MJCET-R25 **Set-B** **QP Code:26A01M43**

Muffakham Jah College of Engineering and Technology

Mount Pleasant, 8-2-249 to 267, Road No. 3, Banjara Hills, Hyderabad -34
(UGC autonomous institution under Osmania University)

B.E. I-Semester (Regular) Examination, January 2026

Subject: Matrices & Differential Calculus

(Common to CE, CSE, ECE, ME, CSE (AI&ML), CSE (DS) and CSE (AI)

Time: 03 hours **Max. Marks: 60**

Note:

1. The question paper comprises Part A and Part B.0
2. Part A is compulsory which carries 20 marks.
3. Part B consists of eight questions. Each question carries 08 marks. Answer any five questions.
4. Missing data, if any, maybe suitably assumed.

PART-A

Answer All the questions. each question carries 2 marks (10X2M=20M)

Q. No.	Questions	Marks	CO	BTL
1	Find the value of 'K' if the rank of the matrix A is 2 where $A=\begin{bmatrix}1 & 1 & -1 & 1\\ 1 & -1 & K & -1\\ 3 & 1 & 0 & 1\end{bmatrix}$	2	CO1	L2
2	Examine whether the vectors are linearly dependent or not $(3,1,1),(2,0,-1),(4,2,1)$	2	CO1	L1
3	Find the Eigen values of $A=\begin{bmatrix}2 & 1\\ 4 & 5\end{bmatrix}$	2	CO2	L2
4	Using Cayley-Hamilton theorem find A^8, $if\ \ A=\begin{bmatrix}1 & 2\\ 2 & -1\end{bmatrix}$	2	CO2	L2
5	State Rolle's theorem.	2	CO3	L2
6	Find the radius of curvature $xy=30\ at\ (3,10)$	2	CO3	L2
7	Evaluate $\lim_{(x,y)\to(0,0)} \frac{x+y}{x+2y}$	2	CO4	L2
8	If $z=\log(x^2+y^2)$, $find\ \frac{\partial z}{\partial x}$	2	CO4	L2
9	Evaluate $\int_o^2 \int_0^x ydydx$	2	CO5	L2
10	Evaluate $\int_0^1 \int_0^1 \int_0^1 x\ dx\ dy\ dz$	2	CO5	L2

PART-B

Answer Any Five questions. each question carries 8 marks (5 X 8M=40M)

Q.No.		Questions	Marks	CO	BTL
11	a	Solve by Gauss-Jordan method $x+y+z=3,\ x+2y+3z=4,\ x+4y+9z=6$	4	CO1	L2
	b	Find the values of p and q so that the equations $2x+3y+5z=9, 7x+3y+2z=8, 2x+3y+pz=q$ have (i) no solution (ii) unique solution (iii) An infinite number of solutions	4	CO1	L2
12		Reduce the quadratic form $3x^2+2y^2+3z^2-2xy-2yz$ to the canonical form and find rank, index, signature, nature of the quadratic form.	8	CO2	L4
13	a	Verify Cauchy's mean value theorem for the functions $f(x)=e^x$, $g(x)=e^{-x}$ in [a, b]	4	CO3	L2
	b	Obtain the Taylor's series expansion of $\sin x$ in powers of $x-\frac{\pi}{4}$	4	CO3	L3
14	a	If $u=f(y-z,z-x,x-y)$ show that $\frac{\partial u}{\partial x}+\frac{\partial u}{\partial y}+\frac{\partial u}{\partial z}=0$	4	CO4	L2
	b	Discuss the maxima and minima of $x^3y^2(1-x-y)$	4	CO4	L3
15	a	Evaluate $\iint y^2dxdy$ where the region bounded by the parabolas $y^2=4x\ and\ x^2=4y$	4	CO5	L3
	b	Evaluate $\int_0^1\int_0^{1-x}\int_0^{1-x-y}dxdydz$	4	CO5	L4
16	a	Discuss the consistency of the system of equations $2x+3y+4z=11; x+5y+7z=15; 3x+11y+13z=25$	4	CO1	L2
	b	Find the Eigen values and the corresponding Eigen vectors of $\begin{bmatrix}1&1&1\\1&1&1\\1&1&1\end{bmatrix}$	4	CO2	L3
17	a	Find the centre and circle of curvature of the curve $y=x^3-6x^2+3x+1$ at the point $(1,-1)$	4	CO3	L3
	b	If $x=rcos\theta\ and\ y=rsin\theta$ show that $\frac{\partial(r,\theta)}{\partial(x,y)}=\frac{1}{r}$	4	CO4	L2
18	a	Evaluate $\int_0^a\int_0^{\sqrt{a^2-x^2}}(\sqrt{x^2+y^2})\,dydx$ by changing into polar coordinates.	4	CO5	L3
	b	Find the inverse of the matrix $\begin{bmatrix}1&-1&0\\0&1&1\\2&1&2\end{bmatrix}$ by using Cayley-Hamilton theorem	4	CO2	L3

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MJCET-R25 **Set-A** **QP Code: 26A010E16**

Muffakham Jah College of Engineering and Technology

Mount Pleasant, 8-2-249 to 267, Road No. 3, Banjara Hills, Hyderabad -34
(UGC autonomous institution under Osmania University)

B.E. I-Semester (Regular) Examination, January 2026

Subject: ENGINEERING PHYSICS

(Common to CE, ECE, ME, CSE (AI&ML), CSE (DS) and CSE (AI))

Time: 03 hours **Max. Marks: 60**

Note:

1. The question paper comprises Part A and Part B.
2. Part A is compulsory which carries 20 marks.
3. Part B consists of eight questions. Each question carries 08 marks. Answer any five questions.
4. Missing data, if any, maybe suitably assumed.

PART-A

(Answer All the questions. Each question carries 2 marks) **(10×2 = 20 Marks)**

Q. No.	Questions	Marks	CO	BTL
1	Explain the advantages of laser-based optical communication in space.	**2**	1	2
2	Which principle is involved in working of optical fiber?	**2**	1	1
3	Outline the various types of qubits used in quantum computing.	**2**	2	2
4	Find the ground-state energy for an electron in a 1 nm box.	**2**	2	1
5	What is a hysteresis loop (B–H curve)? Sketch and label the loop	**2**	3	1
6	Which principle is involved in working principle of a solar cell?	**2**	3	1
7	List out any two engineering applications of terahertz waves.	**2**	4	1
8	List out any two computer-based methods used in ultrasonic testing.	**2**	4	1
9	Name the two material properties that enable electronic devices to be foldable.	**2**	5	1
10	List out the any two advantages of Scanning Electron Microscopy	**2**	5	1

PART-B

Answer any five questions. Each question carries 8 marks (5 × 8 = 40 Marks)

Q. No.		Questions	Marks	CO	BTL
11	a)	Derive the relation between Einstein's coefficients in two level energy system.	6	1	4
	b)	Classify the types of optical fibers based on refractive index of Core.	2	1	2
12	a)	Apply Schrodinger's Time Independent wave equation to derive the expression for the energy levels of a particle confined in a one-dimensional potential box	6	2	3
	b)	Define quantum entanglement and give its applications.	2	2	4
13	a)	Explain the construction and working of a Quantum Dot LED (QLED) with a neat diagram.	6	3	2
	b)	Find the Hall coefficient of a semiconductor material having of thickness 0.02 m when a current of 3 A flows through it in a magnetic field of 0.6 T, Hall voltage is 0.2 V is developed across a semiconductor.	2	3	3
14	a)	Develop Maxwell's differential equations starting from their integral forms.	6	4	3
	b)	Find its fundamental frequency a quartz crystal of length 1 mm is vibrating at its fundamental resonance. Assuming the Young's modulus $E = 8 \times 10^{10}$ N/m^2 and ρ = 2000 Kg/m^3.	2	4	3
15	a)	Explain the synthesis of nanomaterials by using the ball-milling technique with a neat diagram.	6	5	2
	b)	What are nanomaterials? Write any two of their applications.	2	5	1
16	a)	Illustrate how the piezoelectric method is applied to generate ultrasonic waves with neat circuit diagram,	6	4	2
	b)	Define stimulated emission.	2	1	1
17	a)	Explain the salient features of the Kronig–Penney model by using Band theory.	6	2	2
	b)	List out the types of superconductors based on Magnetic field response.	2	3	1
18	a)	Explain the Weiss theory of ferromagnetism and derive the expression for magnetic susceptibility.	6	3	2
	b)	Define the surface-to-volume ratio for nanomaterials.	2	5	1

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MJCET-R25 **SET-C** **QP Code: 26A010E3**

Muffakham Jah College of Engineering and Technology

Mount Pleasant, 8-2-249 to 267, Road No. 3, Banjara Hills, Hyderabad -34
(UGC autonomous institution under Osmania University)

B.E. (CSE) I-Semester (Regular) Examination, January 2026

Subject: ENGINEERING CHEMISTRY

Time: 03 hours **Max. Marks: 60**

Note:
1. The question paper comprises Part A and Part B.
2. Part A is compulsory which carries 20 marks.
3. Part B consists of eight questions. Each question carries 08 marks. Answer any five questions.
4. Missing data, if any, maybe suitably assumed.

PART-A

(Answer All the questions. Each question carries 2 marks) (10×2 = 20 Marks)

Q. No.	Questions	Marks	CO	BTL
1.	Define specific conductance? Mention it's units.	2	1	1
2.	Compare Electrolytic cell with galvanic cell.	2	1	2
3.	What are the causes and effects of corrosion?	2	2	1
4.	What is meant by Hardness of Water. Mention its types.	2	2	1
5.	Define the term functionality. What is the functionality of following monomers? (a) Ethane (b) Phenol	2	3	1
6.	Define Biodegradable polymers? Write any two applications of it.	2	3	1
7.	Classify chemical fuels and mention one example for each.	2	4	2
8.	List any four requirements of a good fuel.	2	4	1
9.	State Lambert and Beers law. Write its expression	2	5	2
10.	What is chemical shift? Write its formula and mention its unit.	2	5	1

PART-B

Answer any five questions. Each question carries 8 marks (5 × 8 = 40 Marks)

Q. No.		Questions	Marks	CO	BTL
11.	a)	Explain the construction and working of Quinhydrone electrode. How pH is determined using this electrode?	4	1	2
	b)	What are fuel cells? Explain the construction and working of Methanol-oxygen fuel cell	4	1	1
12.	a)	Explain the Mechanism of wet (Electrochemical) corrosion taking rusting of Iron as an example	4	2	5
	b)	Explain the principle involved in estimation of Hardness of water by EDTA method.	4	2	2
13.	a)	Differentiate thermoplastic and thermosets.	4	3	2
	b)	What are conducting polymers? Classify them. Write any two applications.	4	3	4
14.	a)	Write the composition and uses of following. (a)Gasoline (b) Diesel	4	4	1
	b)	Explain the process of transesterification with example. Write uses of Biodiesel	4	4	5
15.	a)	Explain the various electronic transitions in UV -Vis. Spectroscopy.	4	5	2
	b)	Discuss the various regions of Electromagnetic spectrum.	4	5	3
16.	a)	Consider the cell, $Zn/Zn^{+2}(0.01M)$ //$Cu^{+2}(0.001M)$ /Cu. The standard electrode potentials are; $E^0_{Cu} = 0.35\,V;\ \ E^0_{Zn} = -0.763\,V$ (i) Write down the cell reaction (ii) Calculate the EMF of the cell.	4	1	5
	b)	Define cathodic protection method. Explain Sacrificial anodic protection method with an example.	4	2	1
17.	a)	Distinguish between Addition and condensation polymerization	4	3	4
	b)	A sample of coal has the following composition: Carbon = 83%; hydrogen = 7.5%; Sulphur = 1.5%; nitrogen = 0.6%; oxygen = 8.4%. find the gross calorific value using Dulong Formula.	4	4	1
18.	a)	What are different types of Vibrations in IR spectroscopy.	4	5	1
	b)	Explain break point chlorination with the help of suitable graph.	4	2	5

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MJCET-R25 **Set-A** **QP Code: 26A01B55**

Muffakham Jah College of Engineering and Technology

Mount Pleasant, 8-2-249 to 267, Road No. 3, Banjara Hills, Hyderabad - 500 034

(UGC Autonomous Institution under Osmania University)

B.E I-Semester (Regular) Examination, January 2026

Subject: BASIC ELECTRICAL ENGINEERING

(Common to CE, ECE, ME, CSE (AIML), CSE (DS) and CSE (AI))

Time: 03 hours **Max. Marks: 60**

Note:

1. **The question paper comprises Part A and Part B.**
2. **Part A is compulsory which carries 20 marks.**
3. **Part B consists of eight questions. Each question carries 08 marks answer any five questions.**
4. **Any missing data may be suitably assumed.**

PART-A

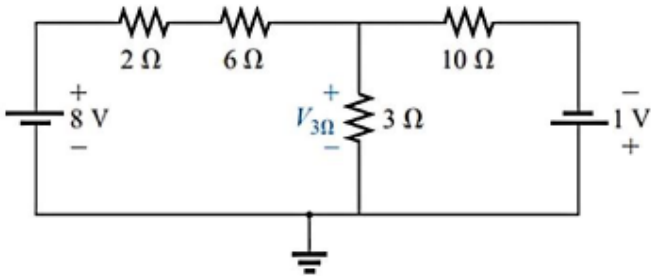
(Answer all the questions. Each question carries 2 marks) (10×2 = 20 Marks)

Q. No.	Questions	Marks	CO	BT
1.	Define Kirchhoff's laws.	2	1	L1
2.	Derive expression for energy stored in Inductor.	2	1	L2
3.	Define Active power and write the expression for it.	2	2	L1
4.	Draw the wave form and phasor diagram of circuit when pure inductance is connected to ac voltage source.	2	2	L2
5.	Differentiate between ideal and practical transformer.	2	3	L4
6.	List different parts of DC Machine.	2	3	L1
7.	Write the applications of 1-Phase Induction Motor.	2	4	L2
8.	Define Slip in three phase Induction Motor?	2	4	L1
9.	What is the function of Fuse?	2	5	L1
10.	Define earthing.	2	5	L1

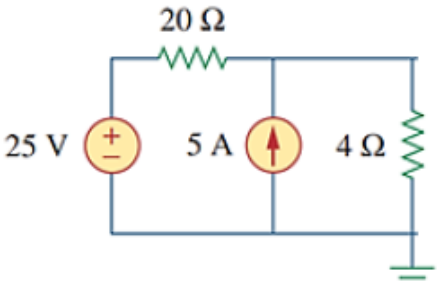
PART-B

Answer any five questions. Each question carries 8 marks (5 × 8 = 40 Marks)

Q. No.		Questions	Marks	CO	BT
11.	a)	State and explain Thevenin's theorem.	4	1	L3
	b)	Solve for the voltage across 3 Ω resistor for the circuit shown in figure by Kirchoff's law.	4	1	L3



12.	a)	Derive expression for RMS value of sinusoidal wave.	4	2	L3
	b)	A resistance of 50 Ω is connected in series with a pure inductor of 250mH. The circuit is connected to a 50Hz sinusoidal supply and the voltage across the resistance is 150V. Calculate the supply voltage.	4	2	L3
13.	a)	List different types of excitations in DC Machines and explain any two types of excitations with circuit diagram and equations.	4	3	L2
	b)	Derive the EMF equation of a Transformer.	4	3	L2
14.	a)	Explain the principle of production of rotating magnetic field in a 3-phase induction Motor.	4	4	L1
	b)	A 4-pole, 3-phase induction motor is connected to a 50 Hz supply. If the rotor speed is 1440 RPM, calculate the synchronous speed, percentage slip and slip speed.	4	4	L3
15.	a)	What is ELCB? With a neat circuit diagram, explain the operation of ELCB.	4	5	L1
	b)	Calculate the energy consumption for a month having 30 days for the load details given below: (per day details) i) Two tube lights of rating 40W for 6hrs ii) Three ceiling fans of rating 65W for 8hrs iii) Other load of rating 150W for 2hrs.	4	5	L2
16.	a)	Solve for current in a 4Ω resistor in the circuit shown below using Superposition theorem.	4	1	L3



	b)	Obtain the relation between line and phase quantities of i) voltages ii) currents in a 3 - phase balanced Delta connected system.	4	2	L3
17.	a)	A 230 V, 50 Hz, single phase transformer has 50 turns on its primary. It is required to operate with a maximum flux density of 1T. Find the cross-sectional area of the core.	4	3	L3
	b)	Explain the working principle of capacitor start and capacitor run 1-Phase Induction Motor.	4	4	L2
18.	a)	What are the advantages of improving the power factor of a system?	4	5	L2
	b)	Explain the working principle of DC Motor.	4	3	L3

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MJCET-R25 **Set-C** **QP Code: 26A01E147**

Muffakham Jah College of Engineering and Technology

Mount Pleasant, 8-2-249 to 267, Road No. 3, Banjara Hills, Hyderabad -34
(UGC autonomous institution under Osmania University)

B.E. (CSE) I-Semester (Regular) Examination, January 2026

Subject: ENGLISH

Time: 03 hours **Max. Marks: 60**

Note:
1. The question paper comprises Part A and Part B.
2. Part A is compulsory which carries 20 marks.
3. Part B consists of eight questions. Each question carries 08 marks. Answer any five questions.
4. Missing data, if any, maybe suitably assumed.

PART-A

(Answer All the questions. Each question carries 2 marks) **(10×2 = 20 Marks)**

Q. No.	Questions	Marks	CO	BT
1.	**Fill in the blanks with appropriate option.** i.The diplomatic party_____ into the restaurant. (proceeded/ precedes) ii. He swam _____the pool. (across/in)	2	CO1	L3
2.	**Fill in the blanks as directed.** i. Information + entertainment = _____. (blending) ii. The constituent words of **real estate**. (compounding)	2	CO1	L1
3.	**Fill in the blanks with appropriate option.** i. I like _____ kind of biscuit. (this/these) ii. He was shot _____ he stayed home. (while/ when)	2	CO2	L3
4.	i. The poet was reading **lucid** prose. (Choose the synonym of the underlined word) a. confusion b. clear c. brilliant d. none ii. The **knave** and his conspirators are plotting to rob the bank. (Choose the antonym of the underlined word) a. hero b. saint c. innocent d. dishonest	2	CO2	L1
5.	**Fill in the correct form of the verb** i. Unless he ____(sell) more he won't get much money. ii.They _____ in Chicago for 20 years (live).	2	CO3	L3
6.	**Give the one-word substitute for the following:** i.One who sees the brighter side of life _____ ii.One who spends lavishly _____	2	CO3	L1
7.	**Change into reported speech.** i.The old lady said to the girl, "Where do you come from?" ii."I know her contact number," said Helena.	2	CO4	L3

8.	**Choose the correct answer.** i.If you accidentally drank a bottle of fabric____, you might___. (die,dye) ii.The_____ is on his way to the castle, but traveling at_____ is very dangerous. (knight, night)	**2**	**CO4**	**L1**
9.	**Fill in the blank using the correct form of the adjective in parentheses.** i.This puzzle is the _____ puzzle in the book. (hard) ii. This book is _____ than the movie. (interesting)	**2**	**CO5**	**L3**
10.	**Match appropriate formal expressions of the following words.** i. liar — over the hill ii. Someone who is old — police officer iii. Policeman — flight attendant iv. Steward, Stewardess — economical with the truth	**2**	**CO5**	**L1**

PART-B

Answer any five questions. Each question carries 8 marks (5 × 8 = 40 Marks)

Q. No.		Questions	Marks	CO	BT
11.	**a)**	Analyze the message presented in the poem "If" by Rudyard Kipling in your own words.	**4**	**CO1**	**L4**
	b)	Find the differences between Note Taking and Note Making.	**4**	**CO1**	**L2**
12.	**a)**	Describe the character of Anukul in the story.	**4**	**CO2**	**L2**
	b)	**Write a paragraph of about 100 words on the following outline. Add a suitable title to it.** Keep surroundings clean- learn this habit at a young age- good for society- don't litter the streets- roadside- with garbage, rubbish- advise friends- neighbours- clean society- clean habits- good health.	**4**	**CO2**	**L3**
13.	**a)**	What could have inspired the poet to compose the poem 'Leisure'? Do you think it relates to our present-day life?	**4**	**CO3**	**L2**
	b)	You are the PR Manager of a NGO that aims for skill development in youth. Write a letter to the appropriate ministry asking for funds for a new project. Sign yourself as Neeraj/Neerja.	**4**	**CO3**	**L3**
14.	**a)**	What is the significance of studying the works of Francis Bacon?	**4**	**CO4**	**L4**
	b)	List a few points to master the art of describing an event or an experience.	**4**	**CO4**	**L2**
15.	**a)**	Why is Adichie arguing that a single story is dangerous?	**4**	**CO5**	**L1**
	b)	**Read the following passage carefully and paraphrase it.** Condenser microphones have been a part of society for a long time now. Because of their fantastic sound quality that has been little to no innovation in the mic industry for over 30 years now. The basics of	**4**	**CO5**	**L3**

condenser mic have remained the same which allow countless many new manufacturers to create great mic for low prices. One such example of this comes from China where the patent laws are quite loose. Now anyone can buy a decent condenser mic just under the price of a pizza.

16.	**a)**	**Read the sentences carefully and mention the sentence type for each.** i.When I get home from school, I'm going to take a nap._____ ii.I got in trouble so I can't go to the party, but it would have been fun._____ iii.Being alone can be scary unless you keep yourself busy._____ iv.Mr. Morton, the best reading teacher in the world, taught me sentence structure._____	**4**	**CO1**	**L3**
	b)	Write a paragraphs of about 150 words on the topic 'Time management'.	**4**	**CO2**	**L2**
17.	**a)**	**Convert the following sentences as directed.** i. The company offered him a good job. (change to Passive voice) ii.The house should have been redecorated before Christmas.(change to Active voice)	**4**	**CO3**	**L3**
	b)	**Study the following points and describe the process of soap-making in a paragraph of 100 words.** 1) Combine coconut oil, caustic soda and water. 2) Heat the mixture for 30 minutes. 3) Allow the mixture to cool. 4) Add common salt to the mixture. 5) Keep the mixture for 12 hours. 6) Cut the mixture into cake-like pieces. 7) The product is ready for use.	**4**	**CO4**	**L3**
18.	**a)**	**Identify the error and rewrite the correct sentence.** i. Jack is wiser than strong. ii. She is senior than me. iii.She has the habit to arrive late. iv.He does nothing but to find faults with others.	**4**	**CO5**	**L3**
	b)	**Select the correct option to complete each sentence.** i. She decided to ___ a shower after her workout. (a) do (b) take (c) make (d) give ii. He ___ a lot of progress in his project last week. (a) took (b) got (c) made (d) done iii. They are planning to ___ a new business in the city. (a) make (b) open (c) start (d) run iv. She always ___ her best to help others. (a) does (b) gives (c) takes (d) tries	**4**	**CO3**	**L1**

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MJCET-R25 **Set-A** **QP Code:26A01P1619**

Muffakham Jah College of Engineering and Technology

Mount Pleasant, 8-2-249 to 267, Road No. 3, Banjara Hills, Hyderabad -34
(UGC autonomous institution under Osmania University)

B.E. I-Semester (Regular) Examination, January 2026

Subject: Programming for Problem Solving

(Common to CE, CSE, ECE, ME, CSE (AI&ML), CSE (DS) and CSE (AI))

Time: 03 hours **Max. Marks: 60**

Note:

1. **The question paper comprises Part A and Part B.**
2. **Part A is compulsory which carries 20 marks.**
3. **Part B consists of eight questions. Each question carries 08 marks. Answer any five questions.**
4. **Missing data, if any, maybe suitably assumed.**

PART-A

Answer All the questions. each question carries 2 marks (10X2M=20M)

Q. No.	Questions	Marks	CO	BT
1.	Define flowchart. List its advantages.	**2**	**1**	**L1**
2.	Differentiate between compiler and interpreter.	**2**	**1**	**L2**
3.	Define a function and write advantages of using a function.	**2**	**2**	**L1**
4.	Differentiate between pre-test and post-test loops.	**2**	**2**	**L2**
5.	What is a macro in C, give an example.	**2**	**3**	**L1**
6.	Define an array. How do you declare a 2 dimensional array.	**2**	**3**	**L2**
7.	What is a pointer? Give an example for declaration and initialization of a pointer variable.	**2**	**4**	**L1**
8.	Define a string variable, mention few string handling functions.	**2**	**4**	**L1**
9.	What are different modes of a file used in file handling.	**2**	**5**	**L1**
10.	Define structure. How is a structure variable declared?	**2**	**5**	**L1**

PART-B

Answer any five questions. Each question carries 8 marks (5 × 8 = 40 Marks)

Q. No.		Questions	Marks	CO	BT
11.	a)	Explain different types of Computer languages with examples.	4	1	L2
	b)	Discuss arithmetic expressions, precedence and associativity.	4	1	L2
12.	a)	Explain relational and logical operators with examples.	4	2	L2
	b)	Develop a program to find factorial using while loop.	4	2	L3
13.	a)	Explain preprocessor directives with examples.	4	3	L2
	b)	Explain multidimensional arrays with examples.	4	3	L2
14.	a)	Explain pointer arithmetic with examples.	4	4	L2
	b)	Develop a program to swap two numbers using pointers.	4	4	L3
15.	a)	Explain nested structures with an example.	4	5	L2
	b)	Write a C program to copy contents of one file into another file.	4	5	L2
16.	a)	Compare flowchart, algorithm, and pseudo-code.	4	1	L2
	b)	Develop a program to generate Fibonacci series using loop.	4	2	L3
17.	a)	Differentiate call by value and call by reference.	4	3	L2
	b)	Write a program to implement linear search using pointer.	4	4	L3
18.	a)	Explain self-referential structure with an example.	4	5	L2
	b)	Explain file input and output functions: fgetc(), fputc(), fgets(), fputs().	4	5	L2

@@End@@