Roll No. | | | | | | | | | | | | |

Total No. of Pages: 2 **Total No. of Questions: 09**

B.Tech (CSE/ IT/ ME/ ECE/ IOT/ CS/ RAI/ AIML/ AIDS/ CSE DS), Semester: 1st

Subject Code: 25C1EMU-101

M.Code:

Date of Examination: 12-12-2025

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

INSTRUCTIONS TO CANDIDATES:

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

Q. No.	Question	Course Outcome	Bloom's Level
	SECTION-A		
1.	Answer briefly:		
a.	Define D'Alembert's Ratio Test.	CO-1	L1
b.	Interpret whether the sequence $\{a_n\}$, where $a_n = \frac{2n-1}{(n+1)^{\frac{3}{2}}}$ is convergent or divergent.	CO-1	L2
c.	Explain Maclaurin's Theorem in one variable.	CO-1	L2
d.	Define Beta and Gamma function with their examples.	CO-2	L1
e.	Show that: $\int_0^\infty e^{-x^2} dx = \frac{\sqrt{\pi}}{2}$	CO-2	L2
f.	Show that: $\beta(m,n) = \beta(m,n+1) + \beta(m+1,n)$.	CO-2	L2
g.	Find stationary points of the function: $f(x,y) = x^2 + y^2 + 6x + 12$	CO-3	L1
h.	Explain the conditions for maxima and minima of a function of two variables.	CO-3	L2
i.	Find the value of : $\int_0^3 \int_0^1 (x^2 + 3y^2)\, dy\, dx$	CO-4	L1
j.	Infer the value of the integral: $\int_0^2 \int_1^2 \int_0^{yz} xyz\, dx\, dy\, dz$	CO-4	L2
	SECTION-B		
2.	Examine the convergence/divergence of the series:	CO-1	L4

	$a_n = \sum\sqrt{\frac{n}{n^2+1}}$		
3.	Solve for the length of an arc of the cycloid: $x = a(\theta - \sin\theta)$ and $y = a(1 - \cos\theta)$	CO-2	L3
4.	If $u = x^y$, Prove that: $\frac{\partial^3 u}{\partial x^2 \partial y} = \frac{\partial^3 u}{\partial x \partial y \partial x}$	CO-3	L5
5.	Solve $\iint_A y\,dx\,dy$ where **A** is the region bounded by the parabolas $y^2 = 4x$ and $x^2 = 4y$	CO-4	L3
6.	If $z = \log(u^2 + 3v)$, $u = e^{5x^2+y^2}$, $v = e^{2x^2+7y}$, Determine $\frac{\partial z}{\partial x}$ and $\frac{\partial z}{\partial y}$	CO-3	L5
	SECTION-C		
7.	(a) Analyse the length of the curve: $x = t^3, y = 2t^2$ on $[0, 1]$. (b) Simplify the integral: $\int_0^1 x^5\ (1 - x^3)^3\,dx$	CO-2	L4
8.	Solve $x^2\frac{\partial^2 u}{\partial x^2} + 2xy\frac{\partial^2 u}{\partial x \partial y} + y^2\frac{\partial^2 u}{\partial y^2}$, where $u = \tan^{-1}(\frac{y^2}{x})$	CO-3	L3
9.	Evaluate $\iiint \frac{dx\,dy\,dz}{\sqrt{1-x^2-y^2-z^2}}$ over the positive octant of the sphere $x^2 + y^2 + z^2 = 1$	CO-4	L5

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Roll No. | | | | | | | | | | | | |

Total No. of Pages: 02

Total No. of Questions: 09

B.Tech (All Branches), (Sem-1)

ENGINEERING MATHEMATICS - I

Subject Code: BTAM – 101 -23

M.Code: 93796

Date of Examination: 21-11-2025

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying two marks each.**
2. **SECTION-B & C have FOUR questions each.**
3. **Each question of SECTION B & C consists of eight marks.**
4. **Attempt any FIVE questions from SECTION B & C, taking at least two questions from each section.**

Q. No.	Question	Course Outcome	Bloom's Level
	SECTION-A		
1.	Answer briefly:		
a.	Explain the necessary condition for the convergence of positive term series.	CO1	L2
b.	Define Ratio test for infinite series.	CO1	L1
c.	What is the formula for the volume of revolution about the initial line and pole perpendicular to the initial line.	CO2	L1
d.	Define Improper integrals of first kind.	CO2	L1
e.	If $u = x^y$, then show that $\frac{\partial^2 u}{\partial x \partial y} = \frac{\partial^2 u}{\partial y \partial x}$	CO3	L2
f.	~~Show~~ find that $\lim_{(x,y)\to(1,2)} \frac{2x^2y}{x^2+y^2+1}$	CO3	L2
g.	Find $\int_1^2 \int_1^3 x\, y^2\, dx\, dy$	CO4	L1
h.	Interpret the value of the integral $\int_0^2 \int_1^3 \int_0^{yz} x\, dx\, dy\, dz$.	CO4	L2

i.	Define absolute convergence with the help of an example.	CO1	L1
j.	Show that Beta function is symmetric.	CO2	L1
	SECTION-B		
2.	Analyse the convergence or divergence of the series $\sum\left(\sqrt[3]{(n^3+1)}-n\right)$.	CO1	L4
3.	Solve the cardiod r = a (1- cos θ) for finding the perimeter	CO2	L3
4.	If u $=sin^{-1}\left(\frac{x^2+y^2}{x+y}\right)$, prove that $x\frac{\partial u}{\partial x}+y\frac{\partial u}{\partial y}=tan\,u$.	CO3	L5
5.	Solve $\iint_A y\,dx\,dy$ where A is the region bounded by the parabolas $y^2=4x$ and $x^2=4y$.	CO4	L3
	SECTION-C		
6.	Examine the convergence of the series $\sum\frac{(-1)^{n-1}n}{5n+1}$.	CO1	L4
7.	Prove the relation between Beta and Gamma functions.	CO2	L5
8.	If $u=f\left(\frac{y-x}{xy},\frac{z-x}{xz}\right)$, then solve $x^2\frac{\partial u}{\partial x}+y^2\frac{\partial u}{\partial y}+z^2\frac{\partial u}{\partial z}$	CO3	L3
9.	Simplify $\iiint(x+y+z)dx\,dy\,dz$ over the tetrahedron bounded by the planes $x=0, y=0, z=0, x+y+z=1$.	CO4	L4

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Roll No. | | | | | | | | | | | | | Total No. of Pages: 02

Total No. of Questions: 09

B.Tech (All Branches), (Sem.-1, 2)

CHEMISTRY-I

Subject Code: BTCH101-18

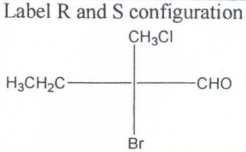
M.Code: 75343

Date of Examination: 02-12-2025

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

INSTRUCTIONS TO CANDIDATES:

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying two marks each.**
2. **SECTION-B & C have FOUR questions each.**
3. **Each question of SECTION B & C consists of eight marks.**
4. **Attempt any FIVE questions from SECTION B & C, taking at least two questions from each section.**

Q. No.	Question	Course Outcome	Bloom's Level
	SECTION-A		
1.	Answer briefly:		
a.	What are chromophores? Give example.	CO3	L1
b.	Outline dry corrosion of metals.	CO2	L2
c.	Recall the term penetration of orbitals.	CO4	L1
d.	Why Electron gain enthalpy of noble gases comes out to be positive?	CO4	L1
e.	Show dipole-dipole interactions through example.	CO1	L2
f.	List differences between enantiomers and diasteromers.	CO6	L1
g.	Show Anti-Markovnikoff addition of water in alkenes.	CO5	L2
h.	Label R and S configuration to the following: 	CO6	L1
i.	Summarize about optical activity of organic compounds.	CO3	L2
j.	Classify and name various types of organic reactions.	CO5	L2
	SECTION-B		
2.	Assess Crystal field splitting in tetrahedral complexes through proper diagram. Also calculate CFSE for d^4 and d^6 configurations for tetrahedral complexes.	CO1	L5
3.	(a) Solve the Nernst equation for the electrochemical cell. Also give its various applications.		
	(b) Model working of ion-exchange process for water softening.	CO2	L3
4.	(a) Explain electrochemical wet theory of corrosion along with appropriate reactions. (b) Describe the Van der Waals constants and critical constants, and illustrate the relationship between them along with the importance of Van der Waals constants.	CO2	L2
5.	(a) Analyze and illustrate the expected ^{1H}NMR spectra of butan-2-ol and 2-chloropropane, interpreting the splitting patterns. (b) Examine different tranistions possible in UV spectroscopy through suitable examples.	CO3	L4
	SECTION-C		
6.	a) Deduce different conformations of propane molecule through Newmann projection formulae. b) Compare meso compounds and racemic mixtures giving suitable examples.	CO6	L5
7.	Solve Schrodinger wave equation for particle in 1-dimentional box. Also discuss its applications for calculating ΔE of conjugated dienes.	CO1	L3
8.	(a) Examine the shapes of NH_3 and H_2O as predicted by VSEPR theory, and analyze the factors responsible for their differert geometries. (b) Analyze the HSAB principle and polarizability, explaining how they help in understanding the nature of soft and hard acids and bases.	CO4	L4
9.	Apply your understanding of organic reaction mechanisms to explain the stepwise processes involved in E1 and E2 substitution reactions, including their influencing factors such as the nature of the substrate, solvent, nucleophile strength, and leaving group ability, with suitable examples.	CO5	L3

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Total No. of Pages: 02

Total No. of Questions: 09

B.Tech (All Branches), (Sem. -1, 2)

CHEMISTRY-I

Subject Code: BTCH101-23

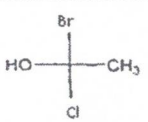
M.Code: 93800

Date of Examination: 02-12-2025

Time: 3 Hrs. Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of TEN questions carrying two marks each.
2. SECTION-B & C have FOUR questions each.
3. Each question of SECTION B & C consists of eight marks.
4. Attempt any FIVE questions from SECTION B & C, taking at least two questions from each section.

Q. No.	Question	Course Outcome	Bloom's Level
	SECTION-A		
1.	Answer briefly:		
a.	Why is TMS used as an internal standard in NMR spectroscopy.	CO3	L1
b.	Outline dry corrosion of metals.	CO2	L2
c.	Recall effective nuclear charge term.	CO4	L1
d.	Why halogens have highest electron affinity in the periodic table?	CO4	L1
e.	How atomic radii varies along the period in the periodic table?	CO1	L1
f.	Outline position isomerim with an example.	CO6	L1
g.	Infer about electrophiles through examples.	CO5	L2
h.	Label R and S configuration to the following: 	CO6	L1
i.	Illustrate the terms: Bathochromic shift and Hypsochromic shift.	CO3	L2
j.	Demonstrate free radical substitution reaction in alkanes.	CO5	L2
	SECTION-B		
2.	Construct the molecular orbital diagram for N_2 molecule and by making use of MOT compare (a) stability (b) Bond order (c) bond length (d) magnetic behavior of N^2, N^{2+} and N^{2-} species.	CO1	L5

3.	(a) The e.m.f of a cell reaction $3Sn^{4+} + 2Cr \rightarrow 2Cr^{3+} + 3Sn^{2+}$ is 0.89. Determine the standard Free energy for this reaction. (b) Model working of lime-soda process for water softening.	CO2	L3
4.	(a) Explain the mechanism of Electrochemical wet theory of corrosion along with appropriate reactions. (b) Describe the methods of prevention of corrosion.	CO2	L2
5.	(a) Analyze the number of signals for the following compounds: (i) CH_3-CH_2-O-CH_3 (ii) CH_3-CH_2-CH_2-OH (b) Examine different types of molecular vibrations in IR spectroscopy.	CO3	L4
	SECTION-C		
6.	(a) Deduce different conformations possible for propane molecule and also discuss their stability. (b) Explain meso compounds? Give atleast one example.	CO6	L5
7.	Solve Schrodinger wave equation upto laplacian operator. Also discuss the physical significance of ψ and ψ^2.	CO1	L3
8.	Analyze the (a) geometry (b) shape (c) bond angle (d) number of bond pairs and (e) lone pairs of these following molecules: H_2O, SF_6, CH_4 and NH_3 by applying VSEPR theory.	CO4	L4
9.	Construct the pathway for the synthesis of Aspirin from salicylic acid. Also, give applications of aspirin drug molecule.	CO5	L3

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Roll No. | | | | | | | | | | | | | Total No. of Pages: 02

Total No. of Questions: 09

B.Tech (All Branches), (Sem.–1, 2)

BASIC ELECTRICAL ENGINEERING

Subject Code: BTEE101-18

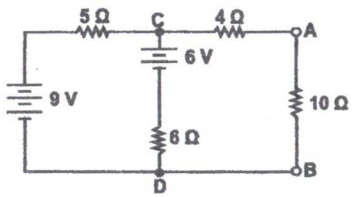
M.Code: 93797/75339

Date of Examination: 26-11-2025

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

INSTRUCTIONS TO CANDIDATES:

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying two marks each.**
2. **SECTION-B & C have FOUR questions each.**
3. **Each question of SECTION B & C consists of eight marks.**
4. **Attempt any FIVE questions from SECTION B & C, taking at least two questions from each section.**

Q. No.	Question	Course Outcome	Bloom's Level
	SECTION-A		
1.	Answer briefly:		
a.	Compare active and passive elements.	CO1	L2
b.	Explain superposition's theorem.	CO1	L2
c.	What is the effect of frequency on inductive reactance?	CO2	L1
d.	Compare DC and AC.	CO2	L2
e.	Define magnetic materials and provide examples.	CO3	L1
f.	Illustrate the significance of torque-slip characteristics in case of an electrical machine.	CO3	L2
g.	What is the difference between wire & cable?	CO4	L1
h.	List the properties of ideal fuse wire.	CO4	L1
i.	What is the importance of power factor?	CO2	L1
j.	Define voltage regulation for a transformer.	CO3	L1
	SECTION-B		
2.	Examine the transient analysis of first order RL series circuit. Also sketch the graphical representation of RL series circuit.	CO1	L4
3.	Solve for current through 10 Ω using Norton's theorem. 	CO1	L3

4.	Explain the series resonance and its effects in RLC series circuit with suitable diagrams.	CO2	L5
5.	A resistance of 12Ω and inductance of 0.1H are connected in series across a 220V, 100Hz supply. Solve for a) Impedance of the circuit. b) Current flowing through the circuit. c) Power factor. d) Power consumed in the circuit.	CO2	L3
	SECTION-C		
6.	The iron loss and full load copper losses of 25KVA, 2000/200V, single phase transformer are 200 watts and 400 watts respectively. Solve (a) the efficiency at full load and half load at 0.8 power factor lag. (b) maximum efficiency and corresponding load at same power factor.	CO3	L3
7.	Explain the construction and working principle of 3-phase induction motor with the help of neat diagram.	CO3	L5
8.	Analyze the important characteristics of batteries in electrical installation. Using suitable diagrams, explain the different types of batteries.	CO4	L4
9.	Examine the function of a miniature circuit breaker with the help of neat schematic diagram.	CO4	L4

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Roll No. | | | | | | | | | | | | | Total No. of Pages: 02

Total No. of Questions: 09

B.Tech. (All Branches), (Sem.-1, 2)

PROGRAMMING FOR PROBLEM SOLVING

Subject Code: BTPS101-18

M.Code: 75346/ 93803

Date of Examination: 05-12-2025

Time: 3 Hrs. Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of TEN questions carrying two marks each.
2. SECTION-B & C have FOUR questions each.
3. Each question of SECTION B & C consists of eight marks.
4. Attempt any FIVE questions from SECTION B & C, taking at least two questions from each section.

Q. No.	Question	Course Outcome	Bloom's Level
	SECTION-A		
1.	**Answer briefly:**		
a.	List the difference between RAM and ROM.	CO1	L1
b.	Illustrate the algorithm to find greatest of two integers' numbers.	CO2	L2
c.	Define the working of switch statement.	CO3	L1
d.	Outline the syntax of while loop.	CO3	L2
e.	Show the working of character array to print name in upper case letter.	CO4	L1
f.	Explain the working of 1D array	CO4	L2
g.	Tell the best case time complexity of linear search.	CO5	L1
h.	Show the example of user defined function.	CO5	L2
i.	Relate the "r" and "w modes " of file handling using C.	CO6	L1
j.	Illustrate the syntax of pointer.	CO6	L2
	SECTION-B		
2.	Build using C programming the source code and algorithm to check enter number is even or not.	CO2	L3
3.	Examine the working of arithmetic pointer using c programming.	CO6	L4
4.	Explain the memory structure of computer system with example.	CO1	L5
5.	Analyze the working of 2D array to add two matrices.	CO4	L4

	SECTION-C		
6.	Develop the structure of C programming in detail by considering the problem to find the factorial of 10 numbers.	CO1	L3
7.	Explain the working of Bubble sort using source code.	CO5	L5
8.	Categorize the various decision making statements in detail with example.	CO3	L4
9.	Evaluate the quadratic equation to find roots are real or imaginary using algorithm and source code.	CO2	L5

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Total No. of Pages:02

Total No. of Questions: 09

B.Tech (IT/AIML/AIDS/ECE/CSE-DS/CSE-CS/RAI), Semester-1st

Chemistry-I

Subject Code: 25C1CHU-101

M.Code:

Date of Examination: 19-12-2025

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

Q. No.	Question	Course Outcome	Bloom's Level
	SECTION-A		
1.	Answer briefly:		
a.	What is physical significance of ψ and ψ^2 ?	CO-1	L1
b.	Summarize Huckel's rule of aromaticity with an example.	CO-1	L2
c.	How hard water differs from soft water?	CO-2	L1
d.	Compare the terms oxidation and reduction?	CO-2	L2
e.	Why is TMS used as an internal standard in NMR spectroscopy?	CO-3	L1
f.	Show stretching vibrations with suitable examples.	CO-3	L2
g.	Outline the shape of XeF_4 on the basis of VSEPR theory.	CO-4	L2
h.	Show an example of aliphatic electrophilic substitution reaction.	CO-5	L2
i.	Explain the concept of structural isomerism.	CO-6	L2
j.	Recall one example of each: Position isomerism and Functional isomerism.	CO-6	L1
	SECTION-B		
2.	Doping Germanium with Phosphorous give rise to n-type semiconductor whereas, it's doping with Boron gives p-type semiconductor. Justify your answer by applying band theory.	CO-1	L3
3.	Simplify the term corrosion and examine the factors which promote electrochemical corrosion? Also, List different methods that can be used to prevent corrosion.	CO-2	L4
4.	Determine the number of distinct ^1H NMR signals and splitting pattern (high resolution NMR) for the following: (a) 1,2-dichloroethane (b) 1,1-dichloroethane	CO-3	L5

5.	Solve how VSEPR theory can be applied to predict the geometry of molecules with up to 6 electron pairs through some examples.	CO-4	L3
6.	Identify the chirality and optical activity terms. Also how chirality can be applied to find optical activity in the compounds.	CO-6	L4
	SECTION-C		
7.	Evaluate the crystal field splitting of d-orbitals in octahedral complexes and justify the formation of high-spin and low-spin complexes	CO-1	L5
8.	(a) What is electron affinity? Apply your knowledge of atomic size and electronic repulsion to explain why chlorine has a higher electron affinity than fluorine. (b) Identify the isoelectronic from the following species and arrange them in increasing ionic radii by applying effect of increasing nuclear charge on their size : O^{2-}, F^-, Na^+, Mg^{2+}	CO-4	L3
9.	Analyze the mechanism of nucleophilic addition to carbonyl compounds and explain why aldehydes are generally more reactive than ketones.	CO-5	L4

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Total No. of Pages: 2

Total No. of Questions: 09

B.Tech (All Branches), (Sem. -1, 2)

ENGINEERING PHYSICS

Subject Code: BTPH101-23

M.Code: 93794

Date of Examination: 18-11-2025

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

INSTRUCTIONS TO CANDIDATES:

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying two marks each.**
2. **SECTION-B & C have FOUR questions each.**
3. **Each question of SECTION B & C consists of eight marks.**
4. **Attempt any FIVE questions from SECTION B & C, taking at least two questions from each section.**

Q. No.	Question	Course Outcome	Bloom's Level
	SECTION-A		
1.	Answer briefly:		
a.	Define a Unit Cell.	CO1	L1
b.	What do you mean by extrinsic semiconductor?	CO2	L1
c.	List two unusual properties of nanomaterials.	CO3	L1
d.	Find the gradient of $1/\vec{r}$ where $\vec{r}=x\hat{i}+y\hat{j}+z\hat{k}$.	CO4	L1
e.	Explain the physical significance of a wave function.	CO5	L2
f.	What is Holography?	CO6	L1
g.	Illustrate the properties of X-rays.	CO1	L2
h.	Explain Magnetic anisotropy.	CO3	L2
i.	Compare the condition for the vector F to be solenoidal and vector F to be irrotational.	CO4	L2
j.	What is Uncertainty Principle?	CO5	L1
	SECTION-B		
2.	Identify the wavelength of X-ray using Bragg's Spectrometer. Also find the minimum wavelength of continuous X-ray emitted from an X-Ray tube with operating voltage of 24kV.	CO1	L3
3.	Examine the function of Zener diode as a voltage regulator.	CO2	L4
4.	Utilize the principles of superconductivity to compare the behavior of Type-I and Type-II superconductors and explain their soft and hard nature.	CO3	L3
5.	Explain the construction and working of Ruby laser with the help of energy level diagram. Also explain spiking in ruby laser.	CO6	L5

	SECTION-C		
6.	Solve the Schrodinger wave equation for particle in 1-D box and show that energy of particle in a box is quantized.	CO5	L3
7.	Distinguish between step index and graded index optical fiber.	CO6	L4
8.	a) Classify the four Maxwell equation in their differential and integral form. Also give the physical significance of each equation. b) Dissect the concepts of dielectric polarization and displacement current.	CO4	L4
9.	Explain the construction and working of Photodiode. Give its disadvantages.	CO2	L5

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Total No. of Questions: 09 **Total No. of Pages:04**

B.Tech (AI&ML/AI&DS/ECE/IT/RAI/CSE-CS/CSE-DS), Semester 1st

ENGLISH & PROFESSIONAL COMMUNICATION

Subject Code: 25C1EPU-101

M.Code:

Date of Examination: 23-12-2025

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

INSTRUCTIONS TO CANDIDATES:

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

Q. No.	Question	Course Outcome	Bloom's Level
	SECTION-A		
1.	Answer briefly:		
a.	**Select the sentence that contains a cliché:** i. Actions speak louder than words. ii. Consistent effort often outweighs empty promises.	CO-1	L1
b.	**Interpret the mistakes in the given abbreviations and rewrite correctly:** "CIA-Central Intelligence Agency" , "LAN- Live Area Network"	CO-1	L2
c.	**Find and fix the noun-pronoun disagreement in the given sentences:** i. The mangoes are very sour. Where did you buy it? ii. The army has reached its destination.	CO-2	L1
d.	**Interpret and fix the misplaced modifiers in the given sentences:** i. My brother only has two children. ii. Reading a book frequently will change the whole course of a man's life.	CO-2	L2
e.	List any two features of a precise writing.	CO-3	L1
f.	"Effective writing is always clear, engaging, and purposeful." Interpret the reason.	CO-3	L2
g.	Outline the ways by which the regular practice of reading comprehension exercises strengthen critical thinking abilities.	CO-4	L2
h.	Interpret what happens when a piece of writing has a weak introduction compared to one with a strong introduction.	CO-5	L2
i.	Interpret any two reasons regarding the importance of good presentation skills in professional settings.	CO-6	L2
j.	Show with an example the way of writing a heading in a business letter when the name and designation both are given.	CO-6	L1
	SECTION-B		
2.	a. **Choose the word from the options which best expresses the meaning of the given words:** i. ABUNDANT:_____ (Options: scarce, plentiful, moderate, limited) ii. PERSEVERANCE:_____ (Options: Giving up, laziness, persistence, confusion) ii. ACHIEVE:_____ (Options: Fail, attempt, accomplish, begin) b. **Choose the word from the options which conveys the antonym of the given words:** i. EXPAND:_____ (Options: Grow, stretch, contract, increase) ii. PARTIAL:_____ (Options: Complete, some, half, limited)	CO-1	L3
3.	**Examine and correct the redundancy in the following sentences:** i. The CEO gave a free complimentary gift to each and every employee in the company. ii. In my personal opinion, I think we should postpone the meeting until a later time in the future. iii. The students gathered together in a small little group to collaborate together on their joint project assignment. iv. She returned back to her house at 10 a.m. in the morning to repeat the same routine again. v. The witness repeated the same story again during the trial.	CO-2	L4
4.	**Read the following passage and do as directed:** i. Deduct the words/ sentences from the passage to form a precis. ii. Paraphrase this passage. In today's fast paced world, maintaining a healthy lifestyle has become increasingly challenging. With busy schedules, people often neglect physical activity and opt for quick, unhealthy meals. This has led to a rise in lifestyle related diseases such as obesity, diabetes, and heart problems. However, incorporating regular exercise and a balanced diet can significantly improve overall health. Simple changes like	CO-3	L5

	walking more, choosing nutritious foods, and reducing stress can make a big difference. It is essential to prioritize health to lead a fulfilling life.		
5.	Read the following paragraph and choose the correct answer from the paragraph for the questions that follow: The rapid advancement of technology has created an unprecedented divide between generations, fundamentally altering how different age groups communicate, learn, and perceive the world around them. While younger generations, often called "digital natives," have grown up immersed in smartphones, social media, and instant connectivity, older generations frequently struggle to adapt to these technological changes. This generational gap extends beyond mere comfort with gadgets—it reflects deeper differences in attention spans, information processing, and social interaction patterns. Young people tend to multitask efficiently, absorbing information in short bursts from multiple sources simultaneously, whereas older individuals often prefer focused, linear learning approaches. However, this technological divide isn't entirely one-sided. While younger generations excel at navigating digital platforms, they sometimes lack the deep analytical skills and patience for sustained concentration that older generations possess. Moreover, excessive reliance on technology has led to concerns about decreased face-to-face communication skills and shortened attention spans among youth. The challenge for society lies not in choosing sides, but in finding ways to bridge this gap, allowing each generation to learn from the other's strengths while addressing their respective weaknesses. **Questions:** i. Analyze the main argument presented in this paragraph. What is the author's central idea/thesis about the digital generation gap? ii. Identify and explain two specific differences between younger and older generations mentioned in the text. How do these differences affect their daily lives? iii. The author states that "this technological divide isn't entirely one-sided." Analyze its meaning and provide evidence from the paragraph to support this claim. iv. Analyze the solution proposed by the author in the final sentence. Do you think this approach is realistic? Give your view point. v. Give antonyms of "excessive" and "deep".	CO-4	L5

6.	Make use of professional email writing etiquettes and draft an email to your boss requesting him for your promotion from Junior Manager to a Senior Manager.	CO-6	L3
	SECTION-C		
7.	**Make use of the appropriate subject-verb agreement rules and correct the following sentences:** i. The man and the woman has absconded. ii. A dictionary and an atlas is missing from the library. iii. The children as well as their mother is missing. iv. Neither the students nor the teacher are satisfied with the results. v. The list of complaints have been submitted.	CO-2	L3
8.	Identify ways to develop good and catchy content writing skills and explain how these skills can be applied to create engaging blogs, social media posts, or articles that attract readers.	CO-5	L3
9.	You are Priya Sharma, a resident of Greenfield Apartments, Sector 15, Chandigarh. You have been facing frequent power outages in your residential area for the past three weeks. The electricity cuts occur daily between 6:00 PM to 10:00 PM, which is peak usage time for families. This has caused significant inconvenience as children cannot study properly, food gets spoiled due to refrigerator shutdowns, and online work from home has become impossible. Explaining all the problems write a complaint letter to the Chief Engineer, Chandigarh Electricity Board, Sector 9, Chandigarh - 160009.	CO-6	L5

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Roll No. | | | | | | | | | | | | | | Total No. of Pages: 2

Total No. of Questions: 09

B. Tech (All branches)(Sem.-2)

ENGINEERING MATHEMATICS-2

Subject Code: BTAM201-23

M. Code: 93811

Date of Examination: 20-12-2025

Time: 3 Hrs. Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of TEN questions carrying two marks each.
2. SECTION-B & C have FOUR questions each.
3. Each question of SECTION B & C consists of eight marks.
4. Attempt any FIVE questions from SECTION B & C, taking at least two questions from each section.

Q. No.	Question	Course Outcome	Bloom's Level
	SECTION-A		
1.	Answer briefly:		
a.	Find the row echelon form of matrix $\begin{bmatrix} 2 & 3 & 4 \\ 4 & 3 & 1 \\ 1 & 2 & 4 \end{bmatrix}$.	CO1	L1
b.	Illustrate the Rank Nullity theorem with an example.	CO2	L2
c.	Examine whether $T: R^2 \rightarrow R^3$ defined by $T(x, y) = (x + y, x - y, y)$ is a linear transformation or not.	CO2	L2
d.	Find the general solution of differential equation $\sec^2 x \tan y dx + \tan x \sec^2 y dy = 0$.	CO4	L1
e.	Find sum and product of Eigen values of the matrix $\begin{bmatrix} -2 & 1 \\ -3 & 1 \end{bmatrix}$.	CO3	L1
f.	Interpret whether the given equation $(1 + x^2)\, dy + 2xydx = 0$ is exact.	CO4	L2
g.	What is an auxiliary equation of Charpit's method ?	CO6	L1
h.	Explain how to obtain the complete solution of $(D^2 + 6D + 9)y = 0$.	CO4	L2
i.	Show that the orthogonal trajectories of the curve $y^2 = 4ax$ is $2x^2 + y^2 = c$.	CO5	L2
j.	Define Similar and diagonalizable matrices.	CO1	L1
	SECTION-B		
2.	Apply the method of variation of parameters to solve $y'' - 6y' + 9y = \frac{e^{3x}}{x^2}$.	CO4	L3

3.	Test for the matrix $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 3 & -1 \\ 0 & -1 & 3 \end{bmatrix}$ is diagonalizable or not.	CO3	L4
4.	Solve the partial differential equation $r - 4s + 4t = e^{2x+y}$.	CO6	L3
5.	Analyze the system of linear equations $x + y + z = 6, x + 2y + 3z = 10, x + 2y + kz = \lambda$ by examining the relationships among the coefficients, for which values of k and λ possesses (i) No solution (ii) Unique solution (iii) Infinite number of solutions.	CO1	L4
	SECTION-C		
6.	Let $V(R)$ be the vector space of all 2×2 matrices and T be a linear operator on $V(R)$ such that $T(v) = Mv$, where $v \in V(R)$ and $M = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$. Construct the matrix of T relative to standard basis of $V(F)$.	CO2	L3
7.	Evaluate the matrices P and Q such that PAQ is in the normal form where A is the matrix $\begin{bmatrix} 1 & 1 & 2 \\ 1 & 2 & 3 \\ 0 & -1 & -1 \end{bmatrix}$.	CO1	L5
8.	Inspect the form of equation $(p + q)(px + qy) = 1$ and identify the reasoning that leads to complete solution.	CO4	L4
9.	If the displacement of a particle moving at any time t is given by $x = a\cos kt + b\sin kt$, show that the point executes simple harmonic motion. Also determine i) amplitude ii) the maximum velocity iii) the maximum acceleration iv) the periodic time.	CO5	L5

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Roll No. | | | | | | | | | | | | | | Total No. of Pages: 2

Total No. of Questions: 09

B. Tech (All branches)(Sem.-2)

ENGINEERING MATHEMATICS-2

Subject Code: BTAM201-23

M. Code: 93811

Date of Examination: 20-12-2025

Time: 3 Hrs. Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of TEN questions carrying two marks each.
2. SECTION-B & C have FOUR questions each.
3. Each question of SECTION B & C consists of eight marks.
4. Attempt any FIVE questions from SECTION B & C, taking at least two questions from each section.

Q. No.	Question	Course Outcome	Bloom's Level
	SECTION-A		
1.	Answer briefly:		
a.	Find the row echelon form of matrix $\begin{bmatrix} 2 & 3 & 4 \\ 4 & 3 & 1 \\ 1 & 2 & 4 \end{bmatrix}$.	CO1	L1
b.	Illustrate the Rank Nullity theorem with an example.	CO2	L2
c.	Examine whether $T: R^2 \to R^3$ defined by $T(x, y) = (x + y, x - y, y)$ is a linear transformation or not.	CO2	L2
d.	Find the general solution of differential equation $\sec^2 x \tan y dx + \tan x \sec^2 y dy = 0$.	CO4	L1
e.	Find sum and product of Eigen values of the matrix $\begin{bmatrix} -2 & 1 \\ -3 & 1 \end{bmatrix}$.	CO3	L1
f.	Interpret whether the given equation $(1 + x^2)\, dy + 2xydx = 0$ is exact.	CO4	L2
g.	What is an auxiliary equation of Charpit's method ?	CO6	L1
h.	Explain how to obtain the complete solution of $(D^2 + 6D + 9)y = 0$.	CO4	L2
i.	Show that the orthogonal trajectories of the curve $y^2 = 4ax$ is $2x^2 + y^2 = c$.	CO5	L2
j.	Define Similar and diagonalizable matrices.	CO1	L1
	SECTION-B		
2.	Apply the method of variation of parameters to solve $y'' - 6y' + 9y = \frac{e^{3x}}{x^2}$.	CO4	L3

3.	Test for the matrix $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 3 & -1 \\ 0 & -1 & 3 \end{bmatrix}$ is diagonalizable or not.	CO3	L4
4.	Solve the partial differential equation $r - 4s + 4t = e^{2x+y}$.	CO6	L3
5.	Analyze the system of linear equations $x + y + z = 6, x + 2y + 3z = 10, x + 2y + kz = \lambda$ by examining the relationships among the coefficients, for which values of k and λ possesses (i) No solution (ii) Unique solution (iii) Infinite number of solutions.	CO1	L4
	SECTION-C		
6.	Let $V(R)$ be the vector space of all 2×2 matrices and T be a linear operator on $V(R)$ such that $T(v) = Mv$, where $v \in V(R)$ and $M = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$. Construct the matrix of T relative to standard basis of $V(F)$.	CO2	L3
7.	Evaluate the matrices P and Q such that PAQ is in the normal form where A is the matrix $\begin{bmatrix} 1 & 1 & 2 \\ 1 & 2 & 3 \\ 0 & -1 & -1 \end{bmatrix}$.	CO1	L5
8.	Inspect the form of equation $(p + q)(px + qy) = 1$ and identify the reasoning that leads to complete solution.	CO4	L4
9.	If the displacement of a particle moving at any time t is given by $x = acoskt + bsinkt$, show that the point executes simple harmonic motion. Also determine i) amplitude ii) the maximum velocity iii) the maximum acceleration iv) the periodic time.	CO5	L5

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Total No. of Pages: 02

Total No. of Questions: 09

B.Tech (IT/CSE/AIML/AIDS/IOT/CSE DS/CS/RAI), Semester 3rd

MATHEMATICS-III

Subject Code: BTAM302-23

M.Code: 94630

Date of Examination: 03-12-2025

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

INSTRUCTIONS TO CANDIDATES:

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

Q. No.	Question	Course Outcome	Bloom's Level
	SECTION-A		
1.	Answer briefly:		
a.	What do you mean by Kurtosis?	CO-1	L1
b.	If arithmetic mean is 56.50, median is 59.50 and standard deviation is 12.40. Find the skewness.	CO-1	L2
c.	Two cards are drawn at random from a well-shuffled pack of 52 cards. What is the probability of drawing two aces?	CO-2	L1
d.	If A, B and C are three mutually exclusive and exhaustive events associated with random experiments. Find P(A) given that $P(B)=\frac{3}{2}P(A), P(C)=\frac{1}{2}P(B)$	CO-2	L2
e.	Explain any two properties of Binomial Distribution.	CO-3	L1
f.	If the probability of defective bolt is 0.1, find the S.D. for the defective bolt in a total of 400.	CO-3	L2
g.	Define Correlation.	CO-4	L1
h.	If the regression coefficient of Y on X is 0.8 and that of X on Y is 0.5, find the correlation coefficient.	CO-4	L2
i.	Define Type-I and Type-II errors.	CO-5	L1
j.	A sample of 400 male students is found to have a mean height of 67.47 inches. Can it be reasonably regarded as sample from a large population with mean height 67.39 inches and S.D. 1.30 inches?	CO-5	L2
	SECTION-B		
2.	Calculate the first four moments about mean for the following data:	CO-1	L4

X:	1	2	3	4	5	6	7	8	9
F:	1	6	13	25	30	22	9	5	2

3.	A random variable X has the following probability distribution X: 0 | 1 | 2 | 3 | 4 | 5 | 6 P(X): k | 3k | 5k | 7k | 9k | 11k | 13k Solve: (a) the value of k (b) $P(X \geq 4)$ and $P(2 < X \leq 5)$	CO-2	L3
4.	In a normal distribution 31% of items are under 45 and 8% of items are over 64. Evaluate mean and standard deviation of the distribution.	CO-3	L5
5.	Calculate rank correlation coefficient from the following data X: 12 | 15 | 18 | 20 | 16 | 15 | 18 | 22 | 15 | 21 | 18 | 15 Y: 10 | 18 | 19 | 12 | 15 | 19 | 17 | 19 | 16 | 14 | 13 | 17	CO-4	L4
6.	Two types of drugs were used to control the high blood pressures on 6 and 8 patients and decreases in systolicblood pressres (upper limit of B.P.) are as below: Drug A: 12 | 18 | 30 | 15 | 7 | 14 | | Drug B: 15 | 16 | 12 | 10 | 21 | 25 | 28 | 17 Interpret if there is any significant difference in the efficiency of drugs?	CO-5	L5
	SECTION-C		
7.	From the following data calculate Karl Pearson's coefficient of skewness: Marks (more than): 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 No. of students: 150 | 140 | 100 | 80 | 80 | 70 | 30 | 14 | 0	CO-1	L4
8.	If the probability that an individual suffers a bad reaction from a certain injection is 0.001. Evaluate the probability that out of 2000 individuals. (a) exactly 3 individuals will suffer a bad reaction (b) none will suffer a bad reaction (c) more than one individual will suffer (d) more than two individual will suffer	CO-3	L5
9.	Given the following data on sales and purchase Sales: 91 | 97 | 108 | 121 | 67 | 124 | 51 | 73 | 111 | 57 Purchase: 71 | 75 | 69 | 97 | 70 | 91 | 39 | 61 | 80 | 47 (a) Obtain regression equations Y on X and X on Y. (b) Calculate coefficient of correlation. (c) Estimate Y when X is 88 and X when Y is 56.	CO-4	L3

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Roll No. | | | | | | | | | | | | | Total No. of Pages: 02

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B.Tech (CSE/AIML/AIDS/IOT/CSE-DS/CYBER SECURITY/RAI), Semester- 3rd

OBJECT ORIENTED PROGRAMMING

Subject Code: - BTCS302-18

M.Code: 76437

Date of Examination: 12-12-2025

Time: 3 Hrs. Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

Q. No.	Question	Course Outcome	Bloom's Level
	SECTION-A		
1.	Answer briefly:		
a.	What is the use of the modulus (%) operator in C++?	CO-1	L1
b.	Explain the difference between while loop and do while loop with syntax.	CO-1	L2
c.	Show how a parameterized constructor can be used to initialize the objects.	CO-2	L1
d.	Explain a constructor in C++.	CO-2	L2
e.	Define ambiguity in inheritance.	CO-3	L1
f.	Demonstrate how a derived class access private members of a base class? Justify your answer.	CO-3	L2
g.	When is early binding used in C++?	CO-4	L1
h.	Compare compile-time and run-time polymorphism.	CO-4	L2
i.	Define a stream and explain how it simplifies I/O operations.	CO-5	L1
j.	Demonstrate the role of fstream in performing both input and output.	CO-5	L2
	SECTION-B		
2.	Compare significance of the public, private, and protected access specifiers in a class? Explain with an example.	CO-1	L4
3.	Construct a Counter class with a static data member to keep track of the number of objects created.	CO-2	L3
4.	Evaluate the different types of inheritance, why hybrid inheritance is considered more complex than other types.	CO-3	L5
5.	Examine the concept of late binding in C++, explaining how it operates when a derived class overrides a base class function.	CO-4	L4
6.	Explain File pointer and various functions for manipulation of file pointer. Justify your explanation with a program.	CO-5	L5

SECTION-C			
7.	Justify the use of friend functions over member functions in operator overloading. Support your justification with a suitable C++ example and evaluate the situations where friend functions provide greater flexibility.	CO-2	L5
8.	Analyze the effect of access specifiers (public, protected, private) on reusability, flexibility, and extensibility of derived classes. In your opinion, which access mode leads to better design practices? Justify your evaluation with reasons.	CO-3	L4
9.	Evaluate the role of polymorphism in C++ by comparing early and late binding with examples.	CO-4	L5

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Total No. of Pages: 02 **Total No. of Questions: 09**

B.Tech (CSE/AIML/AIDS/IOT/CSE DS/CS/RAI), Semester 3rd

DATA STRUCTURE & ALGORITHMS

Subject Code: BTCS-301-18

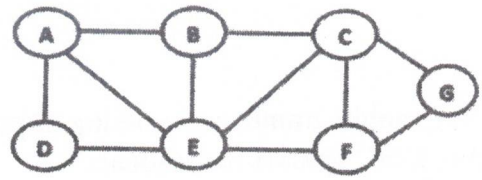
M.Code: 76436

Date of Examination: 09-12-2025

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

INSTRUCTIONS TO CANDIDATES:

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

Q. No.	Question	Course Outcome	Bloom's Level
	SECTION-A		
1.	Answer briefly:		
a.	List basic operations performed on data structures.	CO-1	L1
b.	Explain what a Priority Queue is and describe how it differs from a normal queue.	CO-1	L2
c.	List how Stacks and Queues are represented in data structure.	CO-2	L1
d.	Explain why stack is called a LIFO data structure.	CO-2	L2
e.	State the properties of a Binary Search Tree (BST).	CO-3	L1
f.	Differentiate between min-heap and max-heap with an example.	CO-3	L2
g.	Define chaining as a method for handling collisions in hashing with example.	CO-4	L1
h.	Contrast and compare between Linear Search and Binary Search .	CO-4	L2
i.	Define path and loop in a graph.	CO-5	L1
j.	Illustrate two real-world applications of graphs with example.	CO-5	L2
	SECTION-B		
2.	Construct a stack using a linked list. Push 10, 20, 30, 40 and show the step by step insertion structure with diagram along with the corresponding algorithm.	CO-1	L3
3.	Solve the given array with quick sort and write algorithm to explain all steps. 55, 47, 88, 12, 30, 99, 23, 65, 71	CO-2	L3
4.	Elaborate the concept of BFS traversal of the following graph with 'A' as the source vertex and also write algorithm for it. 	CO-3	L5

5.	Analyze how Insertion Sort works by illustrating each iteration on given elements [8, 3, 5, 4, 7, 6, 2] and explain with algorithm how elements are compared and shifted.	CO-4	L4
6.	Develop an algorithm to insert an element into a queue, in which the queue is implemented as linked list.	CO-5	L6
	SECTION-C		
7.	Categorize the various arithmetic expressions using example. Convert the following infix expression into postfix notation using stack and write algorithm to explain all steps. (A + B) * (C ^ D - E) ^ (F + G * H) - I	CO-1	L4
8.	Compare and contrast stack and queue data structures. Explain their working principles, operations (push, pop, enqueue, dequeue) and applications with neat diagrams.	CO-3	L4
9.	Explain collision resolution in hashing using the separate chaining technique. Using a hash table of size 10 and the hash function h(k) = k mod 10, insert the keys: 12, 22, 32, 42, 15. Draw the hash table showing how collisions are handled. Discuss the advantages and disadvantages of separate chaining.	CO-4	L5

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Total No. of Pages: 02 Total No. of Questions: 09

B.Tech (AIDS/AIML/CSE/CSE DS/CS/IOT/IT/RAI), Semester-3rd

DIGITAL ELECTRONICS

Subject Code: BTES 301-18

M.Code:76435

Date of Examination: 06-12-2025

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

INSTRUCTIONS TO CANDIDATES:

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

Q. No.	Question	Course Outcome	Bloom's Level
	SECTION-A		
1.	Answer briefly:		
a.	Find the hexadecimal equivalent of octal number $(651.124)_8$.	CO-1	L1
b.	Illustrate addition of $(1101)_2$ and $(1010)_2$ using 1's complement method.	CO-1	L2
c.	List any 4 type of min-term implicants and write down examples for each.	CO-2	L1
d.	Show a logic circuit for expression A'BC +A C.	CO-2	L2
e.	What is the use of a de-multiplexer as a logic element?	CO-3	L1
f.	Explain the main role and the use of parity checker.	CO-3	L2
g.	Explain in brief about asynchronous counter.	CO-4	L2
h.	Illustrate the difference between volatile and Non-Volatile Memory.	CO-5	L2
i.	Classify various D/A conversion techniques.	CO-6	L2
j.	Define the term quantization error in ADC.	CO-6	L1
	SECTION-B		
2.	Solve XS-3 addition of these two decimal numbers 56 and 31.	CO-1	L3
3.	Simplify the following function in SOP form $f(A,B,C,D)=\Pi M(0,2,4,6,8,10,12,14) + d(1,11,13,15)$	CO-2	L4
4.	Solve the following function with 8:1 MUX $F(A,B,C,D)=\sum m(1,3,4,11,12,13,14,15)$.	CO-3	L3

5.	Identify the operation of JK flip flop using excitation table.	CO-4	L3
6.	Apply the concept of quantization error in ADCs.	CO-6	L3
	SECTION-C		
7.	Simplify $(1000111.10011)_2$ binary number into decimal, then back to binary. Analyze and compare whether the result is identical to the original.	CO-1	L4
8.	Discuss and design the working of mod-6 counter in detail using K map.	CO-4	L6
9.	Elaborate the organization, working principle, and applications of ROM, PROM, EPROM, and EEPROM.	CO-5	L6

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Total No. of Pages: 02 **Total No. of Questions: 09**

B.Tech (CSE/RAI/IOT/AIDS/AIML/CSE DS/CS), Semester 3rd

DEVELOPMENT OF SOCIETIES

Subject Code: HSMC101-18

M.Code: 76439

Date of Examination: 29-11-2025

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

INSTRUCTIONS TO CANDIDATES:

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

Q. No.	Question	Course Outcome	Bloom's Level
	SECTION-A		
1.	Answer briefly:		
a.	"Clan is a group of people having similar thought process". Recall it.	CO-1	L1
b.	Explain how the family system contributed to the development of clans.	CO-1	L2
c.	What do you understand by the industrial social system?	CO-2	L1
d.	Demonstrate briefly how clans gave rise to larger societies.	CO-2	L2
e.	How does a one-party system affect the freedom of citizens?	CO-3	L1
f.	Compare Bureaucracy and Aristocracy with respect to governing system.	CO-3	L2
g.	List any two characteristics of marxism given by Karl Marx.	CO-4	L1
h.	Compare Pre-British and British economic structures in India.	CO-4	L2
i.	List the features of socialist economy.	CO-5	L1
j.	Explain human scale development with example.	CO-5	L2
	SECTION-B		
2.	"Individuals are charcterized as patterns of society." Discover it.	CO-1	L4
3.	Identify how the biological needs of human beings contributed to the formation of families.	CO-2	L3
4.	Determine the concept of governance in bureaucracy and explain in detail its advantages and disadvantages.	CO-3	L5
5.	Categorize Gandhian decentralization and swaraj with current centralized planning models.	CO-4	L4
6.	Compare buddhist economics and traditional economics with respect to economic development.	CO-5	L5
	SECTION-C		
7.	Analyze how kinship and blood relations shaped the transition from families to clans.	CO-1	L4

8.	Analyze the key differences between capitalist, socialist, and mixed models of governance in terms of political and economic control.	CO-3	L4
9.	Interpret the effectiveness of India's post-independence industrial strategies in transforming a colonial economy into a self-reliant and diversified economic system.	CO-4	L5

Note: Disclosure of identity by writing mobile number or making of passing request on any paper of Answer Sheet will lead to UMC against the student.

Roll No. | | | | | | | | | | | |

Total No. of Pages: 02

Total No. of Questions: 09

B.Tech (CSE/AIML/AIDS/DS/IoT), Semester: 4th

COMPUTER ORGANIZATION AND ARCHITECTURE

Subject Code: BTES - 401-18

M. Code: 77627

Date of Examination: 24-11-2025

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

Q. No.	Questions	Course Outcomes	Bloom's Level
	SECTION-A		
1.	**Answer briefly:**		
a.	What is an interrupt?	CO1	L1
b.	Illustrate the significance of address and data bus.	CO1	L2
c.	What is the advantage of using carry look-ahead adder?	CO2	L1
d.	What is the role of cache memory?	CO5	L1
e.	Define the function of flag register in 8085 MP.	CO1	L1
f.	Explain the concept of memory interleaving.	CO5	L2
g.	Infer how many address lines are required to address the 1000 memory locations.	CO5	L2
h.	What is a control unit ?	CO3	L1
i.	Outline the usage of parallel processing.	CO4	L2
j.	What is a privileged instruction?	CO3	L1

	SECTION-B		
2.	Analyze the Flynn's classification of the processors with appropriate diagrams.	CO4	L4
3.	Evaluate the micro programmed and hardwired design approaches of a control unit.	CO3	L5
4.	Identify the various addressing modes of microprocessor 8085 and select an appropriate instruction to explain each.	CO2	L3
5.	Examine any four memory replacement algorithms with appropriate examples.	CO5	L4
6.	By examining the instruction format and its constituent parts, categorise the instructions according to their size.	CO2	L4
	SECTION-C		
7.	Construct an architectural diagram of microprocessor 8085 and explain in detail.	CO1	L3
8.	Choose an appropriate diagram to design a hypothetical CPU and also identify the role of each part.	CO3	L6
9.	Explain the basic concept of pipelining with a real life example and derive the expressions for throughput and speedup.	CO4	L5

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