Q.P. Code: 2021101

SET - 1

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

B. Tech. 1 Semester (R20UG) Regular & Supple. Examinations of February – 2023

SUB: Linear Algebra and Calculus (Common to All Branches)

Time: 3 Hours **Max. Marks: 60**

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

			M	CO	BL
		UNIT - I			
1.	(a)	Determine the rank of the following matrix by using Echelon form $A=\begin{bmatrix} 0 & 1 & -3 & -1 \\ 1 & 0 & 1 & 1 \\ 3 & 1 & 0 & 2 \\ 1 & 1 & -2 & 0 \end{bmatrix}$	6M	CO1	L1
	(b)	Solve the following system of equations $x+y+2z=1, 2x-y+3z=9, 3x-y-z=2$	6M	CO1	L3
		(OR)			
2.	(a)	Find the eigen values and eigen vectors of the matrix $A=\begin{bmatrix} 6 & -2 & 2 \\ -2 & 3 & -1 \\ 2 & -1 & 3 \end{bmatrix}$	10M	CO1	L1
	(b)	State Cayley-Hamilton theorem	2M	CO1	L1
		UNIT – II			
3.	(a)	Verify Rolle's theorem for $f(x)=2x^3+x^2-4x-2$ in $[-\sqrt{2},\sqrt{2}]$	6M	CO2	L6
	(b)	If $0<a<b$, then prove that $\frac{b-a}{1+b^2}<(\tan^{-1}b-\tan^{-1}a)<\frac{b-a}{1+a^2}$ and hence show that $\frac{\pi}{4}+\frac{3}{25}<\tan^{-1}\frac{4}{3}<\frac{\pi}{4}+\frac{1}{6}$	6M	CO2	L4
		(OR)			
4.	(a)	Verify Taylor's theorem for $f(x)=(1-x)^{\frac{5}{2}}$ with Lagrange's form of reminder upto 2 terms in the interval [0,1]	6M	CO2	L6
	(b)	Obtain the expansion of sin x in ascending powers of x up to the term containing x^6	6M	CO2	L1
		UNIT – III			
5.	(a)	Find the value of $\frac{du}{dt}$ given $u=y^2-4ax, x=at^2, y=2at$	6M	CO3	L1
	(b)	If u, v and w are functions of three independent variables x, y and z are defined by $u=x+y+z, v=x^2+y^2+z^2-xy-yz-zx$ and $w=x^3+y^3+z^3-3xyz$ are functionally related	6M	CO3	L4
		(OR)			
6.	(a)	Explain the procedure for Lagrange's method of undetermined multipliers	4M	CO3	L2
	(b)	In a plane triangle, find the maximum value of $\cos A \cos B \cos C$.	8M	CO3	L3
		UNIT – IV			
7.	(a)	Evaluate $\int_0^1\int_x^{\sqrt{x}}(x^2+y^2)\,dxdy$	4M	CO4	L2
	(b)	Change the order of integration in $I=\int_0^1\int_{x^2}^{2-x} xy\,dx\,dy$ and hence evaluate the same	8M	CO4	L5
		(OR)			

8.	(a)	Evaluate $\int_0^a \int_0^x \int_0^{x+y} e^{x+y+z}\, dxdydz$	6M	CO4	L2
	(b)	Find the volume of the portion of the sphere $x^2 + y^2 + z^2 = a^2$ lying inside the cylinder $x^2 + y^2 = ax$	6M	CO4	L1

UNIT-V

9.	(a)	Define Beta and Gamma functions	4M	CO5	L1
	(b)	Show that $\beta(m,n) = \frac{\Gamma(m)\Gamma(n)}{\Gamma(m+n)}$	8M	CO5	L4

(OR)

10.	(a)	Show that $\Gamma\left(\frac{1}{2}\right) = \sqrt{\pi}$	6M	CO5	L4
	(b)	Evaluate $\int_0^{\frac{\pi}{2}} Sin^5\theta\, Cos^{\frac{7}{2}}\theta\, d\theta$	6M	CO5	L2

Q.P. Code: 20EP10[illegible]

SET - 1

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

B. Tech. 1 Semester (R20UG) Regular & Supple. Examinations of February – 2023

SUB: Engineering Physics (CE)

Time: 3 Hours **Max. Marks: 60**

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

			M	CO	BL
		UNIT - I			
1.	(a)	Write the conditions for sustained interference pattern.	4M	CO1	L1
	(b)	Define interference. Explain the interference in the thin film by reflected light.	8M	CO1	L2
		(OR)			
2.	(a)	Distinguish between Fresnel and Fraunhofer diffraction.	5M	CO1	L4
	(b)	Explain the theory of Fraunhofer diffraction due to a single slit.	7M	CO1	L2
		UNIT – II			
3.	(a)	Explain the construction and working of He-Ne laser.	8M	CO2	L2
	(b)	Define any three types of pumping process.	4M	CO2	L1
		(OR)			
4.	(a)	Discuss various types of optical fibres based on the variation of refractive index.	6M	CO2	L6
	(b)	The numerical aperture of an optical fibre is 0.39. If the difference in the refractive indices of the material of its core and cladding is 0.05. Evaluate the refractive index of material of the core.	6M	CO2	L5
		UNIT – III			
5.	(a)	State and explain hysteresis behavior of ferromagnetic materials.	6M	CO3	L2
	(b)	A magnetic material has a magnetization of 3300 A/m and flux density of 0.0044 Wb/m2. Evaluate magnetizing force and the relative permeability of the material.	6M	CO3	L5
		(OR)			
6.	(a)	Write brief note on top-down and bottom up process.	6M	CO3	L1
	(b)	Explain the synthesis of nanomaterials by chemical vapour deposition.	6M	CO3	L2
		UNIT – IV			
7.	(a)	Determine absorption coefficient.	4M	CO4	L5
	(b)	What are the factors affecting acoustics of buildings and their remedies?	8M	CO4	L2
		(OR)			
8.	(a)	Describe the method of producing ultrasonic waves by magnetostriction method.	7M	CO4	L3
	(b)	Write any five applications of ultrasonics.	5M	CO4	L1
		UNIT-V			
9.	(a)	Describe seven crystal systems with diagrams.	6M	CO5	L3
	(b)	Lithium Crystallises in BCC structure. Evaluate the lattice constant given that the atomic weight and density for lithium 6.94 and 530 kg/m3 respectively.	6M	CO5	L5
		(OR)			
10.	(a)	State and explain Bragg's law.	7M	CO5	L2
	(b)	Draw (1 1 1) and (1 1 0) planes in a cubic lattice.	5M	CO5	L1

Q.P. Code: 20AP102 | SET - 1

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

B. Tech. 1 Semester (R20UG) Regular & Supple. Examinations of February – 2023

SUB: Applied Physics (EEE, ECE)

Time: 3 Hours **Max. Marks: 60**

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

			M	CO	BL
		UNIT - I			
1.	(a)	Discuss the theory of light interference due to thin films by reflection with a suitable ray diagram.	8M	CO1	L2
	(b)	A parallel beam of light of 6000 A° is incident on a thin glass plate of refractive index 1.5 such that the angle of refraction into the plate is 50°. Find the least thickness of the glass plate which will appear dark by reflection.	4M	CO1	L1
		(OR)			
2.	(a)	Distinguish between Interference and Diffraction.	4M	CO1	L4
	(b)	Explain the theory of Fraunhofer diffraction due to a single slit. Discuss the conditions for principal maxima, minimum intensity and secondary maxima.	8M	CO1	L2
		UNIT – II			
3.	(a)	List the Characteristics of lasers.	4M	CO2	L1
	(b)	Explain the construction and working of Nd-YAG laser system.	8M	CO2	L2
		(OR)			
4.	(a)	What do you understand by the terms acceptance angle and acceptance cone? Derive an expression for acceptance angle in terms of refractive indices of the core and the cladding.	8M	CO2	L3
	(b)	Estimate the angle of acceptance and numerical aperture of a given optical fiber, if the refractive indices of the core and the cladding are 1.563 and 1.498 respectively.	4M	CO2	L4
		UNIT – III			
5.	(a)	Define Dielectric polarization and Dielectric polarizability.	4M	CO3	L1
	(b)	Discuss various types of polarization in dielectric materials with neat diagrams.	8M	CO3	L2
		(OR)			
6.	(a)	Extend the hysteresis of ferro-magnetic materials.	6M	CO3	L2
	(b)	Differentiate between hard and soft magnetic materials.	6M	CO3	L4
		UNIT – IV			
7.	(a)	Formulate the expression for the time-independent Schrödinger wave equation.	8M	CO4	L6
	(b)	What is the physical significance of the wave function?	4M	CO4	L1
		(OR)			
8.	(a)	Analyze the electrical conductivity in metals using quantum free electron theory.	6M	CO4	L4
	(b)	Describe the Fermi-Dirac distribution and effect on temperature.	6M	CO4	L2
		UNIT-V			
9.	(a)	Illustrate in detail about intrinsic semiconductors.	6M	CO5	L2
	(b)	Explain the classification of extrinsic semiconductors.	6M	CO5	L2
		(OR)			
10.	(a)	Distinguish Type I and Type II superconductors.	6M	CO5	L4
	(b)	What are Cooper pairs? Outline the BCS theory of superconductivity.	6M	CO5	L2

Q.P. Code: 20EC102 | SET - 1

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

B. Tech. 1 Semester (R20UG) Regular & Supple. Examinations of February – 2023

SUB: Engineering Chemistry (ME)

Time: 3 Hours | Max. Marks: 60

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

			M	CO	BL
		UNIT - I			
1.	(a)	Explain the process of scale and sludge formation in boilers.	6M	CO1	L4
	(b)	Describe the estimation of hardness by EDTA method.	6M	CO1	L3
		(OR)			
2.	(a)	Describe the desalination of brackish water by Reverse osmosis method.	6M	CO1	L3
	(b)	Describe the ion-exchange process for softening of water. What are its advantages?	6M	CO1	L3
		UNIT – II			
3.	(a)	Derive Nernst equation for a single electrode potential.	6M	CO2	L6
	(b)	Write briefly about: (i) Primary cells (ii) Secondary Cells.	6M	CO2	L2
		(OR)			
4.	(a)	Define corrosion of metals. What are different types of corrosion? Explain the electrochemical theory of wet corrosion with its mechanism.	6M	CO2	L1
	(b)	Explain how corrosion can be controlled by cathodic protection method.	6M	CO2	L4
		UNIT – III			
5.	(a)	Distinguish between thermoplastics and thermosetting polymers.	6M	CO3	L3
	(b)	Discuss the Preparation, Properties and applications of Bakelite.	6M	CO3	L6
		(OR)			
6.	(a)	What is crude oil? Describe the refining Process of crude petroleum.	6M	CO3	L5
	(b)	Explain proximate analysis of coal? How is it carried out? What is its significance?	6M	CO3	L4
		UNIT – IV			
7.	(a)	What are refractories? How are they classified? Give the essential requirements of good refractories.	6M	CO4	L2
	(b)	Justify- "the properties of Portland cement depends upon relative proportion of the microscopic constituents".	6M	CO4	L5
		(OR)			
8.	(a)	Define the term lubricants, Mention their important functions. Explain and discuss the significance of any two properties of lubricants.	6M	CO4	L1
	(b)	Explain the setting and hardening of Portland cement.	6M	CO4	L4
		UNIT-V			
9.	(a)	Discuss about the synthetic methods for the preparation of colloids with suitable examples.	6M	CO5	L6
	(b)	What are the characteristics of lyophobic and lyophilic colloids with suitable examples?	6M	CO5	L1
		(OR)			
10.	(a)	Discuss about the colloids that play a major role in our daily life and industry.	6M	CO5	L6
	(b)	Discuss about the preparation of nanometals and metal oxides by CVD method.	6M	CO5	L6

Q.P. Code: 2023102

SET - 1

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

B. Tech. 1 Semester (R20UG) Regular & Supple. Examinations of February – 2023

SUB: Chemistry (CSE)

Time: 3 Hours **Max. Marks: 60**

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

			M	CO	BL
		UNIT - I			
1.	(a)	Apply the Schrödinger wave equation to the electron present in the hydrogen atom	8M	CO1	L3
	(b)	Outline the bonding and anti-bonding molecular orbitals.	4M	CO1	L2
		(OR)			
2.		Among NO and CO molecule which is stable. Utilize the molecular orbital theory in supporting your answer.	12M	CO1	L3
		UNIT – II			
3.	(a)	Discuss the splitting in octahedral planar geometry.	8M	CO2	L2
	(b)	Distinguish between Semiconductor and superconductor materials	4M	CO2	L3
		(OR)			
4.	(a)	Explain the application of nanomaterials	8M	CO2	L2
	(b)	Summarize the magnetic properties of coordination compounds	4M	CO2	L2
		UNIT – III			
5.		Discuss the construction and working of the lithium-ion batteries and give the cell reactions during the charging and discharging process.	12M	CO3	L2
		(OR)			
6.		Define conductometric titrations. Explain the acid-base conductometric titrations	12M	CO3	L2
		UNIT – IV			
7.		Outline the Preparation, and applications of PVC, Teflon, and Bakelite.	12M	CO4	L2
		(OR)			
8.	(a)	Explain chain growth and step growth polymerization.	6M	CO4	L2
	(b)	List the applications of conducting polymers	6M	CO4	L1
		UNIT-V			
9.	(a)	Explain the principle and applications involved in UV-Visible Spectroscopy	8M	CO5	L2
	(b)	Summarize the retardation factor in chromatography and give its significance	4M	CO5	L2
		(OR)			
10.	(a)	Outline the solid-liquid adsorption chromatography	6M	CO5	L2
	(b)	Discuss the electromagnetic spectrum	6M	CO5	L2

. Q.P. Code: 2023103

SET - 1

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

B. Tech. 1 Semester (R20UG) Regular & Supple. Examinations of February – 2023

SUB: Environmental Chemistry (AI&ML)

Time: 3 Hours Max. Marks: 60

Answer any FIVE Questions choosing one question from each unit.

All questions carry Equal Marks.

			M	CO	BL
		UNIT - I			
1.	(a)	Describe the various components of environment.	6M	CO1	L2
	(b)	Explain the effects of oxides of C, N, S on air pollution and write its control measures.	6M	CO1	L2
		(OR)			
2.	(a)	Describe about green house effect.	6M	CO1	L2
	(b)	Discuss global warming.	6M	CO1	L2
		UNIT – II			
3.	(a)	Outline the various sources of water and its distribution in environment.	6M	CO2	L2
	(b)	Illustrate about hydrological cycle.	6M	CO2	L2
		(OR)			
4.	(a)	Explain the bio-magnification process with an example.	6M	CO2	L2
	(b)	Discuss about water borne diseases.	6M	CO2	L2
		UNIT – III			
5.		Describe in detail the domestic waste water treatment.	12M	CO3	L2
		(OR)			
6.		Explain the determination of hardness of water by EDTA method.	12M	CO3	L2
		UNIT – IV			
7.		Illustrate the drawbacks of using chemical fertilizers and agrochemicals in modern agriculture process.	12M	CO4	L2
		(OR)			
8.	(a)	How do chemical fertilizers affect the environment?	6M	CO4	L2
	(b)	Modern agriculture is a source of pollution. Explain	6M	CO4	L2
		UNIT-V			
9.	(a)	Discuss the Radioactive pollution and their control measures.	6M	CO5	L2
	(b)	Explain coagulation and electro-flocculation process.	6M	CO5	L2
		(OR)			
10.		Discuss about any two types of environmental pollution and their control measures.	12M	CO5	L2

Q.P. Code: 2024103 | SET - 1

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

B. Tech. 1 Semester (R20UG) Regular & Supple. Examinations of February – 2023

SUB: Communicative English (CE, EEE, ECE)

Time: 3 Hours | Max. Marks: 60

Answer any FIVE Questions choosing one question from each unit.

All questions carry Equal Marks.

			M	CO	BL
		UNIT - I			
1.	(a)	Explain the advice that William Hazlitt gives his son in the essay "On the Conduct of Life".	6M	CO1	L2
	(b)	Explain the meaning of the idioms and phrases and use them in sentences of your own. (i) Bed of roses (ii) Turn a blind eye (iii) A piece of cake (iv) On cloud nine (v) An arm and a leg (vi) Bread and butter	6M	CO1	L3
		(OR)			
2.	(a)	Explain the meaning of the phrasal verbs and use them in sentences of your own. (i) Find out (ii) Break down (iii) Get along (iv) Calm down (v) Chip in (vi) Eat out	6M	CO1	L6
	(b)	Replace the words in bold with their synonyms. (i) The watch is very costly. (ii) The candies that the man brought were delicious. (iii) The African children were content to share the candies. (iv) A wealthy film-maker gifted a picture to my uncle. (v) He has suffered huge losses and has become destitute. (vi) Windy days are typical of December.	6M	CO1	L3
		UNIT – II			
3.	(a)	Describe how Alfred Lord Tennyson explores themes of eternity and nature in the poem 'The Brook'.	6M	CO2	L2
	(b)	Fill in the blanks with appropriate verb forms. (i) I ---------- (leave) tomorrow. (ii) She ---------- (learn) Spanish by the time she leaves for Spain. (iii) He always ---------- (complain) in the class. (iv) My friend ---------- (reach) the station before the train arrived. (v) He met his friend while he ----------(go) home. (vi) I ------- (help) my neighbor clean his attic before I fixed his car.	6M	CO2	L3
		(OR)			
4.	(a)	Complete the following sentences by using appropriate Articles or prepositions. (i) Gold is ---------- precious metal. (ii) Honest men speak --------- truth. (iii) She showed me ----------one-pound coin. (iv) Government departments are accountable _____ their spending. (v) She is very adaptable _____ change. (vi) We are afraid _____ making him angry.	6M	CO2	L3
	(b)	Construct FIVE meaningful sentences on the following pattern.	6M	CO2	L6

Subject +	Verb +	Indirect Object +	Direct Object
Rohit	gave	Reshmi	his favourite book.

		UNIT – III			
5.	(a)	Write in detail about Oliver Goldsmith's essay 'A City Night Piece'.	6M	CO3	L2
	(b)	Rewrite the following sentences as directed in the brackets. (i) They will send him away to school. (Convert to Passive Voice) (ii) You will be helped by them. (Convert to Active Voice) (iii) His grandmother looked after him. (Convert to Passive Voice) (iv) They called off the meeting. (Convert to Passive Voice) (v) She was attacked by a dangerous dog. (Convert to Active Voice) (vi) Brendon is playing cricket. (Convert to Passive Voice)	6M	CO3	L3
		(OR)			

6.	(a)	Develop a paragraph on the importance of environmental protection.	6M	CO3	L6
	(b)	Rewrite the following sentences converting to reported speech.	6M	CO3	L3

(i) He said, "I work in a factory."
(ii) He said to me, "You answered correctly."
(iii) They said to me, "We will send you gifts."
(iv) He said. "Open the door." (v) He said to me, "Do you like music?"
(vi) She said. "It has been raining for three days."

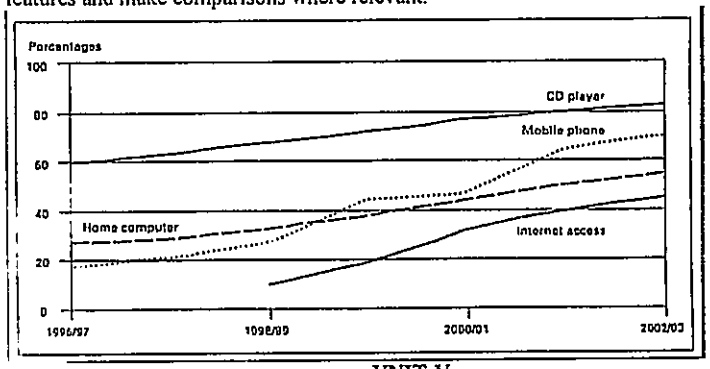
UNIT – IV

7.	(a)	Explain the essay 'Being Rich, Being Good' written by Chetan Bhagat.	6M	CO4	L2
	(b)	Complete the given sentences by including appropriate question tags.	6M	CO4	L3

(i) You weren't listening, ----------?
(ii) Sue doesn't know Ann, ----------? (iii) Don't drop that vase, ----------?
(iv) There are a lot of people here, ----------?
(v) I shouldn't have lost my temper, ----------?
(vi) You can speak German, ----------?

(OR)

8.	(a)	You are having a party and want to invite your friend from a different city. Write a letter to your friend. In your letter: (i) Describe why you are having the party (ii) Give directions on how to get to the venue (iii) Suggest how you can accommodate him/her	6M	CO4	L3
	(b)	The graph below shows in percentage terms the changing patterns of domestic access to technology in homes in India. Analyze and summarize the information by selecting and reporting the main features and make comparisons where relevant.	6M	CO4	L4



UNIT-V

9.	(a)	Describe the way George Orwell addresses how language can be used as a tool of manipulation and control in his essay 'Politics and the English Language'.	6M	CO5	L2
	(b)	Develop dialogues for the given situation: Your telephone is not working. Give a complaint to the officer in charge in the telephone office.	6M	CO5	L6

(OR)

10.		Read the following passage and answer the questions.	12M	CO5	L3

The Aravali Range is affected from human activities like stone crushing, cutting of trees in forest area of Aravali, construction on large scale, mining, dispense and dumping of waste. Such activities affect the environment of Aravali and its surrounding areas environment. Some of the famous lakes like Badkhal lake, Dhauj Jheel, Surajkund Lake, Damdama Lake on the Aravali range had gone dry in last five years because of illegal mining and change of pattern in the natural drainage system. These lakes are dumped with waste material which affected ground water flow. Drying of these lakes also indicates that in future ground water will be not available in this area if the relevant steps for recovery are not taken.

The mindless mining in one of the oldest hills in the world has devastated the range. In several places, the miners have gone so deep that the water table has been exposed, forming lakes amidst the blasted ranges. The Rajasamand lake in Udaipur, which always had water dried up recently.

In May 2009, after months of media "and public protests, along with several environmental groups, the Supreme Court banned mining in an area of 448 square km, across Faridabad, Gurgaon and Mewat districts in Haryana, that was once supposed to be set aside for a national park. This comes after SC's earlier judgment in 1994 that allowed limited mining on the basis of the sustainable development principle and under strict guidelines, which were violated by local miners as the court ruled.

The Supreme Court on February 20, 2010 directed cancellation of 157 mining leases operating in Rajasthan's eco-sensitive Aravali Hills and asked the Forest Survey of India to carry out satellite imagery of the entire 50,000 sq km range spread across 15 districts of the State to assess the extent of ecological damage. Giving four months time to the FSI to complete the task, the Special Bench of Chief Justice K.G. Balakrishnan, Justices S.H. Kapadia and Aftab Alam directed all mines in the area to stop operation till then. The direction follows an earlier order passed by the Supreme Court in May 2009 freezing all mining activities along the Aravali Range situated in Haryana.

Questions:

(i) Find out the synonym of well-known from the passage.
(ii) How is the Aravali Range affected?
(iii) Which activities are harmful to the Aravali Hills?
(iv) Why have some of the lakes on the Aravali range gone dry?
(v) What does the dryness of these lakes indicate?
(vi) When was mining banned across Faridabad, Gurgaon and Mewat districts in Haryana?
(vii) How was the ecological damage across 15 districts of Rajasthan to be assessed?
(viii) Who chaired the Special Bench of the Supreme Court?
(ix) Find out a word from the passage which means 'shows that something exists'.
(x) Find out a word from the passage which means 'instructions telling how to do something'.
(xi) Find out a word from the passage which means 'make a judgement about somebody/something'.
(xii) Give an appropriate title for the given passage.

Q.P. Code: 2039103 | SET - 1

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

B. Tech. 1 Semester (R20UG) Regular & Supple. Examinations of February – 2023

SUB: Problem Solving with Algorithmic Thinking (AI&ML)

Time: 3 Hours **Max. Marks: 60**

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

			M	CO	BL
		UNIT – I			
1.	(a)	Explain Software Development Cycle with neat diagram.	6M	CO1	L2
	(b)	Define a Flow Chart. Draw a flow chart for find the given number is even or odd.	6M	CO1	L1
		(OR)			
2.	(a)	Define an algorithm. Write an algorithm for to find the reverse of the given number.	6M	CO1	L1
	(b)	Explain various steps involved in creating and running a C program and illustrate it with help of a diagram.	6M	CO1	L2
		UNIT – II			
3.	(a)	Write a structure of C program with neat diagram	6M	CO2	L5
	(b)	Define a variable. Write the syntax and rules for declaring a variable.	6M	CO2	L1
		(OR)			
4.	(a)	What is meant by type conversion? Explain the different types type conversions.	6M	CO2	L1
	(b)	Explain the decision making statements with example	6M	CO2	L2
		UNIT – III			
5.	(a)	Define an array. Describe what the different types of arrays with example.	6M	CO3	L2
	(b)	Differentiate the while and do-while with example.	6M	CO3	L3
		(OR)			
6.	(a)	Define pointer? Explain declaration and initialization of a pointer with an example.	6M	CO3	L2
	(b)	Define String. Write a C program to find length of the given string without using string handling functions	6M	CO3	L2
		UNIT – IV			
7.	(a)	Define a function. Explain communication among the functions.	6M	CO4	L2
	(b)	Explain the call-by-value with example.	6M	CO4	L1
		(OR)			
8.		Explain the different dynamic memory allocation functions with example.	12M	CO4	L1
		UNIT-V			
9.	(a)	Define structure. Explain how structure members are declared, initialized and accessed using a C program.	6M	CO5	L1
	(b)	Explain the concept of copying and comparing structure variables.	6M	CO5	L2
		(OR)			
10.	(a)	Define union and give the general syntax for union. Write a suitable example.	6M	CO5	L2
	(b)	Write the differences between structure and unions.	6M	CO5	L5

Q.P. Code: 2014104

SET - 1

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

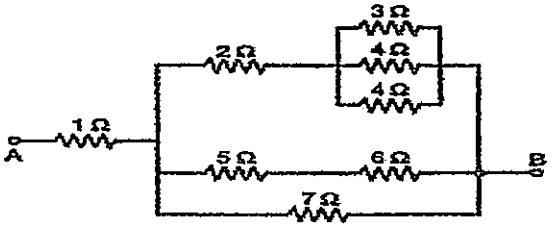
B. Tech. 1 Semester (R20UG) Regular & Supple. Examinations of February – 2023

SUB: Basic Electrical & Electronics Engineering (CE, ME, CSE)

Time: 3 Hours **Max. Marks: 60**

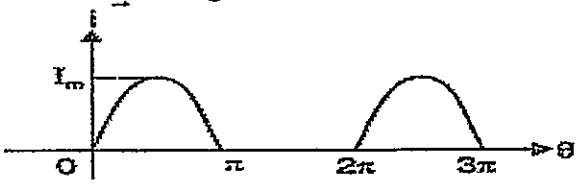
Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

			M	CO	BL
		UNIT - I			
1.	(a)	Define Kirchhoff laws with an example.	6M	CO1	L1
	(b)	Find the equivalent resistance between terminals A and B for the following network shown in figure using network reductions technique.	6M	CO1	L3



(OR)

2.	(a)	Define real power, reactive power and apparent power with necessary equations.	6M	CO1	L1
	(b)	Find the RMS value of the following current waveform.	6M	CO3	L3



UNIT – II

3.		With a neat diagram, explain the performance characteristics of a DC motor.	12M	CO2	L4
		(OR)			
4.		A single-phase transformer has 480 turns on the primary winding and 90 turns on the secondary winding. The maximum value of the magnetic flux density is 1.1T when 2200 volts, 50Hz is applied to the transformer primary winding. Calculate: (i) The maximum flux in the core. (ii) The cross-sectional area of the core. (iii) The secondary induced emf.	12M	CO3	L4
		UNIT – III			
5.	(a)	Explain the operation of full wave rectifier with and without filter.	6M	CO2	L2
	(b)	Write the applications of Zener Diode, LED, Photo Diode.	6M	CO2	L2
		(OR)			
6.	(a)	Explain the construction and operation of BJT with its characteristics.	6M	CO4	L2
	(b)	Explain briefly about the CE & CC amplifier circuits.	6M	CO2	L2
		UNIT – IV			
7.	(a)	Define and briefly explain about the following. (i) CMRR (ii) PSRR (iii) Slew Rate	6M	CO1	L1
	(b)	Draw and explain the pin Configuration of 741 Op-Amp.	6M	CO2	L2
		(OR)			
8.	(a)	With the neat sketch, explain the inverting configuration of an op-amp.	6M	CO4	L2
	(b)	What is voltage follower and write its applications.	6M	CO4	L4
		UNIT-V			
9.		With the neat sketch explain the typical AC power supply scheme.	6M	CO1	L2
		(OR)			
10.	(a)	Draw and explain the basic block diagram of microcontroller.	6M	CO2	L2
	(b)	Write the applications of different microcontrollers.	6M	CO2	L2

Q.P. Code: 2002104

SET - 1

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

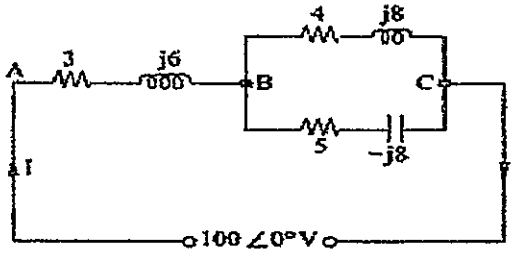
B. Tech. 1 Semester (R20UG) Regular & Supple. Examinations of February – 2023

SUB: Fundamentals of Electrical Engineering (ECE)

Time: 3 Hours **Max. Marks: 60**

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

			M	CO	BL
		UNIT - I			
1.	(a)	State and Explain Kirchhoff Laws with examples	8M	CO1	L1
	(b)	Determine the total resistance in a circuit having 2 resistors of 50Ω,10 Ω are connected in parallel when connected to DC supply of 20V, also find current flowing in the circuit	4M	CO1	L3
		(OR)			
2.		State the following terms. (i) Kirchhoff's Voltage law. (ii) Lenz's Law (iii) Statically Induced Emf (iv) Fleming's Right hand rule (v) Voltage and Current	12M	CO1	L1
		UNIT – II			
3.	(a)	Determine the relationship between line currents and phase currents for a balanced 3-Ø delta connected system with suitable diagrams.	8M	CO2	L3
	(b)	Explain the significance of operator-j in alternating circuits	4M	CO2	L2
		(OR)			
4.	(a)	Show that power consumed in a purely inductive circuit is zero when sinusoidal voltage is applied across it	6M	CO2	L2
	(b)	For the circuit shown in Fig. Determine (i) Total impedance (ii) Total current (iii) Total power absorbed (f=50Hz).	6M	CO2	L4



		UNIT – III			
5.		State and prove maximum power transfer theorem for a passive network connected to an active network consisting of current and voltage sources and linear bilateral elements, when the passive network load consists of (i) A variable resistance only (ii) A variable resistance and a variable reactance.	12M	CO3	L1
		(OR)			
6.	(a)	With neat circuit diagram explain the parameters obtained from Open Circuit test and Short Circuit test on a single-phase transformer?	8M	CO3	L2
	(b)	A 40 KVA single phase transformer has iron losses of 800 W and copper losses of 1140 W when supplying it's full load at unity power factor. Calculate the efficiency of the transformer at unity power factor at (i) Full load (ii) Half load	4M	CO3	L3

UNIT – IV

7.		Explain the construction of a DC machine with neat sketch & explain the function of each part in detail.	12M	CO4	L2

(OR)

8.	(a)	Evaluate the expression for torque developed by a DC motor	6M	CO4	L4
	(b)	A 6 pole Dc Motor has a wave connected armature with 87 slots, each slots contain 6 conductors. The flux per pole is 20 milli wb. and the armature has a resistance of 0.12 ohms, when the motor is connected to 230V supply and the armature draws a current of 80A, driving a load of 15KW. Calculate: (i) Speed (ii) Armature torque and (iii) Shaft Torque	6M	CO4	L3

UNIT-V

9.	(a)	Explain the construction of a three-phase induction motor	6M	CO5	L2
	(b)	Explain the principle operation of a three-phase induction motor with relevant diagrams	6M	CO5	L2

(OR)

10.		Explain the synchronous impedance method for calculating the regulation of a three-phase alternator with a neat diagram?	12M	CO5	L2

Q.P. Code: 2024104

SET - 1

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

B. Tech. 1 Semester (R20UG) Regular & Supple. Examinations of February – 2023

SUB: Professional Communications (AI & ML)

Time: 3 Hours Max. Marks: 60

Answer any FIVE Questions choosing one question from each unit.

All questions carry Equal Marks.

			M	CO	BL
		UNIT - I			
1.	(a)	Define the Role of language in communication?	6M	CO1	L1
	(b)	Explain the Importance of communication?	6M	CO1	L1
		(OR)			
2.	(a)	**Connect the Question Tags to the following:** (i) Rituja is very intelligent, ----------? (ii) The heat has become scorching, ----------? (iii)The guests have not-arrived yet, ---------? (iv) I don't often make mistakes, ----------?	4M	CO1	L4
	(b)	**List out synonyms of the following** (i) Condensation (ii) Precedent (iii) Paradigm (iv) appriciate (v) advatage (vi) Excite	2M	CO1	L4
	(c)	**List out antonyms of the following** (i) Develop (ii) Effective (iii) Inaccurate (iv) Deny (v) sluggish (vi) Alive	3M	CO1	L4
	(d)	**Identify the Parts of Speech of the Underlined words in the given sentences** (i) Are you well? (ii) She speaks well. (iii) Well! That's expensive!	3M	CO1	L3
		UNIT – II			
3.	(a)	**Read the following passage carefully and answer the questions that follow:** The impact of technical advancement in armaments on man, needs to be analyzed with a rational mind, and heart free from prejudices of any kind towards modernization. The most noticeable impact of this development certainly has been the loss of immunity from violence for successive generations ever since the invention of gunpowder. In modern times, the presence of technically advanced arms, not only at the fronts but also among the civilian population, has vastly undermined the value of human life, and endangered the very entity of those virtues of self-restraint and discretion, on which. A peaceful and amiable society rests. However, an unbiased view of the present scenario, would refrain one from attributing the rising trends of violence to the availability of technically superior weapons, for one must not overlook the fact that Necessity is the mother of invention. Every stage in the development of armaments has been marked by its distinct impact on society. When man fought with stones and his bare hands, the society was not yet compact. The discovery of metal and the use of spears, knives and arrows indicate the stage of the formation of small kingdoms. Fire continued to be an effective weapon of destruction. When man introduced the cavalry into the army and improved the strategies of making war, some small kingdoms gave away to form empires, but with no revolutionary advances in armaments forthcoming, the political structure of society remained mare or less stagnant for the many coming centuries.	6M	CO2	L2

The next significant development was the use of gunpowder, which could be used to perform acts which were then thought to be impossible. Gunpowder was used to form the ammunition of several guns and canons. This sudden advances in weaponry not only facilitated the control of a large mass of people by relatively few armed men that helping to form strong empires, but the availability of the new technology to a select few nations enabled the formation of colonies in continents which did not have access to the modernized technologies of warfare. Modern technological advances in armaments aided the formation of nation states in Europe.

The extensive use of the fire-power lent a lethal edge to the naval power which proved to be the greatest asset to any nation in the 19th century. Small United Nations States of Europe with strong navies, modern arms and disciplined men gained control of lands in foreign continents far greater in areas than the parent countries.

Answer the following :

(i) Necessity is the mother of invention means

(ii) The invention of modern weapons have resulted into

(iii) Small kingdoms turned into big empires, after

(iv) The style of the passage is

(a) Informative (b) analytical (c) retrospective

(v) Modern technology advancement is —

(vi) What is the next significant of development?

	(b)	Explain PQRST method in reading comprehension	6M	CO2	L5
		(OR)			
4.	(a)	Illustrate the SQ3R method	6M	CO2	L2
	(b)	Explain subject-verb agreement with six examples.	6M	CO2	L5
		UNIT – III			
5.	(a)	What are the techniques to be adopted for effective oral Presentation?	6M	CO3	L1
	(b)	Define kinesics and mention the role of kinesics in oral Presentation?	6M	CO3	L1
		(OR)			
6.	(a)	Change the following sentences into passive voice.	4M	CO3	L6
		(i) She is feeding the poor (ii) Rishi has made the bed...			
		(iii) Take medicine on time (iv) Are you taking the exam...			
	(b)	Change the following sentences into indirect speech	4M	CO3	L6
		(i) Rachel said, "I have an interview tomorrow."			
		(ii) Mahesh said, "What is he doing?"			
		(iii) Sherly said, "My daughter is playing the lead role in the skit."			
		(iv) Dinesh said, "It is a wonderful movie!"			
	(c)	Rewrite the following sentences as directed	4M	CO3	L6
		(i) Following the trail, we reached our destination. (change into Compound sentence)			
		(ii) Being sick, I went to the doctor. (change into Compound sentence)			
		(iii) Despite several obstacles, Aaron made it to the end. (Change into complex sentence)			
		(iv) On seeing the bride, all her friends were moved to tears. .(Change into complex sentence)			
		UNIT – IV			
7.	(a)	What is Group discussion? Mention the characteristics of GD?	6M	CO4	L1
	(b)	Mention the strategies, Dos and Don'ts of GD	6M	CO4	L5
		(OR)			
8.	(a)	Construct a dialogue between a receptionist of hotel and the customer to book a room in a hotel.	6M	CO4	L6
	(b)	Expand the following Proverbs	6M	CO4	L2
		(i) As you sow, so shall you reap.			
		(ii) Books cannot be judged by its cover			

UNIT-V

9.	(a)	What is an interview? Mention various types of Interviews?	6M	CO5	L1
	(b)	List out the strategies before, during and after the interview? Write Do's and Don'ts of interview	6M	CO5	L1
		(OR)			
10.	(a)	You are seeking for the post of DATA Entry level in WIPRO. Write your resume with suitable details	6M	CO5	L1
	(b)	Correct the following sentences.	6M	CO5	L3
		(i) I am having four brothers and three sisters. .			
		(ii) Does she has a car?			
		(iii) He did not wrote the test last week.			
		(iv) What is the time in your watch?			
		(v) His son-in-laws have come home.			
		(vi) I prefer coffee than tea. .			

Q.P. Code: 20[illegible]3105 | SET - 1

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

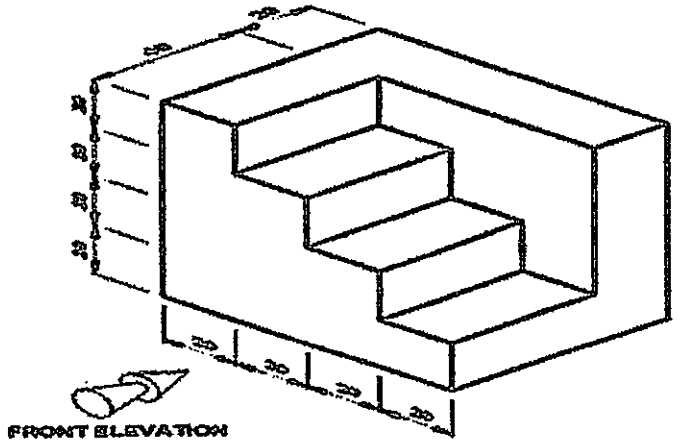
B. Tech, 1 Semester (R20UG) Regular & Supple. Examinations of February – 2023

SUB: Engineering Drawing (CE, EEE, ECE)

Time: 3 Hours **Max. Marks: 60**

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

		M	CO	BL
	UNIT - I			
1.	A circle of 50 mm diameter rolls along a straight line without slipping. Draw the curve traced out by a point P on the circumference, for one complete revolution of the circle. Name the curve. Draw a tangent to the curve at a point on it 40 mm from the line.	12M	CO1	L2
	(OR)			
2.	The major and minor axis of an ellipse is 120 mm and 80 mm. Draw an ellipse by using arcs of circles method. Also draw normal and tangent at any point P on the curve.	12M	CO1	L2
	UNIT – II			
3.	A line CD of 100 mm length is inclined at 30^0 to HP and 45^0 to VP. The point A is 15 mm above HP and 20mm in front of VP. Draw the projections of the line.	12M	CO2	L1
	(OR)			
4.	A square ABCD of 50 mm side has its corner A in n the H.P., its diagonal AC inclined at 30 degrees to the H.P. and the diagonal BD inclined at 45 degrees to the V.P. and parallel to the H.P. Draw its projections.	12M	CO2	L2
	UNIT – III			
5.	A pentagonal pyramid, with side of base 30mm and axis length 60mm is resting with its base on H.P and one of the edges of its base is perpendicular to V.P. It is cut by a plane parallel to H:P and passing through the axis at a point 35 mm above the base. Draw the front view, sectional top view.	12M	CO3	L3
	(OR)			
6.	A cone diameter of base 50mm, axis 75mm long is resting on its base on HP. It is cut by a section plane perpendicular to VP and inclined at 40^0 to HP and cutting the axis at a point 40mm from the base. Draw the development of the part of the cone containing the apex.	12M	CO3	L3
	UNIT – IV			
7.	Draw the isometric projection of a square prism, with side of base 40 mm and length of axis 70 mm, when its axis is **(i)** parallel to vertical and **(ii)** parallel to horizontal.	12M	CO4	L2
	(OR)			
8.	Draw the **(i)** front view, **(ii)** top view and **(iii)** side view of the fallowing object.	12M	CO4	L4



	UNIT-V			
9.	A hexagonal plane of side 30 mm is resting on an edge on the ground with its surface inclined at 30 degrees to P.P. the nearest corner of the plane is 10 mm away from P.P. and 80 mm above G.L and in the central plane of the object. Draw its perspective.	12M	CO5	L4
	(OR)			
10.	Draw the perspective of a square prism of edge of base 40 nn and of length 60 mm lying on a rectangular face on the ground, with a corner on P.P and 80 mm above G.L and lies in a central plane which is passing through the centre of the prism.	12M	CO5	L4

Q.P. Code: 2003106

SET - 1

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

B. Tech. 1 Semester (R20UG) Regular & Supple. Examinations of February – 2023

SUB: Introduction to Digital Manufacturing (AI&ML)

Time: 3 Hours Max. Marks: 60

Answer any FIVE Questions choosing one question from each unit.

All questions carry Equal Marks.

			M	CO	BL
		UNIT - I			
1.	(a)	What is the role of computers in Industrial Manufacturing? Discuss in detail.	6M	CO1	L1
	(b)	Discuss on CAD, CAM and CAE technologies.	6M	CO1	L2
		(OR)			
2.	(a)	Explain the concept of product lifecycle management (PLM).	6M	CO1	L2
	(b)	How to express product design ideas using 2D sketches? Explain with suitable sketches.	6M	CO1	L1
		UNIT – II			
3.	(a)	What do you understand the term additive manufacturing? Describe various categories of it.	6M	CO2	L1
	(b)	Compare the additive manufacturing process with subtractive manufacturing process with suitable examples.	6M	CO2	L2
		(OR)			
4.	(a)	Illustrate the basic procedure of additive manufacturing with an example.	6M	CO2	L2
	(b)	Define the term Hybrid manufacturing? Why it is necessary in current manufacturing industry.	6M	CO2	L1
		UNIT – III			
5.	(a)	Explain the different mechanisms (Machines and Technologies) involved in Powder Bed Fusion Processes.	6M	CO3	L2
	(b)	Discuss the Process Parameters and Modeling in Powder Bed Fusion Processes.	6M	CO3	L2
		(OR)			
6.	(a)	Enumerate the different post processing and surface treatment methods involved in Powder Bed Fusion Processes.	6M	CO3	L2
	(b)	Explain working principle of Selective laser sintering concept with a neat diagram.	6M	CO3	L2
		UNIT – IV			
7.	(a)	Discuss Materials and Reaction Rates in Vat Photo polymerization process.	6M	CO4	L2
	(b)	Discuss various scan patterns in Vat Photo polymerization process.	6M	CO4	L2
		(OR)			
8.	(a)	Explain Laser Scan Vat Photo polymerization.	6M	CO4	L2
	(b)	Explain various stages in fused deposition modeling.	6M	CO4	L2
		UNIT-V			
9.	(a)	Illustrate the process of Rapid prototyping with advantages and limitations.	6M	CO5	L2
	(b)	Elaborate the steps involved while creating STL Files from a CAD System?	6M	CO5	L2
		(OR)			
10.	(a)	Explain various influential factors in Rapid Manufacturing Process Optimization.	6M	CO5	L2
	(b)	Enumerate the important features in CURA software.	6M	CO5	L2

Q.P. Code: 2005103

SET - 1

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

B. Tech. 1 Semester (R20UG) Regular & Supple. Examinations of February – 2023

SUB: C – Programming & Data Structures (EEE, ME, CSE)

Time: 3 Hours **Max. Marks: 60**

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

			M	CO	BL
		UNIT - I			
1.	(a)	Explain input and output statement with examples.	6M	CO1	L2
	(b)	Write a C program to find whether the given number is strong or not.	6M	CO1	L1
		(OR)			
2.	(a)	Differentiate between while and do-while with an example.	6M	CO1	L4
	(b)	Write short notes on basic data types that the C language supports	6M	CO1	L1
		UNIT – II			
3.	(a)	Write a short note on Storage classes.	6M	CO2	L1
	(b)	Write a program to find whether the given string is palindrome or not	6M	CO2	L1
		(OR)			
4.	(a)	Write a program to concatenate one string to another string without using library function	6M	CO2	L1
	(b)	What is an array? How a single dimension and two dimension arrays are declared and initialized?	6M	CO2	L1
		UNIT – III			
5.	(a)	Explain array within a structure with an example	6M	CO3	L2
	(b)	Define a structure by name DoB consisting of three variable members dd, mm and yy of type integer. Develop a C program that would read values to the individual member and display the date in mm/dd/yy form.	6M	CO3	L1
		(OR)			
6.	(a)	Write a C program to demonstrate pointer to pointer	6M	CO3	L1
	(b)	Write a c program to swap two numbers using pointers	6M	CO3	L1
		UNIT – IV			
7.	(a)	Define Stack? Implement Stack operations Using C program?	6M	CO4	L1
	(b)	Explain about Linear Search with an example.	6M	CO4	L2
		(OR)			
8.	(a)	Write a short note on Applications of stack.	6M	CO4	L1
	(b)	Write a program to perform insertion sort.	6M	CO4	L1
		UNIT-V			
9.	(a)	Differentiate between Single and Double Linked list? Give an example.	6M	CO5	L4
	(b)	Write a C Program to implement Single Linked list.	6M	CO5	L1
		(OR)			
10.	(a)	Discuss in details about Circular Linked Lists.	6M	CO5	L6
	(b)	Explain about Binary Tree with an example.	6M	CO5	L2