



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B. Reddy Nagar :: Mylavaram-521 230 :: NTR Dist. :: A.P
Approved by AICTE, New Delhi. Affiliated to JNTUK, Kakinada

B.Tech. (I Semester) (R23) Semester End Examinations (Supplementary) – July 2026

TIME TABLE

R23

Time : 10.00 AM to 01.00 PM

A.Y. : 2025-26

Branch	13-07-2026 (Monday)	14-07-2026 (Tuesday)	15-07-2026 (Wednesday)	16-07-2026 (Thursday)	17-07-2026 (Friday)
AI & DS	23FE01 - Communicative English	23CS01 - Introduction to Programming	23FE03 - Linear Algebra and Calculus	23FE02 - Chemistry	23CM01 - Basic Civil and Mechanical Engineering
ASE	23FE01 - Communicative English	23ME01- Engineering Graphics	23FE03 - Linear Algebra and Calculus	23FE04 - Engineering Physics	23CM01 - Basic Civil and Mechanical Engineering
CE	23FE01 - Communicative English	23ME01- Engineering Graphics	23FE03 - Linear Algebra and Calculus	23FE04 - Engineering Physics	23CM01 - Basic Civil and Mechanical Engineering
CSE	23FE01 - Communicative English	23CS01 - Introduction to Programming	23FE03 - Linear Algebra and Calculus	23FE02 - Chemistry	23CM01 - Basic Civil and Mechanical Engineering
CSE (AI & ML)	23FE01 - Communicative English	23CS01 - Introduction to Programming	23FE03 - Linear Algebra and Calculus	23FE02 - Chemistry	23CM01 - Basic Civil and Mechanical Engineering
ECE	23FE01 - Communicative English	23ME01- Engineering Graphics	23FE03 - Linear Algebra and Calculus	23FE04 - Engineering Physics	23EE01 - Basic Electrical and Electronics Engineering
EEE	23FE01 - Communicative English	23ME01-Engineering Graphics	23FE03 - Linear Algebra and Calculus	23FE04 - Engineering Physics	23EE01 - Basic Electrical and Electronics Engineering
IT	23FE01 - Communicative English	23CS01 - Introduction to Programming	23FE03 - Linear Algebra and Calculus	23FE02 - Chemistry	23CM01 - Basic Civil and Mechanical Engineering
ME	23FE01 - Communicative English	23ME01 - Engineering Graphics	23FE03 - Linear Algebra and Calculus	23FE04 - Engineering Physics	23CM01 - Basic Civil and Mechanical Engineering

Note: Any omissions or clashes in the time table may please be informed to the Controller of Examinations immediately.

Date: 27 JUN 2026

CONTROLLER OF EXAMINATIONS

PRINCIPAL

Copy to: 1. Vice-Principal, Deans & HoDs
3. Canteen, PD, Security & Hostels

2. T&P cell, Transport in-charge & Librarian
4. Coordinator-Disciplinary 5. Notice Boards

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B.Reddy Nagar :: Mylavaram – 521 230 :: NTR Dist. :: A.P.

B.Tech. (I Semester) Regular/Supplementary Examinations

23FE01-COMMUNICATIVE ENGLISH

(Common to All)

10/100/13/1/2

Time : 3 hours

Max. Marks : 70

Q.No	Compulsory Question	Marks	CO	BL
1(a)	What are the two possessions that Youngs were proud of?	2M	CO1	L1
(b)	Differentiate the Skimming and Scanning with examples.	2M	CO1	L1
(c)	Summarize the types of water bodies and plant life that are talked about in the poem 'The Brook'.	2M	CO2	L2
(d)	Fill in the blanks with correct homophone. (i) If you park here, the police will ____ your car away. (tow/toe) (ii) The lioness picked up the ____ of her prey. (cent/scent)	2M	CO2	L2
(e)	Describe Musk's early years and how it inspired his interest in business and technology.	2M	CO3	L2
(f)	Write two compound words for each of each of the following. (i) Noun: ____ (ii) Preposition: ____	2M	CO3	L2
(g)	What instincts and tendencies did Harvey think would be difficult to change?	2M	CO4	L1
(h)	Fill in the blanks with appropriate reporting verb. (i) Darwin ____ a revolutionary new theory in 1859. (revealed/proposed) (ii) Rizwan ____ the previous interpretations of the film. (criticizes/comments)	2M	CO4	L2
(i)	Illustrate how intrapersonal communication helps us overcome challenges in life.	2M	CO5	L2
(j)	Write any four general technical words.	2M	CO5	L2
Q.No	All questions carry equal marks	Marks	CO	BL
2(a)	How do Jim's and Della's actions symbolize the strength of their love for each other?	5M	CO1	L2
(b)	Write the correct (Wh) questions to ask about the word/phrase which is underlined in each sentence. (i) I am reading <u>Malgudi Days</u> right now (ii) <u>Bus number 28</u> goes to Mangalagiri. (iii) <u>The students</u> are on the cricket field. (iv) They are from <u>Mumbai</u> . (v) They went to <u>a party</u> .	5M	CO1	L3
(OR)				
3(a)	Describe the financial situation of the couple Jim and Della in the story.	5M	CO1	L2
(b)	Rewrite the following sentences with proper punctuation marks wherever necessary. (i) When are you going to pay me back. (ii) yes i would like to apply for that job. (iii) mary keeps four dogs and two cats. (iv) ram shyam and raju are good friends. (v) the child said "I am hungry now".	5M	CO1	L3
4(a)	Infer the meaning of the lines 'For men may come and men may go,/ But I go on forever' in your own words.	5M	CO2	L2
(b)	Identify the appropriate prepositions in the following sentences. (i) He lives ____ 19 Tower Road. (up/for) (ii) Ram will divide the sweets ____ all the children. (between/among) (iii) I will arrive ____ six o'clock. (in/at) (iv) The dog is grateful ____ its owner. (to/for) (v) My brother's anniversary is ____ 5th November. (on/in) (vi) The boy ____ the store is quite young. (at/on) (v) Mahatma Gandhi was born ____ 2nd October. (on/in) (vi) Many foods ____ milk contain calcium. (beside/besides) (vii) The dog jumped ____ the sofa. (on/in) (viii) We played a joke ____ him. (on/at)	5M	CO2	L3
(OR)				

5(a)	Describe the landscape, flowers, plants and colours that the poet employs in the poem The Brook.	5M	CO2	L2
(b)	Write a paragraph in about 70-100 words on the topic Pets: do we need them?	5M	CO2	L3
6(a)	How have Tesla and Hyperloop radically revolutionized transportation?	5M	CO3	L2
(b)	Rewrite the following sentences with the correct forms of the verbs. (i) How have you been ____ (do)? (ii) I have ____ (read) many books in the last one year. (iii) Raman ____ (live) in Chennai 10 years ago. (iv) Keep ____ (move) in life till you reach your goal. (v) Rajini ____ (be) a software engineer.	5M	CO3	L3
(OR)				
7(a)	Illustrate how Musk proved to be a visionary leader of cutting-edge technology.	5M	CO3	L2
(b)	Identify the suitable verb that agrees with the subject of each sentence. (i) The team (has/have) been working on this project for months. (ii) The idea of traveling to distant lands (excites/excite) her. (iii) Nobody (is/are) allowed to drive unless they are eighteen. (iv) Each of the students (has/have) their own unique talents. (v) The collection of rare coins (was/were) stolen from the museum. (vi) The news of her promotion (was/were) unexpected. (vii) The number of applicants (has/have) increased significantly. (viii) The committee members (disagree/disagrees) on the proposal. (ix) The box of chocolates (has/have) been eaten. (x) Rs.10,000 a month (is/are) a good salary for a beginner.	5M	CO3	L3
8(a)	Summarize the way that the children play with their non-violent toys in the story The Toys of Peace .	5M	CO4	L2
(b)	Rewrite the following sentences from Active to Passive Voice. (i) The dog chased the cat (ii) I have written a letter to him (iii) The peon is ringing the bell (iv) Ram played hockey (v) Miss Mary teaches us English.	5M	CO4	L3
(OR)				
9(a)	Justify if Harvey and Eleanor Bope's experiment failed.	5M	CO4	L2
(b)	Write an official letter to the Principal of your college requesting him/her to allow your class to go on a picnic.	5M	CO4	L3
10(a)	Relate how intrapersonal communication helps improve everyday life.	5M	CO5	L2
(b)	Read the passage below and answer the questions that follow Kalam focused greatly on mathematics and then after he grew up, he studied physics and aerospace engineering in Madras Institute of Technology, from where he passed out in the year 1955. When Kalam was in the third year of his graduation, he was given the assignment to build an aircraft with a few other selected students. In spite of the teacher pressuring him with a hard-core deadline, he completed the project in time and impressed everyone with his creativity. This zeal later drove him to become a fighter pilot; however, he ranked 9th in IAF and there were only 8 positions available at that time. Nevertheless, Kalam was a multi-talented man. He went on to become a scientist, an author, an engineer, a professor, and later, a politician. (i) What assignment was given to Kalam in his third year of graduation? (ii) What was Kalam's great focus on? (iii) How many positions were available in IAF? (iv) What did Kalam become finally? (v) What is the word in the passage that means same as enthusiasm?	5M	CO5	L3
(OR)				
11(a)	What is intrapersonal communication and how does it relate to self-awareness?	5M	CO5	L2
(b)	Rewrite the following incorrect sentences/phrases. (i) Let us discuss about tomorrow's programme (ii) She said me that she liked maths (iii) Your's sincerely (iv) I have been working in this department since four years (v) I have seen my friend yesterday.	5M	CO5	L3

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B.Tech. (I Semester) ~~Regular~~/Supplementary Examinations**23CS01-INTRODUCTION TO PROGRAMMING**

(AI&DS,CSE,CSE(AI&ML) and IT)

Time : 3 hours

Max. Marks : 70

Q.No	Compulsory Question	Marks	CO	BL
1(a)	List the characteristics of a good algorithm.	2M	CO1	L1
(b)	What is the output for the below program? <pre>int main() { char num = 127; num = num + 1; printf("%d", num); return 0; }</pre>	2M	CO5	L3
(c)	What is the difference between selection and iteration control structures?	2M	CO2	L2
(d)	What is the output for the below program? <pre>#include<stdio.h> #include<string.h> int main() { int n=0; if(n++) printf("Zero"); if(n) printf("TRUE"); if(n==0) printf("IT Wont Execute"); return 0; }</pre>	2M	CO5	L3
(e)	What is meant by contiguous memory allocation?	2M	CO3	L1
(f)	State the formula to calculate address of an element in a 1-D array with an example.	2M	CO3	L3
(g)	What happens when a pointer is incremented? Illustrate with an example.	2M	CO4	L3
(h)	How is a structure different from an array?	2M	CO4	L2
(i)	Differentiate between actual and formal parameters.	2M	CO3	L2
(j)	What is the purpose of fopen() and fclose() functions?	2M	CO5	L1
Q.No	All questions carry equal marks	Marks	CO	BL
2(a)	Explain the process of compilation and execution of a program with a neat diagram.	5M	CO1	L2
(b)	Compare top-down and bottom-up approaches to problem solving with suitable example.	5M	CO3	L4
(OR)				
3(a)	Write an algorithm and flowchart for a unit converter to convert Celsius to Fahrenheit.	5M	CO2	L3
(b)	Explain type conversion and type casting with suitable examples.	5M	CO1	L2
4(a)	Compare if-else and switch-case statements with suitable examples.	5M	CO2	L4
(b)	Develop a C program to display a pyramid of numbers using nested loops.	5M	CO3	L3
(OR)				
5(a)	Differentiate between entry-controlled and exit-controlled loops with suitable examples.	5M	CO2	L2
(b)	Write a C program to exit a loop when a negative number is entered using break statement.	5M	CO3	L3
6(a)	Write a C program to calculate sum and average of the given array elements.	5M	CO3	L3
(b)	Describe any five string handling functions along with their syntax.	5M	CO4	L2
(OR)				
7(a)	Write a C program to find the transpose of a matrix using two-dimensional arrays.	5M	CO3	L3
(b)	Develop a C program to find the frequency of each character in a string.	5M	CO3	L3
8(a)	Write a C program using pointers to access and display array elements.	5M	CO3	L3
(b)	Write a C program using an array of structures to store student information.	5M	CO3	L3
(OR)				
9(a)	Show how the address operator and dereferencing operator works using a neat diagram.	5M	CO4	L3
(b)	Analyze the importance of structures in real-world programming applications.	5M	CO4	L3
10(a)	Explain different types of functions based on arguments and return values with suitable examples.	5M	CO4	L2
(b)	Discuss the importance of functions like feof() and ferror() with examples.	5M	CO5	L3
(OR)				
11(a)	Write a C program to pass pointer as parameter to a function and explain its execution.	5M	CO5	L3
(b)	Explain various file opening modes in C and provide suitable examples.	5M	CO5	L3

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B.Tech. (I Semester) **Regular**/Supplementary Examinations**23ME01–ENGINEERING GRAPHICS**

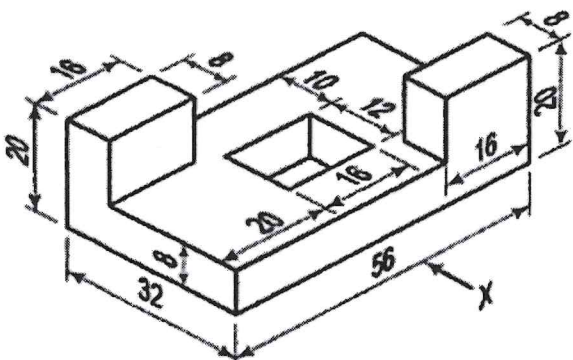
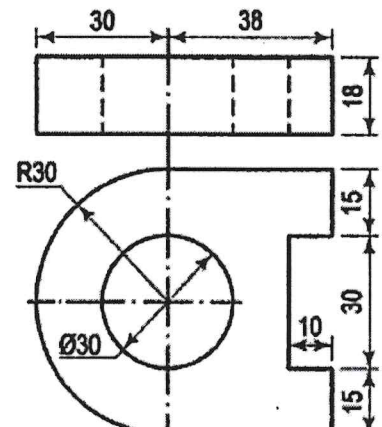
(ASE,CE,ECE,EEE&ME)

Time : 3 hours

Max. Marks : 70

Q.No	All questions carry equal marks	Marks	CO	BL
1(a)	Construct an ellipse when the distance of the focus from the directrix is equal to 45 mm and eccentricity is $1/2$. Draw tangent and normal at a point 60 mm from the directrix.	7 M	CO1	L3
(b)	Draw the projections of the following points: (i) A point A is on HP and VP (ii) A point B is on VP and vertically 40 mm above A, (iii) A point C is on VP, 40 mm from B, the line joining B and C is parallel to HP. (iv) A point D is on HP and VP and 40 mm below point C. Draw the projections (FV, TV) of the points A, B, C and D.	7 M	CO1	L2
(OR)				
2(a)	Draw an involute of a circle of 40 mm diameter. Draw a normal tangent to it at a point 75 mm away from the circle's centre.	7 M	CO1	L2
(b)	Two switches, E and F, are on the wall and 3m and 5m from the ground level. The distance between the switches, measuring parallel to the floor is 4m. (i) Draw all three projections (FV, TV, and SV) of two switches. (ii) Draw the projections of the lines joining E and F.	7 M	CO1	L3
3.	The projectors of the ends of line AB are 50 mm apart. The end 'A' is 20 mm above the H.P. and 30 mm in front of the V.P. The end 'B' is 10 mm below the H.P. and 40 mm behind the V.P. Determine the true length and its inclinations with two planes.	14 M	CO2	L3
(OR)				
4(a)	The front view of a line, inclined at 30° to the V.P is 65 mm long. Draw the projections of the line, when it is parallel to and 40 mm above the H.P., its one end being 30 mm in front of the V.P.	7 M	CO2	L2
(b)	A rectangular plane 30 mm x 60 mm in size rests on HP on one of its shorter edges, with its surface inclined at 60° to HP and perpendicular to VP. Draw its projections.	7 M	CO2	L3
5(a)	Draw the projections of a square prism with a 30 mm side and a 60mm long resting on its base on HP, with one of the base edges perpendicular to the VP.	7 M	CO3	L3
(b)	A cone of base 40 mm diameter and axis 60 mm long lies on a point on its circumference on H.P. with its axis inclined 45° H.P. Draw the projections of the cone.	7 M	CO3	L3
(OR)				
6(a)	Draw the projections of a regular pentagonal pyramid with a base of 30 mm edge and an axis of 60 mm long, with its base on H.P. and an edge of the base parallel to the V.P. and nearer to the observer.	7 M	CO3	L3
(b)	A tetrahedron of an edge 40 mm long stands on its base on the ground with one of its base edges perpendicular to V.P. Draw the projections of the solid.	7 M	CO3	L2

23ME01-ENGINEERING GRAPHICS

7.	A cone, base 45 mm diameter and axis 65 mm long is resting on the H.P. on its base. It is cut by a section plane, perpendicular to both the H.P. and the V.P. and 6 mm away from the axis. Draw its front view, top view and sectional side view.	14 M	CO4	L3
(OR)				
8.	A triangular prism, base 30 mm side & axis 50 mm long is lying on the ground on its base, with one of its base edges perpendicular to the VP. It is cut by a section plane, inclined at 30° to HP and perpendicular to VP, passing through the axis at a distance of 20 mm from its top end. Draw full development of the cut solid.	14 M	CO4	L3
9.	Draw (i) Front view (ii) Top view and (iii) one of its side views of the object shown below. All dimensions are in mm. 	14 M	CO5	L3
(OR)				
10.	Orthographic projections of the object are shown in the following figures. Draw the isometric view of the object. 	14 M	CO5	L3

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B.Tech. (I Semester) Regular/Supplementary Examinations

23FE03-LINEAR ALGEBRA AND CALCULUS

(Common to All)

Time : 3 hours

Max. Marks : 70

Q.No	Compulsory Question	Marks	CO	BL
1(a)	State any two properties of rank of a matrix.	2 M	CO1	L1
(b)	Find the rank of the matrix $\begin{bmatrix} 1 & 1 & 0 \\ 0 & 0 & 1 \\ 2 & 2 & 2 \end{bmatrix}$	2 M	CO1	L1
(c)	Write Matrix form of the quadratic form $x_1^2 + 2x_2^2 + 3x_3^2 + 2x_1x_2 + 2x_1x_3 - 4x_3x_2$	2 M	CO2	L2
(d)	Find the sum and product of the eigen values of the matrix $A = \begin{bmatrix} 1 & -1 & 2 \\ 3 & 2 & 1 \\ 2 & -3 & 1 \end{bmatrix}$	2 M	CO2	L2
(e)	Write the Taylor series expansion of $f(x)$.	2 M	CO3	L1
(f)	State Lagrange's mean value theorem.	2 M	CO3	L2
(g)	If $u = \frac{y}{x}, v = xy$, then $J\left(\frac{u,v}{x,y}\right) = ?$	2 M	CO4	L2
(h)	Prove that $\frac{\partial^2 u}{\partial x \partial y} = \frac{\partial^2 u}{\partial y \partial x}$, if $u = xy^2 + yx$	2 M	CO4	L2
(i)	Evaluate $\int_0^1 \int_0^2 x dx dy$	2 M	CO5	L1
(j)	Evaluate $\int_0^1 \int_0^1 \int_0^1 dx dy dz$	2 M	CO5	L1
Q.No	All questions carry equal marks	Marks	CO	BL
2(a)	Reduce the following matrix into its Echelon form and hence find its Rank $\begin{bmatrix} 2 & 1 & 3 & 5 \\ 4 & 2 & 1 & 3 \\ 8 & 4 & 7 & 13 \\ 8 & 4 & -3 & -1 \end{bmatrix}$	5 M	CO1	L3
(b)	Solve by Jacobi's iteration method, the equations $2x + y + 6z = 9, 8x + 3y + 2z = 13, x + 5y + z = 7$.	5 M	CO1	L3
(OR)				
3(a)	Apply Gauss elimination method so solve the equations $x + y + z = 9, 2x - 3y + 4z = 13, 3x + 4y + 5z = 40$	5 M	CO1	L3
(b)	Solve the homogeneous system of equations $x + y - 2z + 3w = 0, x - 2y + z - w = 0, 4x + y - 5z + 8w = 0, 5x - 7y + 2z - w = 0$.	5 M	CO1	L3
4.	Verify Cayley-Hamilton theorem and apply it to evaluate A^{-1} and A^4 where $A = \begin{bmatrix} 2 & -1 & -1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$	10 M	CO2	L3
(OR)				
5.	Reduce the quadratic form to $3x^2 + 5y^2 + 3z^2 - 2yz + 2zx - 2xy$ to canonical form and also find Nature, index, rank and signature of the quadratic form.	10M	CO2	L3

23FE03-LINEAR ALGEBRA AND CALCULUS

6(a)	Verify Rolle's theorem for the function $f(x) = (x+2)^3(x-3)^4$ in $[-2,3]$.	5M	CO3	L3
(b)	Verify Cauchy's mean value theorem for the functions $\log_e x$ and $\frac{1}{x}$.	5M	CO3	L3
(OR)				
7(a)	Obtain the Taylor's series expansion for $f(x) = \sin 2x$ in powers of $x - \frac{\pi}{4}$.	5M	CO3	L3
(b)	Verify Lagrange's mean value theorem for $f(x) = x^3 - x^2 - 5x + 3$ in $[0,4]$.	5M	CO3	L3
8(a)	Find the shortest distance from the origin to the plane $z^2 = xy + 1$.	5 M	CO4	L3
(b)	If $u = \sin^{-1} \frac{x+y}{\sqrt{x}+\sqrt{y}}$, show that $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} = \frac{1}{2} \tan u$.	5 M	CO4	L3
(OR)				
9.	If $x = r \cos \theta, y = r \sin \theta$, evaluate $\frac{\partial(x,y)}{\partial(r,\theta)}$ and $\frac{\partial(r,\theta)}{\partial(x,y)}$. Also show that $\frac{\partial(x,y)}{\partial(r,\theta)} \times \frac{\partial(r,\theta)}{\partial(x,y)} = 1$	10 M	CO4	L3
10(a)	Evaluate $\int_0^{\log 2} \int_0^x \int_0^{x+y} e^{x+y+z} dz dy dx$	5M	CO5	L3
(b)	Change the order of integration and hence evaluate $\int_0^a \int_{\frac{x}{a}}^{\sqrt{\frac{x}{a}}} (x^2 + y^2) dy dx$	5M	CO5	L3
(OR)				
11(a)	Evaluate $\int_0^a \int_0^{\sqrt{a^2-x^2}} y \sqrt{x^2+y^2} dx dy$ changing to polar coordinates.	5M	CO5	L3
(b)	Evaluate $\iiint_V (x^2 + y^2 + z^2) dx dy dz$ taken over the volume enclosed by the sphere $x^2 + y^2 + z^2 = 1$, by transforming in to spherical coordinates.	5M	CO5	L3

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B.Tech. (I Semester) ~~Regular~~/Supplementary Examinations**23FE02-CHEMISTRY**

(AI&DS,CSE,CSE(AI&ML) and IT)

Time : 3 hours

Max. Marks : 70

Q.No	Compulsory Question	Marks	CO	BL
1(a)	Calculate the bond order and predict the magnetic character of N ₂ .	2M	CO1	L1
(b)	List out any two differences between bonding and anti-bonding molecular orbitals.	2M	CO1	L1
(c)	What are super capacitors? Write the classification of super capacitors.	2M	CO2	L1
(d)	Define critical magnetic field.	2M	CO2	L1
(e)	Calculate the standard cell potential of a cell formed by the combination of SHE as a cathode and lithium electrode ($E^\circ_{Li^+/Li} = -3.05V$) as an anode.	2M	CO3	L2
(f)	Write any two applications of conductometric titrations.	2M	CO3	L1
(g)	What are thermoplastics? Mention any two examples of thermoplastics.	2M	CO4	L1
(h)	Write the classification of polymers based on the conductance.	2M	CO4	L1
(i)	What is auxochrome? Mention any two examples of auxochromic functional groups.	2M	CO5	L1
(j)	Mention any two applications of high pressure liquid chromatography.	2M	CO5	L1
(OR)				
2(a)	Outline the postulates of molecular orbital theory (MOT).	5M	CO1	L2
(b)	Derive the energy of a particle present in a one-dimensional box using the Schrodinger wave equation.	5M	CO1	L3
(OR)				
3(a)	Apply molecular orbital theory to nitrogen monoxide (NO) molecule.	5M	CO1	L2
(b)	Explain the $\pi(\pi)$ -molecular orbital energy level diagrams of benzene.	5M	CO1	L2
4(a)	Explain the conduction process of p-doped semiconductors.	5M	CO2	L2
(b)	Differentiate type-I and type-II superconductors.	5M	CO2	L2
(OR)				
5(a)	Write the classification of nanomaterials based on its dimension by giving suitable examples.	5M	CO2	L2
(b)	Summarize the properties and applications of supercapacitors.	5M	CO2	L2
6(a)	Explain the construction and working of Li-ion battery with a neat sketch.	5M	CO3	L2
(b)	Illustrate the conductometric titration of weak acid <i>versus</i> strong base.	5M	CO3	L2
(OR)				
7(a)	Describe the construction and working of Zinc-air battery	5M	CO3	L2
(b)	Calculate the equilibrium constant of the following the reaction. $2Ag^+ + Zn \leftrightarrow 2Ag + Zn^{2+}$; The standard cell potential of the cell is 1.56 V.	5M	CO3	L3
8(a)	How is nylon-6,6 prepared? Write any two properties and four applications of nylon-6,6.	5M	CO4	L2
(b)	Outline any five differences between addition polymerization and condensation polymerization methods.	5M	CO4	L2
(OR)				
9(a)	Explain the preparation, properties and applications of any one of the synthetic rubber.	5M	CO4	L2
(b)	Discuss the preparation of polylactic acid (PLA)? Write any two properties and four applications of polylactic acid (PLA).	5M	CO4	L2
10(a)	Discuss the absorption and intensity shifts observed in UV-Visible spectroscopy.	5M	CO5	L2
(b)	Illustrate the instrumentation of IR spectroscopy with a neat diagram.	5M	CO5	L2
(OR)				
11(a)	Describe the instrumentation of HPLC with a neat sketch.	5M	CO5	L2
(b)	List out applications of UV-Visible spectroscopy with suitable examples.	5M	CO5	L2

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B.Tech. (I Semester) Regular/Supplementary Examinations

23FE04-ENGINEERING PHYSICS

(ASE,CE,ECE,EEE & ME)

Time : 3 hours

Max. Marks : 70

Q.No	Compulsory Question	Marks	CO	BL
1(a)	Write difference between interference and diffraction.	2M	CO1	L1
(b)	Define double refraction and give an example for double refracting crystals.	2M	CO1	L1
(c)	Distinguish primitive cell and non -primitive unit cell.	2M	CO2	L1
(d)	Draw (100) and (111) planes.	2M	CO2	L3
(e)	Mention two applications of dielectric materials.	2M	CO3	L1
(f)	Give two examples of Ferro magnetic materials.	2M	CO3	L1
(g)	State de Broglie's hypothesis.	2M	CO4	L1
(h)	State the normalization and orthogonal conditions of wave functions.	2M	CO4	L1
(i)	Define Conduction band and valence band.	2M	CO5	L1
(j)	Define extrinsic semiconductor. Why is doping required?	2M	CO5	L1
All questions carry equal marks				
Q.No		Marks	CO	BL
2(a)	Describe the formation of Newton's Rings and derive an expression for the wavelength of monochromatic light.	5M	CO1	L2
(b)	Discuss the Fraunhofer diffraction due to N slits.	5M	CO1	L2
(OR)				
3(a)	State Brewster's law and prove that if angle of incidence corresponds to the Brewster's angle, the angle between the reflected and refracted beams is 90°.	5M	CO1	L3
(b)	Describe Half-wave and Quarter-wave plates with suitable diagrams and derive equations for their thicknesses.	5M	CO1	L2
4.	Show that FCC is more closely packed than BCC & SC.	10M	CO2	L3
(OR)				
5(a)	What are Miller indices? How they are obtained. Discuss with an example.	5M	CO2	L2
(b)	Calculate the value of d-spacing for (100) and (111) planes in a rock salt crystal of $a=1.732 \text{ \AA}$.	5M	CO2	L2
6(a)	Derive the Clausius-Mossotti relation.	5M	CO3	L1
(b)	The polarizability of Neon gas is $0.35 \times 10^{-40} \text{ Fm}^2$ If the gas contains $2.7 \times 10^{25} \text{ atoms/m}^3$ at 0°C and 1 atmospheric pressure. Estimate its relative dielectric constant.	5M	CO3	L3
(OR)				
7(a)	Explain the Origin of Magnetic moment and give an expression for Bohr Magneton.	5M	CO3	L1
(b)	List the applications of magnetic materials.	5M	CO3	L1
8.	Derive Schrodinger's wave equation $\nabla^2\psi + \frac{2m}{\hbar^2}(E - V)\psi = 0$ for a free particle.	10M	CO4	L3
(OR)				
9(a)	Explain the Fermi-Dirac distribution function of electrons and give the effect of temperature on Fermi function with graphically.	5M	CO4	L2
(b)	Find the temperature at which there is 1% probability that a state with energy 0.5 eV is above Fermi energy.	5M	CO4	L3
10(a)	Discuss how energy bands are formed in solids.	5M	CO5	L2
(b)	Draw the energy level diagrams indicating Fermi level (E_F) for intrinsic, N-type and P-type semiconductors at 0 K.	5M	CO5	L2
(OR)				
11(a)	Distinguish P-type and N-type semiconductors.	5M	CO5	L2
(b)	Deduce the Einstein's relation.	5M	CO5	L3

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING(AUTONOMOUS)

L.B. Reddy Nagar :: Mylavaram – 521 230 :: NTR Dist.: A.P.

B.Tech. (I Semester) Regular/Supplementary Examinations
23CM01-BASIC CIVIL AND MECHANICAL ENGINEERING
 (AI&DS, ASE, CE, CSE, CSE(AI&ML), IT and ME)

17/7/26

Time : 3 hours

Max. Marks: 70

Part - A

Q.No	Compulsory Question	Marks	CO	BL
1(a)	What is Setback?	1M	CO1	L1
(b)	What are the uses of Surveying?	1M	CO2	L1
(c)	Write the components of a flexible pavement.	1M	CO3	L1
(d)	Name any one type of dam.	1M	CO3	L1
(e)	Write the full form of OPC and PPC.	1M	CO1	L1
Q.No	All questions carry equal marks	Marks	CO	BL
2(a)	Discuss the scope of following branches of Civil Engineering: (i) Water Resources Engineering (ii) Transportation Engineering	5M	CO1	L1
(b)	List out various uses of bricks in construction.	5M	CO2	L2
(OR)				
3(a)	Discuss the advantages of Steel over other materials.	5M	CO1	L2
(b)	Discuss briefly about prefabricated structures.	5M	CO1	L2
4.	The angles observed with a surveyor compass in traversing the lines AB, BC, CD, DE and EF are as given below. Compute the included angles and show them in a neat sketch.	10M	CO2	L3
(OR)				
5(a)	The following staff readings were observed successively with a level. The instrument has been shifted after the second and fifth reading: 0.675, 1.230, 0.750, 2.565, 2.225, 1.935, 1.835, 3.220. The first reading was with staff held on benchmark of RL 100.000 m. Enter the readings in a page of level book and calculate the RL of all points. Apply arithmetic checks. Use Rise and Fall method.	5M	CO2	L3
(b)	Discuss briefly the uses of Contour maps.	5M	CO2	L2
6(a)	Define Railway and list out the various components of Railways.	5M	CO3	L2
(b)	Differentiate between a port and a harbour.	5M	CO3	L1
(OR)				
7(a)	Outline the advantages and disadvantages of Roadways.	5M	CO3	L1
(b)	Discuss the concept of Rainwater harvesting and its significance.	5M	CO3	L2
Q.No	Compulsory Question	Marks	CO	BL
8(a)	State at least one application of ceramics.	1M	CO1	L1
(b)	Define Industry 4.0.	1M	CO2	L1
(c)	On which cycle does a CI engine operate?	1M	CO2	L2
(d)	What is the primary function of bevel gears?	1M	CO3	L1
(e)	Define a robot joint.	1M	CO4	L1
Q.No	All questions carry equal marks	Marks	CO	BL
9(a)	Discuss the role of mechanical engineering in the marine sector.	5M	CO1	L1
(b)	Differentiate ferrous and non-ferrous metals.	5M	CO1	L1
(OR)				
10(a)	Explain the importance of mechanical engineers in the industrial sector.	5M	CO1	L1
(b)	Discuss various types of composites.	5M	CO1	L2
11(a)	Classify the casting processes and illustrate sand casting with a neat sketch.	5M	CO2	L2
(b)	Elaborate the 3D printing with its applications.	5M	CO2	L3
(OR)				
12(a)	Illustrate the working principle of boiler with a neat sketch.	5M	CO2	L2
(b)	Explain the Otto cycle with P-V and T-S diagrams.	5M	CO2	L3
13.	Illustrate the working principle, advantages and disadvantages of steam power plant with a neat sketch.	10M	CO3	L2
(OR)				
14(a)	Mention the advantages and disadvantages of gear drives compared with other power transmission drives.	5M	CO3	L2
(b)	Discuss cylindrical robot configuration system with a neat sketch.	5M	CO4	L3

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B.Tech. (I Semester) Regular/Supplementary Examinations

23EE01-BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

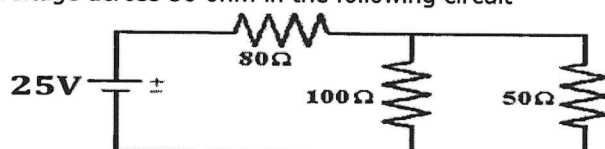
(ECE & EEE)

Time : 3 hours

Max. Marks: 70

Part - A

Q.No	Compulsory Question	Marks	CO	BL
1(a)	State Kirchhoff's current law.	1 M	CO1	L1
(b)	List the applications of electrical machines.	1 M	CO2	L1
(c)	List the examples of conventional energy resources.	1 M	CO3	L1
(d)	Define peak factor of the AC waveform.	1 M	CO1	L1
(e)	List the types of transformers.	1 M	CO2	L1
Q.No	All questions carry equal marks	Marks	CO	BL
2(a)	State Ohm's Law and list its applications.	5 M	CO1	L2
(b)	Determine the voltage across 50 ohm in the following circuit	5 M	CO1	L3



(OR)

3(a)	Derive the RMS value of the Sine waveform.	5 M	CO1	L3
(b)	Determine the following parameters of a current $i = 28.28 \sin 314t$. (i) Frequency (ii) Peak value (iii) Time period (iv) average value	5 M	CO1	L3
4.	Illustrate the constructional details of the DC machine with a neat sketch.	10 M	CO2	L2
(OR)				
5(a)	Distinguish between moving coil and moving iron instruments.	5M	CO2	L2
(b)	Using the principle of the Wheatstone bridge, explain how an unknown resistance is to be measured.	5M	CO2	L2
6(a)	Draw the layout and discuss the operation of wind power generation.	5M	CO3	L2
(b)	Distinguish between conventional and non-conventional energy resources.	5M	CO3	L2
(OR)				
7(a)	Distinguish between MCB and Fuse.	5M	CO3	L2
(b)	Discuss the various earthing methods to avoid the electric shock.	5M	CO3	L2

Part - B

Q.No	Compulsory Question	Marks	CO	BL
8(a)	List any two applications of Zener junction diode.	1 M	CO4	L1
(b)	What is an amplifier?	1 M	CO5	L1
(c)	Convert $(255)_{10}$ to binary.	1 M	CO6	L1
(d)	Define current gain β .	1 M	CO4	L1
(e)	Write the Boolean expression for XOR gate and its truth table.	1 M	CO5	L1
Q.No	All questions carry equal marks	Marks	CO	BL
9(a)	Explain the V-I characteristics of a PN junction diode in forward and reverse bias.	5 M	CO4	L2
(b)	Examine the CC configuration of BJT with input and output characteristics.	5 M	CO4	L2
(OR)				
10(a)	Explain the construction of a Bipolar Junction Transistor (BJT).	5 M	CO4	L2
(b)	In a transistor operating in CE configuration, base current is $40 \mu A$ and $\beta = 125$. Calculate: (i) Collector current (ii) Emitter current	5 M	CO4	L3
11(a)	Explain the working of a RC coupled CE amplifier with circuit diagram.	5 M	CO5	L2
(b)	In the bridge type circuit connected with power supply mains of 220V, 50Hz having turns ratio of 4:1, the diodes are assumed to be ideal. Find DC output voltage, output frequency and Rectifier efficiency with a load resistance 200Ω is connected.	5 M	CO5	L3
(OR)				
12(a)	Illustrate how an AC input is converted into a smooth DC output using rectification and filtering, and support your answer with a suitable circuit.	5 M	CO5	L2
(b)	Draw the circuit diagram of a common emitter amplifier and discuss its frequency response. Also explain the importance of frequency response of an amplifier design.	5 M	CO5	L2
13(a)	Draw and explain truth tables of NOT, OR, AND, NAND and NOR gates.	5 M	CO6	L2
(b)	Convert below Decimal to Binary, Octal and hexadecimal numbers equivalent (i) $(574.25)_{10}$ (ii) $(4275)_{10}$	5 M	CO6	L3
(OR)				
14(a)	Construct a Full adder and explain its working in detail.	5 M	CO6	L2
(b)	Convert the binary number 1101 into its equivalent Gray code and excess-3 codes.	5 M	CO6	L3
