CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

Examination	:	B.Tech I Sem Regular & Supplementary Examinations Jan-2025	
Course Name	:	Matrices and Calculus	
Course Code	:	A400001	
Branch	:	COMMON FOR ALL	
Date & Session	:	23-01-2025 AN	Duration: 3 hours Max. Marks: 60

(Note: Assume suitable data if necessary)

PART-A
Answer all TEN questions (Compulsory)
Each question carries ONE mark.   10x1=10M

1. Define Rank of matrix — 1 M

2. Define Unitary matrix — 1 M

3. Define Quadratic form, index, signature — 1 M

4. Define Model Matrix — 1 M

5. State Taylor's series — 1 M

6. Define Gamma Function — 1 M

7. If $f(x,y) = x^3 + y^3 - 3axy$ find first order, second order partial derivatives — 1 M

8. Define Jacobian transformation for two and three variables — 1 M

9. Evaluate $\int_0^2 \int_0^3 y\,dx\,dy$ — 1 M

10. Evaluate $\int_0^1 \int_0^2 \int_0^3 dx\,dy\,dz$ — 1 M

PART-B
Answer any FIVE questions. One question from each unit either A or B (Compulsory)
Each question carries TEN Marks.   5x10=50M

11. A. Find Rank of matrix of $A = \begin{bmatrix} 2 & -4 & 3 & 1 & 0 \\ 1 & -2 & -1 & -4 & 2 \\ 0 & 1 & -1 & 3 & 1 \\ 4 & -7 & 4 & -4 & 5 \end{bmatrix}$ by reducing to

   Normal form — 10M

OR

11. B. Discuss for what values of λ, μ the simultaneous equations $x + y + z = 6, x + 2y + 3z = 10, x + 2y + \lambda z = \mu$ have i)no solution (ii) a unique solution (iii) an infinite number of solutions. — 10M

(P.T.O.)

12. A. Reduction of quadratic form to canonical form by orthogonal transformation $x^2 + 2y^2 + 3z^2 + 2yz - 2zx + 2xy$ 10M

OR

12. B. Verify Cayley Hamilton theorem if $A = \begin{pmatrix} 7 & 2 & -2 \\ -6 & -1 & 2 \\ 6 & 2 & -1 \end{pmatrix}$ 10M

13. A. Find the Taylors series for the function $f(x) = \sin x$ about $x = \dfrac{\pi}{2}$ 10M

OR

13. B. Prove that $\beta(m,n) = \displaystyle\int_0^\infty \dfrac{x^{n-1}}{(1+x)^{m+n}} dx = \int_0^\infty \dfrac{x^{m-1}}{(1+x)^{m+n}} dx$ 10M

14. A. If $u = \dfrac{yz}{x}, v = \dfrac{zx}{y}, w = \dfrac{xy}{z}$ then find $J\left(\dfrac{u,v,w}{x,y,z}\right)$ and $J\left(\dfrac{x,y,z}{u,v,w}\right)$ 10M

OR

14. B. Find the minimum value of $f(x,y,z) = x^2 + y^2 + z^2$ given that $xyz = a^3$ 10M

15. A. Evaluate $\displaystyle\int_0^{4a} \int_{\frac{x^2}{4a}}^{2\sqrt{ax}} dy\,dx$ by change of order of integration 10M

OR

15. B. Evaluate $\int_{-1}^{1} \int_0^z \int_{x-z}^{x+z} (x+y+z)\,dx\,dy\,dz$ 10M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

Examination	:	B.Tech I Sem Regular & Supplementrary Examinations Jan-2025
Course Name	:	Applied Physics
Course Code	:	A400008
Branch	:	CV/ME/CSC/CSM/CSD/AIM
Date & Session	:	25-01-2025 AN　　　　Duration: 3 hours　　　　Max. Marks: 60

(Note: Assume suitable data if necessary)
PART-A
Answer all TEN questions
Each question carries ONE mark.　　　　　　　　**10x1=10M**

1.	Define a Blackbody	1 M
2.	State Bloch theorem	1 M
3.	What is a Semiconductor? Give two examples	1 M
4.	Draw the circuit symbol of LED	1 M
5.	What are the four characteristics of LASER?	1 M
6.	List out the Losses in Optical Fiber?	1 M
7.	List out any two applications of Magnetic field sensors.	1 M
8.	Name the types of Polarizations in dielectric Materials.	1 M
9.	Name any four synthesis techniques of Nano Materials.	1 M
10.	Identify any two Applications on Nano Materials?	1 M

PART-B
Answer any FIVE questions. One question from each unit either A or B (Compulsory)
Each question carries TEN Marks.　　　　　　　**5x10=50M**

11. A. State de-Broglie's hypothesis and deduce the Schrodinger's time independent wave equation?	10M

OR

11. B. Explain in detail about the behavior of an electron moving in a periodic potential by using Kronig - Penny Model?	10M
12. A. Outline the Phenomenon of Hall effect. Derive an Expression for Hall Coefficient of Semiconductor material	10M

OR

12. B. Discuss the Construction , Working, Characteristics and Applications of Solar cell	10M

(P.T.O.)

13. A. What are the Einstein's Coefficients? Deduce the relationship among the Coefficients — 10M

OR

13. B. a) Deduce the expressions for numerical aperture and acceptance angle of an optical fiber cable. — 6M

b) What is the numerical aperture of an optical fiber cable with clad index of 1.378 and a core index of 1.546 also find its acceptance angle. — 4M

14. A. a) Derive the expression for local field in a dielectric material. — 8M

b) Compare and contrast the Ferroelectric, Piezoelectric and Pyroelectric materials. — 2M

OR

14. B. a) What are ferromagnetic materials? Discuss the importance of hysteresis curve. — 8M

b) Magnetic Materials are used to synthesize Bubble Memory Devices. Justify? — 2M

15. A. Analyze the working Principle of the rechargeable ion batteries? — 10M

OR

15. B. Outline the construction and working Principle of X-Ray Diffraction (XRD) and summarize their limitations? — 10M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

Examination	:	B.Tech I Sem Regular & Supplementary Examinations Jan-2025
Course Name	:	Engineering Chemistry
Course Code	:	A400009
Branch	:	EEE/ECE/CSE/IT
Date & Session	:	25-01-2025 AN Duration: 3 hours Max. Marks: 60

(Note: Assume suitable data if necessary)

PART-A
Answer all TEN questions
Each question carries ONE mark.   10x1=10M

1.	What is Calomel?	1 M
2.	What is pilling-Bedworth rule?	1 M
3.	What are thermoplastic resins? Give one example.	1 M
4.	Define polymer. Give example.	1 M
5.	Define Higher Calorific Value.	1 M
6.	What is the composition of LPG?	1 M
7.	Mention the salts responsible for the temporary and permanent hardness.	1 M
8.	What is caustic embrittlement?	1 M
9.	What is the composition of Portland cement?	1 M
10.	Define cloud point.	1 M

PART-B
Answer any FIVE questions. One question from each unit either A or B (Compulsory)
Each question carries TEN Marks.   5x10=50M

11. A.	Derive Nernst equation and mention its applications.	5M
	Explain electrochemical corrosion mechanism by taking formation of rust as an example.	5M

OR

11. B.	Demonstrate the construction, working and applications of Lead-acid storage battery.	5M
	What is hot dipping? Explain galvanizing process.	5M
12. A.	Illustrate the synthesis, properties and applications of PVC.	5M
	Explain the preparation and applications of poly lactic acid.	5M

OR

12. B.	What is condensation polymerization? Explain the preparation, properties and engineering applications of bakelite.	10M

(P.T.O.)

13. A. Explain the classification of fuels. 3M

Discuss the proximate analysis of coal. Mention its significance. 7M

OR

13. B. What is cracking? Explain moving bed catalytic cracking method for the synthesis of petrol.

10M

14. A. Appraise the steps and principle involved in the determination of hardness of water by EDTA method. 7M

Distinguish between scales and sludges. 3M

OR

14. B. List out the specifications of potable water.

Making use of reverse osmosis principle, explain the desalination of brackish water. 3M

7M

15. A. Explain the setting and hardening stages of portland cement with relevant chemical reactions involved. 10M

OR

15. B. List out the applications of smart materials. 3M

Explain the mechanism of extreme pressure lubrication. 7M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

Examination	:	B.Tech I Sem Regular & Supplementary Examinations January-2025
Course Name	:	English for Skill Enhancement
Course Code	:	A400101
Branch	:	CE/ME/CSC/CSM/CSD/AIM
Date & Session	:	27-01-2025 AN Duration: 3 hours Max. Marks: 60

(Note: Assume suitable data if necessary)

PART-A
Answer all TEN questions
Each question carries ONE mark.   10x1=10M

1. Write the meaning of the given prefixes.   1 M
    a) homo-   b) pan-

2. Select the closest antonym of the word – amicable.   1 M
    a) surprising   b) unfriendly   c) negative

3. Spot the incorrectly spelt words and correct the spelling mistakes. 1 M
    My neice is very careful about hygiene.

4. Fill in the blanks using the correct spelling of the given words in brackets. 1 M
    A good _____ (calender) is _____ (indispensible) for efficient time management.

5. Fill in the blanks with words chosen from the options given in the bracket. 1 M
    His designs use a limited _____ of colours. (palate/palette/pallet)

6. Make sentences with the given set of words, distinguishing their meanings. 1 M
    Flaunt-flout

7. What is the full form of AWOL _____   1 M

8. Rewrite the sentence to avoid cliché.   1 M
    She had to toe the line to keep her job.

9. Fill in the blank with the right word.   1 M
    _____ reports provide an overview of the marketing efforts undertaken for a particular product.

10. What is collocation? Give one example.   1 M

PART-B
Answer any FIVE questions. One question from each unit either A or B (Compulsory)
Each question carries TEN Marks.   5x10=50M

11. A. Evaluate the statement "The refinements of usage in countries where English has a bazaar status are worthy a study."   10M

OR

11. B. Why reading is important? What are the strategies for effective reading?   10M

12. A. Summarize what happened during Sudha Murty's interview at TELCO.   10M

OR

(P.T.O.)

12. B. What is Noun-Pronoun agreement. Explain with rules and examples. 10M

13. A. Elaborate on any two issues that need to be tackled to improve online learning by referring to your own experience. 10M

OR

13. B. You are planning to organize students' get together on the campus. Construct a letter of requisition for the approval from your principal. 10M

14. A. Examine why art and literature is important in one's life according A P J Abdul Kalam 10M

OR

14. B. Summarize the role of SQ3R method in reading effectively. 10M

15. A. Choose a suitable format and prepare a report on the given situation.

The road near your house has been seeing an increase in traffic. Prepare a feasibility report to be submitted to the local corporation office, showing how the traffic may be diverted during peak hours to other roads. 10M

OR

15. B. Identify the author's point of view by answering the given questions.

Reading is a fundamental skill that plays a vital role in our lives. It's not just about deciphering words on a page but about the doors it opens, the knowledge it imparts, and the worlds it allows us to explore. Reading is an essential tool for learning, expanding our horizons, and fostering imagination. When we read, we acquire knowledge. Whether it's reading textbooks, newspapers, or online articles, we gain information that helps us understand the world. Books, in particular, are a treasure trove of knowledge. They contain the wisdom of generations, the discoveries of great minds, and the stories of diverse cultures. Reading books can educate us on history, science, literature, and countless other subjects. It's like having a mentor, guiding us through the complexities of life. Reading also broadens our horizons. It exposes us to different viewpoints, perspectives, and experiences. When we read about characters from various backgrounds or explore far-off lands through the pages of a novel, we step into their shoes and see the world from a different angle. This broadening of perspective fosters empathy and understanding, making us more tolerant and open-minded individuals. Furthermore, reading fuels our imagination. Whether it's a fantasy novel, a science fiction story, or a compelling mystery, books transport us to other worlds and challenge us to envision the unimaginable. Our minds become the canvas, and words paint the pictures. It's a magical experience that ignites creativity and inspiration. Moreover, reading is a skill that transcends academic boundaries. It's not just about scoring well on tests; it's about developing critical thinking, analytical skills, and the ability to communicate effectively. A person who reads regularly is likely to have a broader vocabulary, better writing skills, and an improved ability to express their thoughts and ideas. In our modern digital age, reading has taken on new forms. E-books and audiobooks have made it more accessible and convenient. With just a few clicks or taps, we can access a vast library of literature. However, there's something timeless and intimate about holding a physical book, flipping its pages, and smelling the scent of paper and ink. In conclusion, reading is not just a hobby; it's a cornerstone of education, personal growth, and cultural enrichment. It empowers us with knowledge, broadens our perspectives, ignites our imagination, and equips us with essential skills. Whether we're reading for pleasure, information, or self-improvement, reading is a journey that enriches our lives and shapes us into more informed, empathetic, and creative individuals.

(P.T.O.)

1. What are some of the benefits of reading mentioned in the passage?
10M

A) Acquiring knowledge

B) Physical exercise

C) Developing cooking skills

D) Enhancing video game proficiency

2. How does reading broaden our horizons and foster empathy?

A) By encouraging isolation

B) By exposing us to different viewpoints and experiences

C) By promoting narrow-mindedness

D) By making us less tolerant

3. What role does reading play in developing critical thinking and communication skills?

A) It has no impact on critical thinking or communication skills

B) It broadens horizons but does not impact skills

C) It expands vocabulary, improves writing skills, and enhances communication abilities

D) It only helps with imagination but not critical thinking or communication

4. What are the advantages of reading physical books compared to digital formats?

A) Physical books are more expensive

B) Digital formats are more environmentally friendly

C) Physical books offer a timeless and intimate experience

D) Digital formats are easier to access

5. How does reading enrich our lives and shape us as individuals, according to the passage?

A) Reading has no impact on personal growth

B) Reading makes us less informed and less creative

C) Reading empowers us with knowledge, broadens our perspectives, and equips us with essential skills, making us more informed, empathetic, and creative individuals

D) Reading only fosters creativity but not empathy

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H.T No: ☐☐☐☐☐☐☐☐☐☐ **R22**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

Examination	:	B.Tech I Sem Regular & Supplementary Examinations January-2025
Course Name	:	Electrical circuit Analysis
Course Code	:	A402202
Branch	:	EEE
Date & Session	:	27-01-2025 FN Duration: 3 hours Max. Marks: 60

(Note: Assume suitable data if necessary)

PART-A
Answer all TEN questions
Each question carries ONE mark.   10x1=10M

1. Write down the expression of equivalent resistance for 'n' number of resistors in series connection   1 M

2. State Kirchhoff's Voltage law.   1 M

3. Determine the power factor of a RLC series circuit with R=5 ohm, X_L=8 ohm and X_C=12 ohm.   1 M

4. What is the series resonance?   1 M

5. What is the Maximum power transfer theorem condition?   1 M

6. State the super position theorem.   1 M

7. Write the relationship between line voltage & phase voltage and line current & phase current of a 3 phase delta connected system.   1 M

8. What are the advantages of 3 phase circuits over single phase circuits?   1 M

9. What is use of dot convention?   1 M

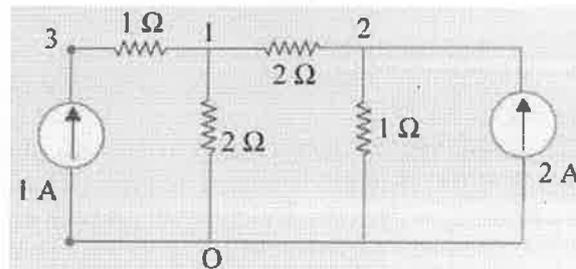10. Define Graph and Basic Tie set   1 M

PART-B
Answer any FIVE questions. One question from each unit either A or B (Compulsory)
Each question carries TEN Marks.   5x10=50M

11. A.   a) Discuss the source transformation method with suitable examples.   4 M

b) Determine the node voltages of the network in fig. by nodal analysis.

6 M

OR

11. B.   a) Derive the expression for star-delta and vice versa transformations in electrical circuits.   10 M
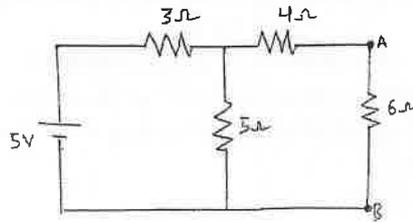
12. A.   a) Derive the expression for RMS & AVG Value of AC waveforms.   10 M

OR

12. B. a) Write the differences between series and parallel resonance. 5 M

b) Show that $Q_0 = \omega_0 L/R = f_0/BW$ for a series RLC circuit. 5M

13. A. State and explain Thevenin's theorem. Draw the Thevenin's equivalent circuit across A and B terminals for the circuit shown in Fig.1 10 M

OR

13. B. Find the current flowing through branch A-B of the network shown in fig. by applying Norton's. Verify the equivalence between Norton's equivalent circuit All the values of resistances and reactances in the circuit are in ohms 10M
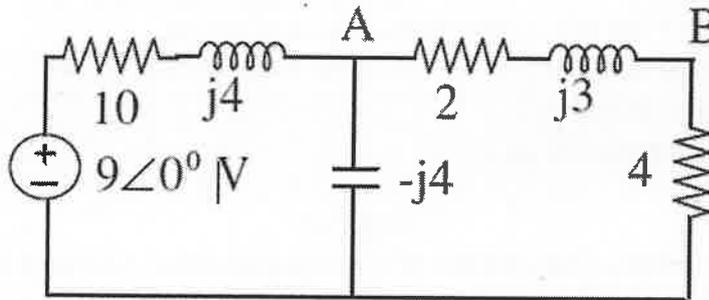
14. A. a) Discuss the concept of balanced loads. 4 M

b) Explain the 3 phase power measurement on wattmeter readings in two wattmeter method. 6 M

OR

14. B. a) Which type of connection of 3-phase system is preferred at the point of utilization? 4M

b) A three phase balanced delta connected load of (10+j8) ohm is connected across a 400V, 3-phase balanced supply. Determine the phase currents and line currents. Calculate the power drawn by load. 6M

15. A. a) In the coupled circuit derive self inductance, mutual inductance & coefficient of coupling. 10M

OR

15. B Explain the procedure for obtaining fundamental tie-set matrix with suitable network. 10M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

Examination	:	B.Tech I Sem Regular & Supplementary Examinations January-2025
Course Name	:	Basic Electrical Engineering
Course Code	:	A402201
Branch	:	ECE/CSE
Date & Session	:	27-01-2025 FN Duration: 3 hours Max. Marks: 60

(Note: Assume suitable data if necessary)

PART-A
Answer all TEN questions
Each question carries ONE mark.   10x1=10M

1.	State Kirchoff's current law.	1 M
2.	What is the difference between a loop and a mesh?	1 M
3.	Define form factor.	1 M
4.	Define frequency of sinusoidal waveform.	1 M
5.	What is an autotransformer.	1 M
6.	Draw the equivalent circuit of a transformer under no-load condition.	1 M
7.	What are the different types of DC generators?	1 M
8.	Define synchronous speed.	1 M
9.	What are the different types of cables?	1 M
10.	What is the function of MCB?	1 M

PART-B
Answer any FIVE questions. One question from each unit either A or B (Compulsory)
Each question carries TEN Marks.   5x10=50M

11. A. Explain the time domain analysis of first order Series RL Circuit with necessary Diagrams   10M

OR

11. B. State and explain Thevenin's theorem. Draw the Thevenin's equivalent circuit across A and B terminals for the circuit shown in Fig.1
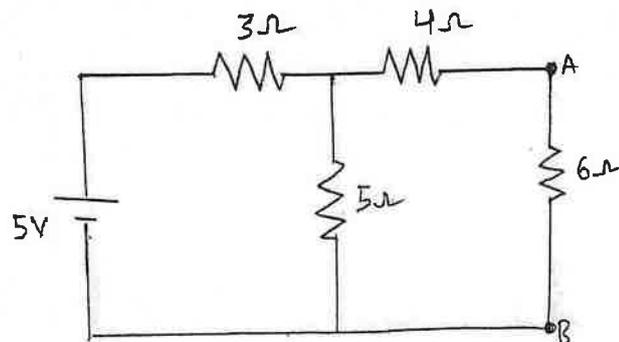
10M

Fig.1

12. A. Explain the following terms of AC circuit: 10M
(a) rms value   (b) average value   (c) peak value   (d) formfactor   (e) peak factor.
And also Derive the expression for RMS value of alternating current wave
$I = I_m Sin \omega t$.

OR

12. B. Derive the relationship between phase voltage and line Voltage, phase current and   10M
line current for balanced three phase delta connected system

13. A. Derive an emf equation of a single-phase transformer and also explain the various   10M
Loses in a transformer.

OR

13. B. Explain the 3 phase transformer connections with necessary diagrames   10M

14. A. Explain the construction and operation of synchronous generator with   10M
neat diagram.

OR

14. B. Explain the constructional and principle of operation of DC generator with neat   10M
sketch.

15. A. (i) Differentiate between MCB and MCCB.
(ii) Define earthing and also explain the purpose of earthing using different   4M
methods.   6M

OR

15. B. What are the drawbacks of low power factor? Explain the methods to improve power   10M
factor.

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

Examination	:	B.Tech I Sem Regular & Supplementary Examinations Jan-2025
Course Name	:	Engineering Mechanics
Course Code	:	A403201
Branch	:	CE/ ME
Date & Session	:	29-01-2025 AN

Duration: 3 hours   Max. Marks: 60

(Note: Assume suitable data if necessary)

PART-A
Answer all TEN questions
Each question carries ONE mark.   10x1=10M

1.	Classify different types of system of forces.	1 M
2.	What is Lami's theorem?	1 M
3.	Distinguish types of friction.	1 M
4.	Define the term coefficient of friction.	1 M
5.	Write down the expression for the centroid of a quarter circle.	1 M
6.	Define centre of gravity.	1 M
7.	What is the perpendicular axis theorem?	1 M
8.	What is moment of inertia of a rectangle about its Centroidal axis?	1 M
9.	What is the principle of conservation of energy?	1 M
10.	Differentiate the kinematics and kinetics.	1 M

PART-B
Answer the following. Each question carries TEN Marks.   5x10=50M

11.A). Find the reactions at the supports. Given the radius of each ball is 100mm and each ball weighs 250N.   10M

(P.T.O..)

11. B).   A 75 N vertical force is applied to the end of a bar 3 m long which is attached to a shaft at   10M
O as shown in figure below. Determine:

i) The moment of the 75 N force about O

ii) The magnitude of the horizontal force applied at A which creates the same moment about O

iii) The smallest force applied at A which creates the same moment about O

iv) How far from the shaft at O a 200 N vertical force must act to create the same moment about O?
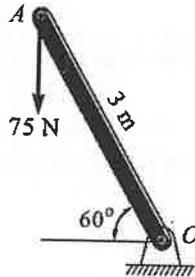

12. A).   A ladder 6 m long, weighting 300 N, is resting against a wall at an angle of 60° with the   10M
horizontal plane as shown in figure. A man weighting 750 N climbs the ladder from position B towards A. At what position along the ladder from the bottom of the ladder does he induce slipping. Take μ for both the wall and the ground with the ladder as 0.2.
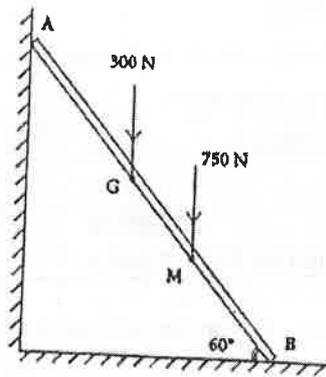
12. B).   A 120 wedge resting on a horizontal floor supports a block of weight 1200 N as shown in   10M
Figure 4. The block is to be raised by applying a horizontal force P to the wedge. Assume coefficient of friction between all contact surfaces to be 0.28. Determine minimum horizontal force applied to the wedge to raise the block.
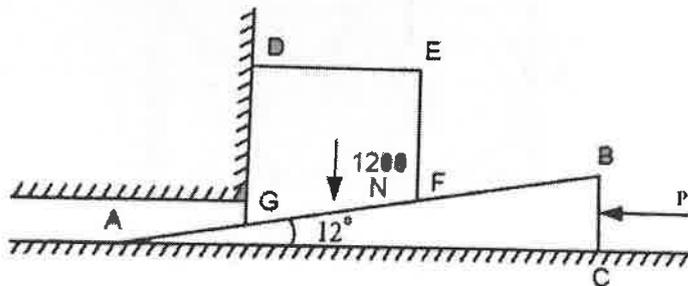

(P.T.O..)

13. A). Three plates ABC and BCDE and DEF are welded together as shown in figure. Circle of **10M** diameter 1.5 m is cut from the composite plate. Determine the centroid of the remaining area.
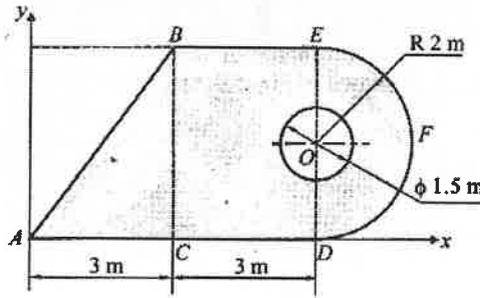
OR

13. B). State and explain Pappus–Guldinus theorems for surface of revolution and volume of **10M** revolution.

14. A). What is the area moment of inertia of the given lamina from the Centroidal axis? **10M**

I-section.
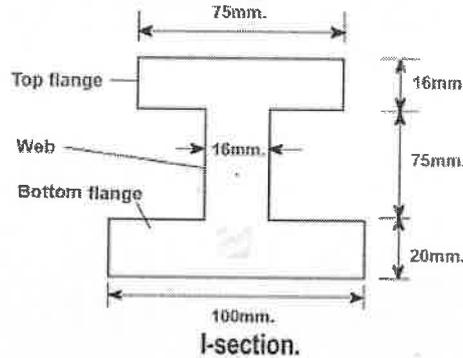
OR

14. B). A right circular cone made of steel has a height of 500 mm and a base diameter of 600 **10M** mm. A hole 150 mm deep and 200 mm diameter is drilled from the centre of the base of the cone and filled with lead. Lead weighs 11400 kg/m3 and steel weighs 7860 kg/m3. Determine the mass moment of inertia of the resulting solid with respect to its geometrical axis.

15. A). Two blocks of weight 150 N and 50 N are connected by a string and passing over a **10M** frictionless pulley as shown in figure. Predict the acceleration of blocks A and B and the tension in the string.
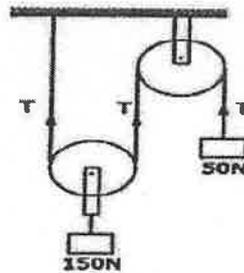
OR

15. B). A tram car weight 120KN, the tractive resistance being 5N/KN, what power will be **10M** required to propel the car at a uniform speed of 20 kmph?
    i.   On the level surface
    ii.   Up an incline of 1 in 300
    iii. Down an inclination of 1 in 300
    iv. Take the coefficient of motor as 80%.

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

Examination : **B.Tech I Sem Regular & Supplementary Examinations Jan-2025**
Course Name : **C Programming and Data Structures**
Course Code : **A405202**
Branch : **EEE/ ECE**
Date & Session : **29-01-2025 AN**   **Duration: 3 hours**   **Max. Marks: 60**

(Note: Assume suitable data if necessary)
PART-A
Answer all TEN questions
Each question carries ONE mark.   10x1=10M

1. List tokens of C Language.   1 M
2. What is the conditional operator?   1 M
3. Consider the following code   1 M

```c
#include <stdio.h>
int main()
{
    int i;
    for(i=1;i<20;i++)
    {
        if(i==10)
            break;
        else if(i==5 || i==8)
            continue;
        else
            printf("%d ",i);
    }
    return(0);
}
```

   What is the output of the above code?
4. How to initialize one dimensional array?   1 M
5. List the advantages of pointers.   1 M
6. How to measure the size of a structure?   1 M
7. What is the condition to check queue is full in array implementation   1 M
8. List types of data structures.   1 M
9. Give any two differences between linear search and binary search.   1 M
10. What is the complexity of bobble sort in the best case? Give justification.   1 M

PART-B
Answer the following. Each question carries TEN Marks.   5x10=50M

11.A). Explain about assignment operators, increment & decrement operators and bitwise   10M
operators in C Language.

OR

11. B). Explain the concept of precedence and associativity. Apply the concept on the following   10M
code and find the output.

```c
int main()
{
    Int a = 5,b=6,d=6,c;
    c = (++a) + (b<<2) * d;
    printf("a = %d , b= %d , c= %d \n",a,b,c);
}
```

(P.T.O..)

12. A). Malathi has 3 bags that she wants to take on a flight. They weigh A, B, and C kgs respectively. She wants to check-in exactly two of these bags and carry the remaining one bag with her. The airline restrictions say that the total sum of the weights of the bags that are checked-in cannot exceed D kgs and the weight of the bag which is carried cannot exceed E kgs. Develop a code to find if Malathi can take all the three bags on the flight. (Note:- Inputs to the program are A,B,C,D,E) 10M

OR

12. B). Write a C program to read two matrices namely *matrix1* and *matrix2* of order *mXn* and perform the addition. Print *matrix1 , matrix 2* and resultant matrix. 10M

13. A). Define string. Explain different string manipulating functions in C with examples. 10M

OR

13. B). Write a C program to define a structure called *employee*. Assume fields in this structure as *empid, empname, salary*. Read **n** employees information and print it as it is and also find average salary of all **n** employees. 10M

14. A). Give the linked implementation of queue data structure. 10M

OR

14. B). You have given linked list with **n** nodes. Develop a function to insert a node at the given position k where k< n. 10M

15. A). Apply Insertion sort on the following list of values : **14,2,7,9,13,34,29,45,22** 10M

OR

15. B). Explain the implementation of binary search: Apply binary search on the following elements: 5,10,15,20,25,30,45,50. Consider the search element as 45. 10M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

Examination	:	B.Tech I Sem Regular & Supplementary Examinations Jan-2025
Course Name	:	Programming for Problem Solving
Course Code	:	A405201
Branch	:	CSE/ CSM/CSD
Date & Session	:	29-01-2025 AN Duration: 3 hours Max. Marks: 60

(Note: Assume suitable data if necessary)

PART-A
Answer all TEN questions
Each question carries ONE mark.   10x1=10M

1.	What is a flowchart?	1 M
2.	What are the data types used in C?	1 M
3.	Give the syntax of ternary operator.	1 M
4.	Mention the advantages of arrays.	1 M
5.	What are the storage classes used in C?	1 M
6.	Write the syntax of strlen( ) function.	1 M
7.	Define pointer.	1 M
8.	Write the syntax of malloc( ) function.	1 M
9.	Write the syntax of fopen() function.	1 M
10.	What is the importance of searching?	1 M

PART-B
Answer the following. Each question carries TEN Marks.   5x10=50M

11.A).	i) What is precedence and associativity in an expression? What is their need?	5M
	ii) List the operators in C? Explain Relational and Logical operators in C.	5M

OR

11. B).	i) Define algorithm. Explain the properties of an algorithm.	5M
	ii) Write an algorithm to find the largest of any three integers.	5M
12. A).	i) Define looping. Explain various looping statements used in C with example.	5M
	ii) Write a C program to print the prime numbers between 100 to 200.	5M

OR

12. B).	What is array? Explain the declaration and initialization of two-dimensional array with an example.	10M
13. A).	Explain various categories of functions with an example.	10M

OR

13. B).	Explain with syntax and example, the different string manipulation library functions.	10M
14. A).	What is structure? Explain declaration and initialization of a structure with suitable example.	10M

OR

14. B).	Explain passing parameter techniques with example program.	10M
15. A).	Define File. Explain random access file functions with example.	10M

OR

15. B).	i) What do you mean by sorting? Mention different types of sorting.	5M
	ii) Explain selection sort in detail on (24, 14,15, 78, 40,13,68,35, 78, 34 89).	5M

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