1	Mention any three advantages of electroless plating over electroplating	3	Model QP
2	Discuss the sacrificial anodic method for the prevention of corrosion	3	Model QP
3	Write a short note on the construction and working of Li-ion cell	3	Model QP
4	Define conductivity. How cell constant is determined?	3	Model QP
5	List out the applications of electro chemical series with suitable examples	4	Model QP
6	Derive the Nernst equation for single electrode and for a complete cell emf of Daniels cell.	5	Model QP
7	What is glass electrode? Explain the construction and working of glass electrode used for pH measurement.	4	Model QP
8	Explain the construction and working of fuel cell which uses acid electrolyte in it	5	Model QP
MODULE 2			
1	“Properties of nano materials differ from bulk materials,” Justify the statement with suitable examples.	3	Model QP
2	Enumerate the advantages of OLED over LCD display	3	Model QP
3	Explain the chemical method for the synthesis of polypyrrole	3	Model QP
4	What are super capacitors? Give any two advantages of it over batteries?	3	Model QP

5	Briefly discuss the principle, working and any two applications of SEM	4	Model QP
6	Write a note on Sol- Gel method for the preparation of nanomaterials	5	Model QP
7	Explain the structural features and applications of fullerenes	4	Model QP
8	Write a short note on spintronics	5	Model QP

MODULE 3

1	Name and state the law which governs the absorption of light by molecules of a solution	3	Model QP
2	Distinguish between absorption spectrum and emission spectrum	3	Model QP
3	Explain the reason for broadening UV- Visible spectrum	3	Model QP
4	What are the advantages of spectroscopic	3	Model QP
5	Brief out the instrumentation and working of dielectric thermal analysis technique (DETA)	4	Model QP
6	Discuss various transition levels possible in UV-Visible spectrum	5	Model QP
7	With the help of a block diagram, explain the instrumentation of UV -Visible spectroscopy	4	Model QP
8	How does the IR spectroscopy help in identifying the functional groups in an organic molecule	5	Model QP

MODULE 4

1	Name any two metal constituents of e-waste and give their adverse effect on human health	3	Model QP
2	List any three sustainable development goals	3	Model QP
3	Explain break point of chlorination with the help of a graph	3	Model QP

4	Define dissolved oxygen. What are the factors affecting DO?	3	Model QP
5	Discuss the chemistry of ozone depletion by nitric oxide	4	Model QP
6	What are ion exchange resins? Explain iron exchange process used for demineralization of water. How exhausted resins are regenerated.	5	Model QP
7	Explain primary, secondary and tertiary process involved in sewage water treatment with the help of flow diagram	4	Model QP
8	Explain the three major aspects of sustainable development. List any three SDGs where Chemistry plays a crucial role.	5	Model QP

GMEST 103 ENGINEERING GRAPHICS AND COMPUTER AIDED DRAWING

Qn. No.	Module-1	Marks	Year
1	The front view of line AB is 50° inclined to XY line and is 55 mm long while its top view is 60° inclined to XY line. If end A is 10 mm above HP and 20 mm in front of VP, draw its projections. Find the true length and inclinations of line with HP and VP.	20	KTU-July 2021
2	The end point A of a line is 20 mm above HP and 10mm in front of VP. The other end of the line is 50 mm above HP and 15 mm behind VP. The distance between the end projectors is 70 mm. Draw the projections of the line. Find the true length and true inclinations of the line with the principal planes. Also locate the traces of the line.	20	KTU-July 2021
3	The front view of the line MN is 55 mm long. The point M is 15 mm above HP and 20 mm in front of VP. The point N is 35 mm above HP. Draw the projections of the line if its true length is 70 mm. Measure the true inclinations of the line with respect to the reference planes.	20	KTU-Dec 2020
4	A line AB is in the first quadrant. Its ends A and B are 20 mm and 60 mm in front of to VP respectively. The distance between the end projectors is 75 mm. The line is inclined at 30° to the HP and its HT is 10 mm above XY line. Draw the projections of AB and determine its true length and mark VT.	20	KTU-Dec 2020
5	One end point of a line AB is 12 mm above HP and is 15 mm in-front of VP. Other endpoint is 50 mm above HP and is 42 mm in front of VP. Draw the projections of the line AB if its elevation measures 70 mm. Find out its true length and the true inclinations with respect to the reference planes.	20	KTU-June 2022
6	One end point P of a line PQ, 75 mm long, is 10 mm above HP and 20 mm in front of VP. The line is inclined 45° to HP and its plan is inclined 35° to x-y line. Draw the projections of the line PQ and find out true inclination of the line with respect to VP.	20	KTU-June 2022
7	The distance between the end projectors through the end points of line AB is 60 mm. The end A is 20 mm above HP and 15 mm in front of VP. The end B is 45 mm in front of VP and above HP. Front view of the line measures 75 mm. Draw the projections of line AB and find its true length and true inclinations with HP and VP.	20	KTU-Dec 2021
8	The top view of a line PQ is 70 mm long and makes an angle of 45° with XY. The end P is in VP and 15 mm above HP. The end Q is 30 mm above HP and the whole line is located in first quadrant. Draw its projections and find its true length, length of its elevation, inclinations with reference planes and also locate its traces.	20	KTU-Dec 2021
9	A line PQ is 60 mm long has one of its ends on HP and 30 mm in front of VP. Draw the projections of the line if it is inclined at 30 degrees to HP and 45 degrees to VP. Locate the traces of the	20	KTU-Dec 2022

	line and determine its apparent lengths and apparent inclinations.		
10	The point M of a line MN is 15 mm above HP and 10 mm in front of VP and the other end N is 50 mm in front of the VP. The front view of the line has a length of 70 mm. The distance between the end projectors is 60 mm. Find the true length, plan length, true inclinations, and apparent inclinations of the line by drawing its projections. Also locate its traces.	20	KTU-Dec 2022
11	A line of length 60 mm has its end P is 15 mm above HP and 20 mm in front of VP. Its topview and front view measures 50 mm and 40 mm respectively. Draw its projections and determine its true inclinations with HP and VP. Also locate its traces.	20	KTU-June 2024
12	A line AB of length 75 mm has one of its ends 60 mm in front of VP and 20 mm above HP. The other end is 20 mm in front of VP and is above HP. The top view of the line is 55 mm long. Draw its projections and also locate its traces.	20	KTU-June 2024
Qn. No.	Module- 2	Mark s	Year
1	A square pyramid of base 25 mm side and axis 60 mm long, has a corner of the base on the ground such that the square base is inclined at 30° to the ground and the two base edges containing that corner are equally inclined to HP. Draw the projections of the pyramid if its axis is inclined at 60° to the VP.	20	KTU-July 2021
2	A cylinder 40 mm diameter and 50 mm axis is resting on a point of its base circle on VP while its axis makes 45° with VP and front view of the axis makes 35° with XY line. Draw its projection.	20	KTU-July 2021
3	A pentagonal prism 30 mm base edge and 60 mm height is on HP on one of its base edges so that the axis is inclined at 45° with HP and the base edge on which it rests is inclined at 30° with VP. Draw the projections of the solid.	20	KTU-Dec 2020
4	A square pyramid base 40 mm side and axis 60 mm long is freely suspended from one of the corners of its base. Draw its projections when the axis makes an angle of 50° with the VP.	20	KTU-Dec 2020
5	A hexagonal prism base 20 mm side and axis 40 mm long is placed with one of its base edges on the HP such that the axis is inclined at 30° to HP and 45° to VP. Draw the projections of the prism.	20	KTU-June 2022

6	A cone of base diameter 50 mm and axis length 60 mm is resting on VP on one of its generators with the front view of the axis inclined at 40° to HP. Draw its projections.	20	KTU-June 2022
7	A pentagonal pyramid of base edge 30 mm and axis length 60 mm is resting on VP on one of its base edges. The axis of the pyramid is inclined at 35° to VP and the resting base edge is inclined at 45° to HP. Draw the projection of the pyramid.	20	KTU-Dec 2021
8	A right circular cone, 40 mm base diameter and 60 mm long axis is resting on HP on one point of base circle such that its axis makes 45° inclination with HP and 40° inclination with VP. Draw its projections.	20	KTU-Dec 2021
9	A rectangular prism of base 25 x 35 mm and height 50 mm is resting on VP on one of its longer base edges. Draw the projection of the solid when its axis inclined at 35 degrees to VP and the base edge resting on VP is inclined at 45 degrees to HP. Also assume that end face of the solid visible in front view is away from HP and located right side of the viewer.	20	KTU-Dec 2022
10	Draw the projection of a pentagonal pyramid of 30 mm base side and 65 mm long axis is resting on one of its corners of the base on HP. The axis is inclined at 30 degrees to HP and top view of the axis is inclined at 35 degrees to XY line. Consider that apex is away from VP and is on the right side of the viewer.	20	KTU-Dec 2022
11	A tetrahedron of edge 35 mm is lying on the HP on one of its edges, such that the triangular face containing the resting edge is inclined at 30° to the HP and the resting edge is inclined at 50° to the VP. Draw its projection.	20	KTU-June 2024
12	A square prism of base edge 30 mm and axis length 60 mm is resting on HP on one of its base edges such that the rectangular face containing the resting edge makes an angle of 40° with the HP. Draw its projections if the top view of the axis makes 30° with the VP.	20	KTU-June 2024
Qn. No.	Module- 3	Mark s	Year
1	A hexagonal pyramid side of the base 30 mm and axis 70 mm rests with its base on the HP and an edge of the base inclined at 30° to VP. A section plane inclined at 45° to VP and perpendicular to HP passes through the pyramid at a distance of 10 mm from the axis and in front of it. Draw its top view, sectional front view and true shape of section.	20	KTU-July 2021
2	A pentagonal prism side of base 25 mm and altitude 50 mm, rests on its base on the HP such that an edge of the base is parallel to VP and nearer to the observer. It is cut by a plane inclined at 45° to HP, perpendicular to VP and passing through the centre of the axis. Draw the development of the surface of the truncated prism.	20	KTU-July 2021
3	A pentagonal pyramid side of base 25 mm, height 70 mm has its base on the ground and a side of the base parallel to VP. The pyramid is cut by a section plane passing through a point on the axis which is 25 mm below the apex and making an angle of 60° with the	20	KTU-Dec 2020

	axis. Draw the projections and obtain the front view, sectional top view and true shape of the section.		
4	Draw the development of the lower portion of a cylinder of diameter 50 mm and axis height 70 mm when it is sectioned by a plane inclined at 40° to HP, perpendicular to VP and bisecting the axis.	20	KTU-Dec 2020
5	A cylinder with a 60 mm base diameter and 70 mm axis is resting on its base in the HP. It is cut by an auxiliary inclined plane which makes an angle of 60° with the HP and perpendicular to VP and passes through the top end of the axis. Draw its front view, sectional top view and true shape of the section.	20	KTU-Dec 2021
6	. A pentagonal prism of base 30 mm and axis 60 mm long is kept with its base on HP with a base edge perpendicular to VP. It is cut by a plane inclined at 45° to HP, perpendicular to VP and passing through the mid-point of the axis. Draw the development showing the remaining portion of the solid.	20	KTU-Dec 2021
7	A hexagonal pyramid, side of base 25 mm and altitude 70 mm long, rests with its base on HP with two of its base sides parallel to VP. It is cut by a section plane perpendicular to VP, inclined at 45° to HP and passing through the axis 15mm from the base. Draw the sectional top view and true shape of the section. (June-2022)	20	KTU-June 2022
8	A pentagonal pyramid, side of base 50 mm and height 80 mm rests on its base on the ground with one of its base sides parallel to VP. A section plane perpendicular to VP and inclined at 30° to HP cuts the pyramid, bisecting its axis. Draw the development of the truncated pyramid.	20	KTU-June 2022
9	A hexagonal prism of base side 35 mm and height 65 mm rests on its base on HP with one of the base edges parallel to VP. It is cut by a section plane inclined towards right at an angle of 30 degrees to HP and perpendicular to VP. The section plane meets the axis of the prism at a height of 45 mm from the base. Draw the front view, sectional top view, and true shape of the section.	20	KTU-Dec 2022
10	Draw the development of the lateral surface a truncated right circular cone of base diameter 46 mm and height 64 mm, which is cut by a section plane inclined towards right at 30 degrees to HP and perpendicular to VP. Assume that the section plane is meeting the axis of the cone at 35 mm above the base. The cone is resting on HP on its base.	20	KTU-Dec 2022

11	A hexagonal pyramid of base edge 30 mm and axis length 70 mm is resting on HP on its base. Two of its base edges are parallel to VP while it is resting. It is cut by a section plane perpendicular to VP and inclined at 45° to HP and passing through a point 15 mm above the base and is located on the axis. Draw the front view, sectional top view and true shape of the section.	20	KTU-June 2024
12	A cone of base diameter 50 mm and axis length 70 mm rests with its base on HP. A section plane perpendicular to VP and inclined at 35° to HP and bisects the axis of the cone. Draw the development of the truncated cone.	20	KTU-June 2024
Qn. No.	Module- 4	Mark s	Year
1	Draw the isometric projection of a hexagonal prism, 25 mm side of base and 60 mm height, which is resting on a rectangular face on HP.	20	KTU-Dec 2020
2	A hemisphere of diameter 70 mm is placed centrally over a cylinder of diameter 50 mm and height 80 mm, with its flat surface facing upward. Draw the isometric view of the combination.	20	KTU-Dec 2020
3	Draw the isometric view of a pentagonal pyramid, side of base 20 mm and height 50 mm which rests centrally with base on a cylinder of diameter 60 mm and height 40 mm.	20	KTU-July 2021
4	A hollow cylinder of inside diameter 40 mm, outside diameter 60 mm and 80 mm long is resting on its generator on the top of a rectangular slab of 80 mm x 60 mm and height 30 mm. Draw the isometric view of the combination if the axis of the cylinder is parallel to the longer edges of the slab.	20	KTU-July 2021
5	A sphere of 50 mm diameter is placed centrally on the top of the frustum of a square pyramid of 30 mm base side, 20 mm top side and the axis 50 mm long. Draw the isometric projection of the solids.	20	KTU-Dec 2021
6	A hexagonal pyramid of base edge 25 mm and height 60 mm is surmounted centrally over a square slab of 70 mm side and 30 mm thickness lying with its square side on HP so that one side of the square slab and one base edge of the pyramid are parallel to VP. Draw the isometric view of the combination.	20	KTU-Dec 2021
7	A square pyramid of base edge 20 mm and height 40 mm is mounted centrally on a face of a cube of base edge 50 mm. Draw the isometric projection of the objects.	20	KTU-June 2022
8	Draw the isometric projections of a hexagonal prism with edge of base 30 mm and axis 60 mm when it rests on a rectangular face on the ground.	20	KTU-June 2022
9	Draw the isometric view of a triangular prism resting vertically on a circular disc with the axes of both the solids coinciding each other. The triangular prism is having a base edge of 30 mm and height 50 mm. The circular disc is of 60 mm diameter and 40 mm thick.	20	KTU-Dec 2022

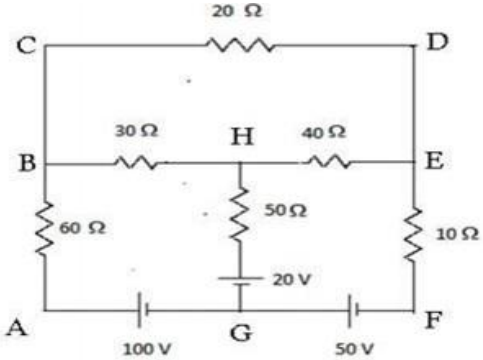
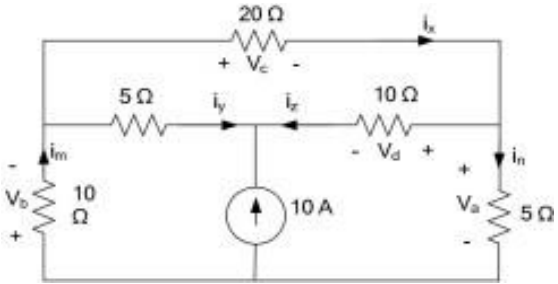
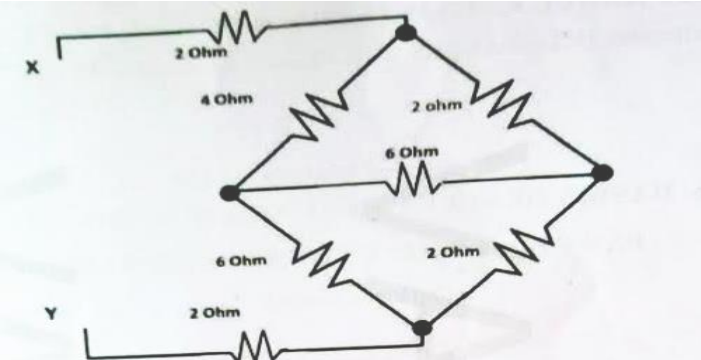
	Assume that one of the base edges of the triangular prism is parallel to VP, which is nearer to it and the combination of the solids is lying on the ground on one of the end faces of the circular disc.		
10	A sphere of diameter 60 mm is resting centrally on top of a pentagonal prism which is on HP on one of its end faces. Prism is having a base edge of 30 mm and altitude 40 mm. If the axes of both the solids are coinciding with each other, draw the isometric view of the combination of solids. One of the base edges of the prism is perpendicular to VP and it is on the left side of the viewer.	20	KTU-Dec 2022
11	A cone of base diameter 40mm and axis length 60 mm is resting centrally over a square slab of edge length 50 mm and thickness 20 mm. Draw the isometric view of the combination of the solids.	20	KTU-June 2024
12	Draw the isometric projection of a pentagonal prism of base edge length 30 mm and axis length 65 mm, which is lying on the ground on one of its rectangular faces. Assume that the axis of the solid is perpendicular to the vertical plane, while it is resting.	20	KTU-June 2024

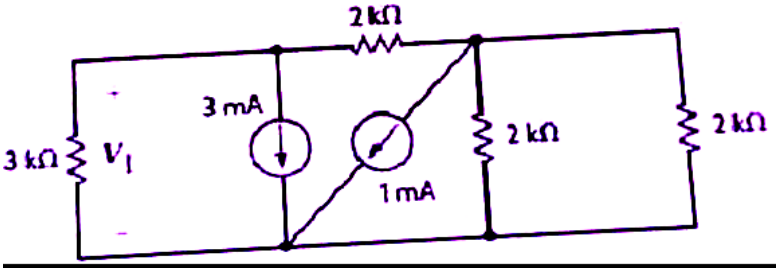
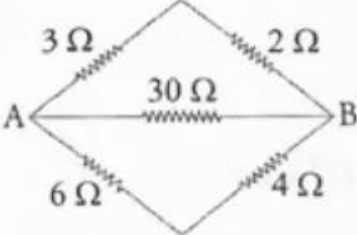
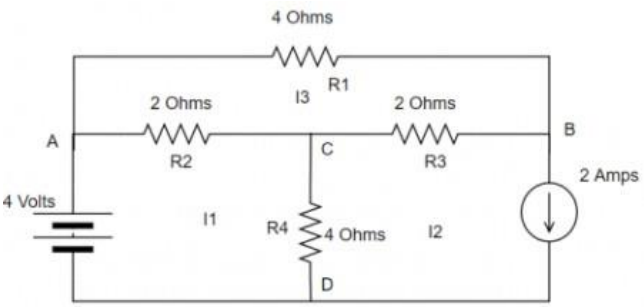
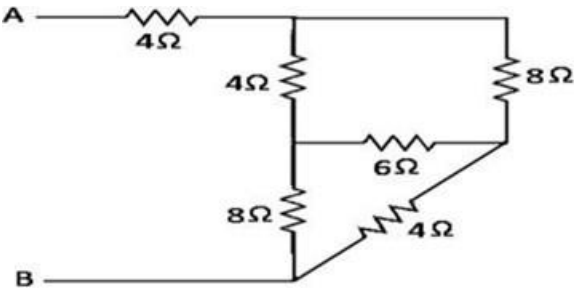
UCEST105 ALGORITHMIC THINKING WITH PYTHON

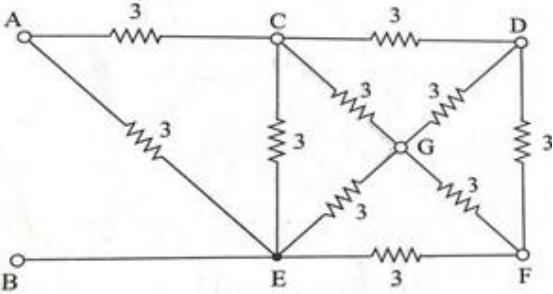
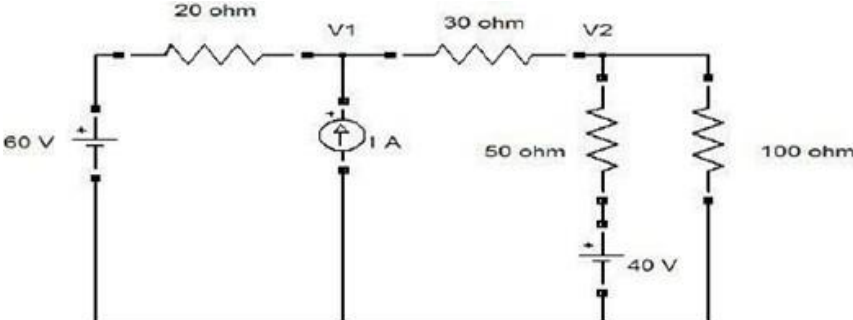
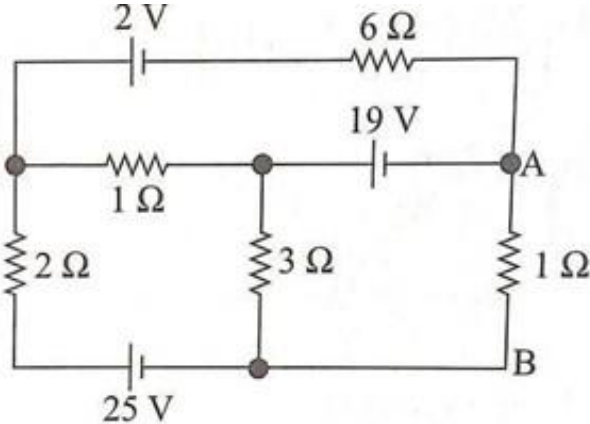
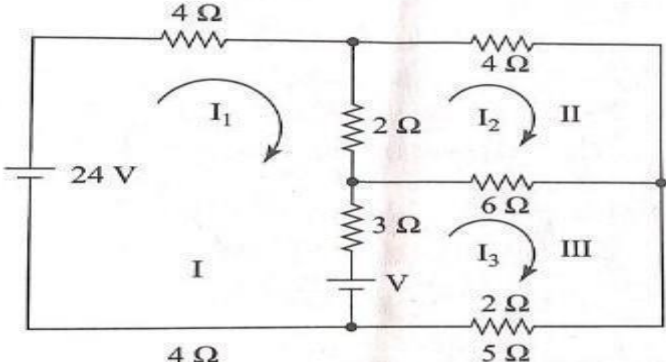
Module I			
Sl. No	Questions	Marks	Year
1	Describe the significance of problem-solving strategies?	3	Model Question
2	Use cases for Trial and Error, Algorithm, Heuristic and Means-ends analysis can be applied in proffering solution to problems?	10	Model Question
3	Explain means-ends analysis with an example problem?	6	Model Question
4	Explain backtracking or working backward strategy?	6	Model Question
5	Explain algorithmic approach in problem solving and its advantages?	6	Model Question
6	Explain the various steps in problem solving process?	4	Model Question
7	Identify five use cases for Trial and error, Heuristic, backtracking and means-ends analysis?	8	Model Question
8	How do you find the length of a string in Python?	6	Model Question
9	How do you take user input in Python?	3	Model Question
10	What is string slicing? Provide an example?	6	Model Question
Module II			
1	What is the main difference between a flowchart and pseudocode in representing an algorithm?	3	Model Question
2	Write a pseudocode for calculating the average of three numbers input by a user?	8	Model Question
3	What are the advantages of using pseudocode over natural language when describing an algorithm?	8	Model Question
4	What is the purpose of using standardized symbols in flowchart?	3	Model Question
5	How would you represent a switch or case statement in pseudocode?	4	Model Question
6	How does pseudocode differ from actual programming code?	6	Model Question
7	In pseudocode, how would you represent a basic if-else statement?	4	Model Question
8	Design a flowchart for printing the largest of N numbers entered by the user?	10	Model Question
9	Draw a simple flowchart for determining whether a number is even or odd?	6	Model Question
10	Create a pseudocode for finding the largest number in a list of 10 numbers?	6	Model Question

Module III			
1	Describe the various selection and iteration statements in Python?	6	Model Question
2	Write a program to create,append,and remove lists in Python using Numpy?	8	Model Question
3	Write a program to calculate the factorial of a number entered by the user?	6	Model Question
4	What is Numpy and why is it used in Python for numerical computations?	4	Model Question
5	How can you create a Numpy array from a Python list?	3	Model Question
6	What is problem decomposition,and why is it an effective strategy for solving complex problems?	5	Model Question
7	What are the key benefits of modularization in programming?	3	Model Question
8	How does modularization relate to the concept of divide and conquer?	6	Model Question
9	Write a recursive function to find the sum of the digits of a positive number?	8	Model Question
10	Write a Python function using recursion to find the n th Fibonacci number?	8	Model Question
Module IV			
1	How does the Merge Sort Algorithm exemplify the Divide-and conquer Approach?	3	Model Question
2	What are the main characteristic of the Brute-force Approach in problem-solving?In what scenarios might a Brute-force Approach be particularly useful or necessary?	4	Model Question
3	Describe the fundamental principle of the Greedy Algorithm?	3	Model Question
4	What is the key idea behind Dynamic Programming?	4	Model Question
5	How does the hat-check party problem illustrate the concept of randomization in problem-solving?	5	Model Question
6	In the task completion example for Greedy Algorithm,what is the general strategy to maximize the number of completed tasks?	6	Model Question
7	How do Greedy Algorithm differ from Dynamic Programming in terms of decision-making?	4	Model Question
8	What are the potential benefits of using a randomized approach over deterministic algorithm?	6	Model Question
9	In the context of Randomized Algorithm ,what is meant by “expected number” or “expected outcome”?	5	Model Question
10	How does Dynamic Programming differ from simple recursion when solving problem like the Fibonacci series?	8	Model Question

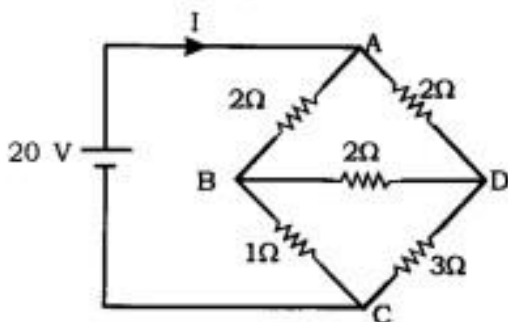
GXEST104 INTRODUCTION TO ELECTRICAL ENGINEERING

MODULE 1			
SINo		Marks	KTU, Year
1	<p>Calculate the current in each branch of the following circuit using mesh analysis?</p> <div style="text-align: center;">  </div>	10	KTU DEC20 19
2	<p>Use nodal analysis to find voltages V_a, V_b, V_c and V_d</p> <div style="text-align: center;">  </div>	10	KTU DEC 2021
3	<p>Find the equivalent resistance between the terminals X and Y</p> <div style="text-align: center;">  </div>	10	KTU DEC 2021

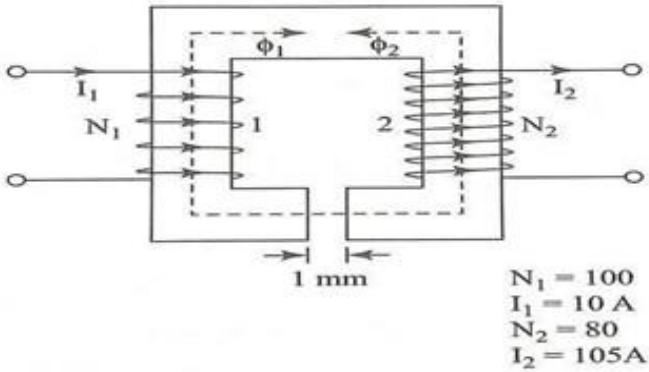
4	<p>Use nodal analysis to find V_1 in the given circuit</p> 	10	KTU- JULY 2021
5	<p>Find the current through the circuit shown below if the voltage applied is 50V</p> 	10	KTU-DEC 2020
6	<p>Find the current in R_2 using mesh analysis</p> 	10	KTU-DEC 2020
7	<p>State and explain Kirchoff's laws with examples</p>	4	KTU- DEC2019
8	<p>Using star-delta transformation, determine the equivalent resistance R_{AB}</p> 	10	KTU-DEC 2019
9	<p>Calculate equivalent resistance across B and A</p>	4	KTU MAY 2016

			
10	<p>A resistor of 5Ω is connected in parallel with a resistor of $R_1\Omega$. This combination is connected in series with an unknown resistor of $R_2\Omega$ and the complete circuit is then connected to 50 V dc supply. Calculate the values of R_1 and R_2, if the power dissipated by the unknown resistor R_1 is 150W with 5A passing through it.</p>	4	KTU MAY 2017
11	<p>Find current in 100 ohm resistor using node analysis</p> 	10	KTU DEC 2018
12	<p>By applying Kirchoff's laws calculate current flowing through the 6Ω resistor in the network shown</p> 	10	KTU DEC- 2016
13	<p>A network with three meshes is shown. Apply mesh current method to determine the value of unknown voltage V, for which mesh current $I_1=0$.</p> 	10	KTU DEC- 2016

14	Find the source current I in the below figure using star-delta transformation.	10	KTU DEC 2020
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15	A coil of 180 turns is linked with a flux of 0.03 Wb when carrying a current of 10A. Calculate the inductance of the coil. If the current is uniformly reversed in 0.04 sec, calculate the emf induced in the coil.	4	KTU DEC2021
16	An alternating current is represented by $i(t)=14.14 \sin (377t)$. Find (i)rms value (ii) frequency (iii)time period and (iv)instantaneous value of the current at $t=3\text{ms}$.	4	KTU DEC2021
17	An iron ring has a cross section area of 3 cm^2 and a mean diameter of 25 cm. An cut across the section of the ring. The ring is wound with a coil of 200 turns through which a current of 3A is passed. If the total magnetic mWb, find the relative permeability of iron, assuming no magnetic leakage	10	KTU DEC 2021
18	Define the terms i) mmf ii) magnetic field strength iii) magnetic flux and iv) magnetic flux density	4	KTU DEC 2019
19	State and explain i) Faraday's laws and ii) Lenz's law.	4	KTU DEC 2019
20	An alternating current varying sinusoidally with a frequency of 50Hz has an rms value of 20A. i) Write down the equation for the instantaneous current ii) Find the instantaneous value of current at 0.0025s. iii) Find the instantaneous value of current 0.125s after passing through a positive maximum value iv) At what time, measured from a positive maximum value, will the instantaneous current be 14.14 A?	10	KTU-DEC 2019
21	Compare Electric and Magnetic Circuit	4	KTU-DEC 2018

22	<p>Calculate the flux produced in the air gap in the magnetic circuit shown in figure which is excited by the MMF of two windings. The mean length of the flux path is 40 cm. The permeability of iron is 2000. The uniform cross sectional area is 10 cm²</p>  <p style="text-align: right;"> $N_1 = 100$ $I_1 = 10 \text{ A}$ $N_2 = 80$ $I_2 = 105 \text{ A}$ </p>	10	KTU DEC 2018
23	Draw the circuit of a series parallel magnetic circuit. Show its electrical equivalent	4	KTU DEC 2016
24	<p>A steel ring of 25 cm diameter and of circular section 3 cm in diameter has an air gap of 1.5mm length. It is uniformly wound with 1000 turns of wire carrying a current of 2A.</p> <p>Calculate</p> <ol style="list-style-type: none"> Magneto motive force magnetic flux density in air gap magnetic flux Relative permeability of steel ring. Assume that iron path takes about 40% of the total mmf. 	10	KTU MAY 2019

MODULE 2			
SL. No.	Questions	Marks	KTU, Year
1	Derive the expression for the current in an ac series RLC circuit	10	KTU- DEC 2021
2	A resistance of 10Ω, an inductance of 0.3 H, and a capacitance of 100μF are connected in series across 230V, 50 Hz single phase power supply. Calculate the impedance, current through the circuit (iii) voltage across R,L &C and(d) power factor of the circuit	10	KTU- DEC 2021
3	A balanced delta connected 3 phase load is fed from a 3 phase, 400 V 50 Hz supply. The line current is 20A and the total power absorbed by the load is 10kW. Calculate (i) the impedance in each branch (ii) the power factor and (iii) the total power consumed if the same impedances are star connected in the network (10)	10	KTU- DEC 2021
4	Explain the advantage of three phase system of power supply compared to single phase system of power supply	4	KTU MAY 2019

When an alternating voltage of $(80+j60)$ V is applied to a circuit, the resulting current flow is $(-4+j10)$ A. Find the impedance, power consumed and the phase angle of the circuit.	4	KTU-DEC2019
Two impedances Z_1 and Z_2 when connected separately across a 220V, 50 Hz supply, consume 300W and 150W at a power factor of 0.4 lagging and 0.7 leading respectively. When the two impedances are connected in series across the same supply, find total power consumed and overall power factor.	10	KTU-DEC2019
A balanced three phase load has per phase impedance of $(30+j50)$ Ω . If the load is connected across 400V, 3 phase supply, find (i) phase current (ii) line current and (iii) power supplied to load when it is connected in (a) star (b) delta	10	KTU DEC 2019
In a single phase ac circuit consisting of an impedance of 10Ω , the RMS value of applied voltage is 230V. i. Write down the expression for instantaneous voltage ii. If the current lags the applied voltage by 30° write down the expression for instantaneous current Calculate the power consumed in the circuit	4	KTU MAY 2019
A balanced three phase load consists of three coils each having resistance of 4Ω and inductance 0.02H. It is connected to a 415V, 50Hz, 3-phase ac supply. Determine the phase voltage, phase current, power factor and active power when the loads are connected in (i) star (ii) delta	10	KTU MAY 2019
A coil of resistance 10Ω and inductance 0.1 H is connected in series with a $150 \mu\text{F}$ capacitor across 200V, 50 Hz supply. Calculate (i) Inductive reactance, Capacitance reactance, impedance, current and power factor. (ii) The voltage across the coil and capacitor respectively.	10	KTU DEC 2017
An alternating voltage is defined as $v=100 \sin \alpha$ $0<\alpha<\pi$ $v=0$ $\pi<\alpha<2\pi$ What is the RMS value of this voltage	4	KTU DEC 2017
A balanced 3 phase load consists of 3 coils each of resistance 6Ω and inductive reactance of 8Ω . Determine the line current and power absorbed when the coils are (i) star connected (ii) delta connected across 400V, 3 phase supply.	10	KTU JULY 2021
Derive the relation between line and phase currents in a 3 phase delta connected system	4	KTU DEC2020

Three inductive coils, each with a resistance of 22Ω and an inductance of 0.05 H are connected in first in star and then in delta, to a 3 phase 415 V , 50 Hz supply. Calculate for both star and delta connections, (i) phase current and line current and (ii) total power absorbed.	10	KTU DEC2020
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UCHUT 128 Life skills and Universal Human Values

MODULE 1

Sl No	Questions	Marks	KTU YEAR
1	What do you mean by communication? What are the different types of Barriers to communication?	6	KTU- Dec,2016
2	Briefly mention different Levels of communication?	5	KTU-Jan,2022
3	Explain the Flow of communication and represent it diagrammatically?	5	KTU-jul,2022
4	What are the different types of Communication Networks?	6	KTU Dec,2019
5	Differences between Group Discussion & Debate	5	KTU Apr,2019
6	Prepare your Resume	6	KTU May,2018
7	Methods to ensure success in GD	5	KTU Dec,2018
8	Types of Report	4	KTU Apr,2019
9	What role do life skills play in helping people achieve better results in both their personal and professional lives? What are the Main Components of Life Skills?	5	KTU-Dec 2022
MODULE 2			
1	Different types of Thinking Hats	5	KTU-DEC2019
2	Differences between Lateral Thinking & Vertical Thinking	5	KTU DEC,2019
3	Differences between Creative Thinking & Critical Thinking	4	KTU-Apr2019
4	Differences between Creativity & Innovation	3	KTU May2016

5	Define : Kinesics, Proxemics, Chronemics	3	KTU-Jan 2017
6	Interpreting body language cues	3	KTU-July2017
7	Discuss the steps in Problem Solving	5	KTU-Apr2019
8	“Manage Stress by Knowing What You Value” - Inspect the given statement by defining stress and mention the relationship between Self-awareness, coping of emotion, values and ethics.	5	KTU-Dec 2022
MODULE 3			
1	Differences between Group & Team	5	KTUMay2018
2	Different types of Group	3	KTU May2018
3	Piaget’s Theory of Moral Development	6	KTU-Jan 2017
4	Different types of Team	3	KTUMay2018
5	What is Mind Mapping & diagrammatically represent it	6	KTU-Jan 2017
6	What are the means to enhance productivity?	5	KTU-Dec2016
7	Kohlberg’s Theory	6	KTUMay2018
8	Illustrate the relation between creativity level and problem solving skill	5	KTU-Dec2022
MODULE 4			
1	What do you mean by Moral Realism?	3	KTU,May,2016
2	What is Moral Absolutism?	3	KTU,Dec,2019
3	What is the importance of Professional Ehics?	5	KTU,Jan,2017
4	Explain Engineering as Experimentation	3	KTU,Dec,2019
5	Briefly mention Code of ethics	6	KTU,Dec,2019
6	What is the relevance of Environmental ethics with regard to Engineering?	6	KTU,Dec,2018
7	What do you mean by Empathy, Integrity & sharing?	4	KTU,Dec,2018

8	Explain what team dynamics is and how it affects the team's performance	5	KTU-Dec2022
MODULE 5			
1	What do you mean by Leadership & what are its different traits	5	KTU-July 2017
2	Explain VUCA Leadership	3	KTU-Apr 2019
3	What are the different Levels of Leaderships?	6	KTU-Dec 2019
4	Explain the term making of a leader	3	KTU-Dec 2018
5	Differences between Transactional leader & Transformational leader?	5	KTU-May2018
6	What are the different types of Leadership?	6	KTU-May2018
7	Differences between Coaching & Teaching	3	KTU-Dec 2016
8	What are the different levels of Leadership?	6	KTU-Dec 2018
CASE STUDY			
	<p>Rita and her family moved to the city from a remote community in the middle off the school year. Within a week, Rita was registered at the local high school and began attending classes. She travelled to and from school by school bus.</p> <p>After two weeks at the new school, Rita was just beginning to settle into her classes. However, she was somewhat nervous about her history course. After her first class, the teacher made it clear that Rita had a lot of “catching up” to do, if she were to pass the course.</p> <p>The following week, some students gave a presentation on Columbus' voyage in 1492 to the “New World.” There was lively discussion, and readings and prints were circulated depicting Columbus' arrival in various territories. There were several references made to</p>		KTU DEC2022

<p>“Indians and savages” that the colonists “had to defeat” to settle the New World.</p> <p>As a member of the Cree Band, Rita was dismayed by the way the teacher did not question the portrayal of Aboriginal persons in the presentation. She approached her teacher before class the next day to discuss the issue. As the class began, the teacher announced that Rita had concerns with the Columbus presentation. She then turned to Rita and asked her to give her version of the “Columbus discovery” from an Aboriginal point of view.</p> <p>Caught off guard, Rita haltingly made several points, and then sat down quickly when several of the students began to snicker. Later that day on the bus ride home, some of the other students jeered at her, saying if she didn't like history the way it was taught, then she should drop out. She turned away and ignored them. The next day, the jeering continued in the hallway. When she went to her locker at lunch, someone had scrawled the words “gone hunting” on her locker door. Again, she ignored the curious students around her.</p> <p>Rita told her parents about the incidents. They called the principal, who said she would give “hell” to the offenders. She also suggested that Rita should make more of an effort to fit in and get along with others</p> <ol style="list-style-type: none"> a) Who are the characters in this story? Describe each one's characteristics b) Determine the issues Rita is dealing with. Do you agree with how she handled the situation? Offer a suggestion about how to manage it. c) Describe the attitude of Rita’s classmates. d) How should the teacher have handled Rita's concern over the Columbus presentation? 	<p>5</p> <p>5</p>	
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	Evaluate the approach in term of professionalism.	5	
	e) Consider yourself in Rita's role, suggest some life skills to overcome such situations in life.	5	

