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

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 (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 (CSE, IT, AIML, AIDS), (Sem-1)

MATHEMATICS - I

Subject Code: BTAM – 104 -18

M.Code: 75362

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.	What is the general expression of Taylor's series.	CO1	L1
b.	Show that $\tan x > x > \sin x$ for all $x \in (0, \pi/2)$	CO1	L2
c.	Interpret the convergence of integral $\int_{-1}^{1} \frac{dx}{x^2}$	CO2	L2
d.	Show that $\beta(m, n) = \beta(n, m)$.	CO2	L2
e.	Define Linearly Independent set of vectors.	CO3	L1
f.	Let V be a Vector space in R^3. Interpret that $W = \{(a, b, c); a \geq b \geq c\}$ is a subspace of V or not.	CO3	L2
g.	Show that the matrix $\frac{1}{3}\begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & -2 \\ -2 & 2 & -1 \end{bmatrix}$ is orthogonal.	CO4	L1
h.	Find the eigen values of $A = \begin{bmatrix} 1 & 4 \\ 3 & 2 \end{bmatrix}$	CO4	L1
i.	Recall Rolle's theorem for the function $f(x) = x(x-3)^2$ on the interval [1, 4]	CO1	L1
j.	Define Rank of matrix A of order n x n.	CO4	L1

	SECTION-B		
2.	Apply Taylor's Theorem with Lagrange's form of remainder to the function f(x)=sin x in [$\pi/2$, x].	CO1	L3
3.	Solve $\lim_{x\to 0}(\frac{1}{x^2})^{\tan x}$	CO2	L3
4.	Examine the L.I or L.D of the system of vectors (2, -1, 3) , (8, 2, 0) and (0, 1, -2). Find the relation between them.	CO3	L4
5.	Determine the inverse of matrix $\begin{bmatrix} 1 & 0 & 2 \\ 2 & -1 & 3 \\ 4 & 1 & 5 \end{bmatrix}$ using Gauss Jordan Method.	CO4	L5
	SECTION-C		
6.	Inspect that $\beta(m,n) = \frac{(m-1)!\ (n-1)!}{(m+n-1)!} : m, n > 0 \text{ and } m, n \in Z$	CO1	L4
7.	Prove that the height of a cylinder, which is open at the top having a given surface and greatest volume, is equal to the radius of its base.	CO2	L5
8.	If W be the subspace of all the vectors (a, 0, b) for all reals a and b. Solve Basis and Dimension of W.	CO3	L3
9.	Inference that similar matrices have same eigen values.	CO4	L4

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

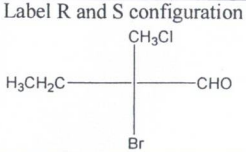
M.Code: 75343

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

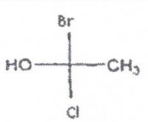
M.Code: 93800

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

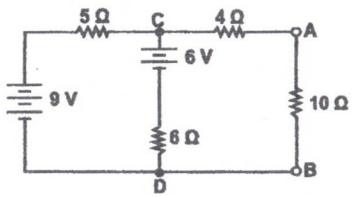
M.Code: 93797/75339

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

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

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 Pages: 2

Total No. of Questions: 09

B.Tech (CSE/IT/AIML/AIDS), (Sem.-1, 2)

SEMICONDUCTOR PHYSICS

Subject Code: BTPH104-18

M.Code: 75360

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.	Summarize Weidmann-Franz Law.	CO1	L2
b.	Find the temperature at which 4% probability that state with energy 2eV is occupied. Given that fermi energy is 1.5 eV .	CO1	L1
c.	Explain drift and diffusion currents.	CO2	L2
d.	Define depletion region.	CO2	L1
e.	What are photovoltaic devices?	CO3	L1
f.	Illustrate the concept of Excitons.	CO3	L2
g.	What is Hall effect?	CO4	L1
h.	Define Divergence.	CO4	L1
i.	Classify Direct and indirect band gap semiconductors.	CO1	L2
j.	Explain charge carrier generation and recombination processes.	CO2	L2
	SECTION-B		
2.	Explain in detail (with diagrams) the origin of the bandgap in solids using the Bloch's theorem for particles in periodic potential.	CO1	L5
3.	Distinguish between intrinsic and extrinsic semiconductors.	CO2	L4
4.	Apply the concepts of stimulated absorption, spontaneous emission, and stimulated emission to construct and interpret the relationship among Einstein's coefficients.	CO3	L3
5.	Construct and explain the schematic of the hot-point probe setup, applying its basic principle to identify semiconductor type.	CO4	L3

	SECTION-C		
6.	Analyze the energy–state relationships in a three-dimensional system to derive the expression for the density of states.	CO1	L4
7.	Apply the concept of Fermi level to illustrate its variation with temperature in intrinsic and extrinsic semiconductors.	CO2	L3
8.	a)Examine the role of phonon density of states in solids. b)Analyze how population inversion enables laser action.	CO3	L4
9.	Explain the principle and procedure for any one method to measure the wavelength of Laser.	CO4	L5

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Total No. of Pages: 2

Total No. of Questions: 09

B. Tech (IT)

SUBJECT NAME: BRIDGE COURSE MATHEMATICS II

Subject Code: BTAMBC2-18

Date of Examination: 13-12-2025

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 Spearman's rank correlation coefficient.	CO3	L1
b.	Explain student's t- distribution test.	CO4	L2
c.	Tell four properties of normal distribution.	CO2	L1
d.	Define degree of freedom.	CO4	L1
e.	For two events A and B such that P(A) =1/3, P(B) = ¼ and P(AUB)=1/2 Find P(B/A) ?	CO2	L1
f.	Illustrate normal equations for the curve fitting x = b+cy by the method of least square.	CO3	L2
g.	Define Type II error.	CO4	L1
h.	Compare discrete and random variables.	CO2	L2
i.	Explain four characteristics of any ideal measure of dispersion	CO1	L2
j.	Define sampling error.	CO2	L1
	SECTION-B		
2.	The length of time a person speaks over phone by applying an exponential distribution with mean 6. What is the probability that the person will talk for (i) more than 8 minutes and (ii) between 4 and 8 minutes?	CO2	L3
3.	From the following table, determine the coefficient of correlation Karl Pearson's method. X: 6, 2, 10, 4, 8 Y: 9, 11, ?, 8, 7 Arithmetic means of X and Y series are 6 and 8 respectively.	CO3	L5
4.	During war 1 ship out of 9 was sunk on an average in marketing a certain voyage. What was the probability by applying binomial distribution i) the exactly 3 out of a convoy of 6 ships would arrive safety ii) a minimum of 7 ships would arrive safety?	CO2	L3

P.T.O

<table>
<tr><td>5.</td><td>Examine the data, 60 new entrants in a given university are found to have a mean height 68.60 inches and 50 seniors a mean height of 69.51 inches, is the evidence conclusive that the mean height of the senior is greater than that of a new entrant ? Assume the standard deviation of height to be 2.48 inches.</td><td>CO4</td><td>L4</td></tr>
<tr><td>6.</td><td>If the two lines of regression are $4x - 5y + 30 = 0$ & $20x - 9y - 107 = 0$. Which of these is the line of regression of x on y, and y on x. Determine correlation coefficients and variance of Y when variance of X is 3.</td><td>CO3</td><td>L4</td></tr>
<tr><td colspan="4">SECTION-C</td></tr>
<tr><td>7.</td><td>A reading test is given to an elementary school class that consists of 12 Anglo-American children and 10 Mexico-American children. The results of test are:
<table>
<tr><td></td><td>Anglo American</td><td>Mexico American</td></tr>
<tr><td>Mean</td><td>74</td><td>70</td></tr>
<tr><td>Std.</td><td>8</td><td>10</td></tr>
</table>
Evaluate whether the difference between means of the two groups significant at the 0.05 level of significance? Value of t at 5% level for 20 degree is freedom is 2.086.</td><td>CO4</td><td>L5</td></tr>
<tr><td>8.</td><td>From the given data
<table>
<tr><td>Marks in Mathematics</td><td>25</td><td>38</td><td>35</td><td>32</td><td>31</td><td>36</td><td>29</td><td>38</td><td>34</td><td>32</td></tr>
<tr><td>Marks in Statistics</td><td>43</td><td>46</td><td>49</td><td>41</td><td>36</td><td>32</td><td>31</td><td>30</td><td>33</td><td>39</td></tr>
</table>
a) Discover the Two regression equations.
b) Analyze the relationship between the coefficient of correlation between marks in mathematics and statistics
c) The most likely marks in statistics when marks I mathematics are 30.</td><td>CO3</td><td>L4</td></tr>
<tr><td>9.</td><td>a) Evaluate Standard deviation from the table giving age distribution of 542 members
<table>
<tr><td>Age Group</td><td>20-30</td><td>30-40</td><td>40-50</td><td>50-60</td><td>60-70</td><td>70-80</td><td>80-90</td></tr>
<tr><td>No of members</td><td>3</td><td>61</td><td>132</td><td>153</td><td>140</td><td>51</td><td>2</td></tr>
</table>
b) The first four moments of a distribution about the value 4 of the distribution are -: -1.5,17, -30 and 108. Evaluate the moments about mean.</td><td>CO1</td><td>L5</td></tr>
</table>

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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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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 $x = acoskt + bsinkt$, 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: 2

Total No. of Questions: 09

B.Tech (CSE/IT/AIML/AIDS) (Sem.-2)

MATHEMATICS-2

Subject Code: BTAM204-18

M.Code: 76257/91960

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 mean of 20,22,25,28,30.	CO1	L1
b.	What are Type- I and Type-II errors in Sampling ?	CO4	L1
c.	Given Cov(X,Y)=15, Var(X)=36, Var(Y)= 25, Find Coefficient of correlation and regression coefficient for X on Y .	CO3	L1
d.	Explain null hypothesis.	CO4	L2
e.	Explain continuous random variable.	CO2	L2
f.	The distribution function for a random variable X is $F(x) = \begin{cases} e^{-2x}, & x \geq 0 \\ 0, & x < 0 \end{cases}$ Using definition of c.d.f. find: $P(X > 3)$.	CO2	L1
g.	Using $b_{xy} = -0.89$; $b_{yx} = -0.11$, interpret Karl-Pearson co-efficient of correlation . Comment on validity of data.	CO3	L2
h.	The time required to repair a machine is exponentially distributed with parameter 0.5. What is the probability that a repair time exceeds 2 hours?	CO2	L1
i.	Using mean and variance of binomial distribution which are 4 and4/3.Find $P(X \geq 1)$.	CO2	L1
j.	What do you mean by degree of freedom in testing of hypothesis ?	CO4	L1
	SECTION-B		
2.	Fit a binomial distribution to the following data:	CO2	L3

X	0	1	2	3	4
F	30	62	46	10	2

3.	From the following data determine "r"and the two regression equations X: 1, 2, 3, 4, 5 Y: 2, 5, 3, 8, 7	CO3	L5
4.	Find mean, standard deviation and coefficient of variation for the data given below: Marks: 0-10, 10-20, 20-30, 30-40, 40-50, 50-60 No. of students: 5, 10, 25, 30, 20, 10	CO1	L4
5.	The average income in a sample of 100 people of a city A was Rs.210 with a standard deviation of Rs.10. For another sample of 150 persons from city B, the average income was Rs.220 with a standard deviation of Rs.12.Test whether there is any significant difference between average incomes of two cities?	CO4	L4
	SECTION-C		
6.	The number of road accidents per week in a certain city were as follows: 12, 8, 20, 2, 14, 10, 15, 6, 9, 4. Are these frequencies in agreement with the belief that numbers of accidents were uniformly distributed during this 10 week period?	CO4	L5
7.	Solve for E(X) and $E[X - E(X)]^2$ for the following probability distribution. X : 8 12 16 20 24 P(X) : 1/8 1/6 3/8 1/4 1/12	CO2	L3
8.	Analyze skewness and kurtosis for the following data. Marks: 5-15, 15-25, 25-35, 35-45, 45-55 No. of students: 1, 3, 5, 7, 4	CO1	L4
9.	Using suitable method of correlation evaluate coefficient of correlation for the marks given by Judge A: 10, 15, 15, 20, 18, 16, 15 Judge B: 16, 18, 16, 20, 20, 18, 12	CO3	L5

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Total No. of Questions: 09

B.Tech. (CSE, IT), Semester- 3rd
(AIML, AIDS)
MATHEMATICS - III

Subject Code: BTAM 304-18

M. Code: 76438/76393

Date of Examination: 24-12-2025

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.	Questions	Course Outcomes	Bloom's Level
	SECTION-A		
1.	**Answer briefly:**		
a.	Illustrate $\lim\limits_{\substack{x\to 1\\ y\to 2}} \frac{2x^2y}{x^2+y^2+1}$	CO1	L2
b.	Find $\frac{dy}{dx}$ if $x^2+y^2=c$	CO1	L1
c.	Interpret $\int_1^2\int_1^3 xy^2\,dx\,dy$	CO2	L2
d.	Translate $\iint_R f(x,y)\,dx\,dy$ into polar coordinates.	CO2	L1
e.	State Cauchy Integral test for convergence of a positive term infinite series.	CO3	L1
f.	Test the convergence of the series $\sum \frac{(-1)^{n-1}}{n}$.	CO3	L2
g.	Recall whether the differential equation is exact $(x^2+y^2+2x)dx+2y\,dy=0$.	CO4	L1
h.	Elucidate by reducing into Clairaut's equation: $p=\log(px-y)$.	CO4	L2
i.	Illustrate the differential equation $\frac{d^2y}{dx^2}-4\frac{dy}{dx}+3y=0$.	CO5	L2

j.	Find Particular solution of the differential equation: $\frac{d^2y}{dx^2}-4y=e^{2x}$.	CO5	L1
	SECTION-B		
2.	Using Method of Lagrange Multipliers, Examine the maximum and minimum distance of the point (3, 4, 12) from the sphere $x^2+y^2+z^2=1$.	CO1	L4
3.	Change the order of integration and hence elaborate $\int_0^{\infty}\int_0^{x} xe^{-\frac{x^2}{y}}dydx$.	CO2	L6
4.	Examine the convergence of the series $\sum\sqrt{n^4+1}-\sqrt{n^4-1}$.	CO3	L4
5.	Solve $(3x^2y^3e^y+y^3+y^2)dx+(x^3y^3e^y-xy)dy=0$.	CO4	L3
6.	Apply the method of variation of parameter to solve $\frac{d^2y}{dx^2}-6\frac{dy}{dx}+9y=\frac{e^{3x}}{x^2}$.	CO5	L3
	SECTION-C		
7.	a). Determine the area lying inside the circle $r=a\sin\theta$ and outside the cardioid $r=a(1-\cos\theta)$ by double integration. b). Prove that the series $x-\frac{x^2}{2}+\frac{x^3}{3}-\frac{x^4}{4}+\ldots\infty$ is convergent for $-1<x\le 1$. Also write the interval of convergence.	CO2 CO3	L5 L5
8.	a). Solve $\frac{dy}{dx}-\frac{dx}{dy}=\frac{x}{y}-\frac{y}{x}$. b). Solve $\frac{dy}{dx}-x\sin 2y=x^3\cos^2 y$.	CO4	L3
9.	Evaluate: $(x^3D^3+2x^2D^2+2)y=10\left(x+\frac{1}{x}\right)$	CO5	L5

NOTE: Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the student.

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

B.Tech (Information Technology), Semester-3rd

Object Oriented Programming

Subject Code: BTIT-302-18

M.Code: 76392

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.	Define Class. Explain with the help of example how object and class are related to each other.	CO-1	L1
b.	Summarize the concept of pointers with an example.	CO-1	L2
c.	Define a copy constructor with an example.	CO-2	L1
d.	Outline how friend functions can access private data.	CO-2	L2
e.	Show the role of virtual base classes.	CO-3	L1
f.	Contrast between single and multilevel inheritance.	CO-3	L2
g.	Define pure virtual function.	CO-4	L1
h.	Infer the advantages of runtime polymorphism.	CO-4	L2
i.	Recall the classes used for file I/O.	CO-5	L1
j.	Outline various file accessing modes.	CO-5	L2
	SECTION-B		
2.	a) Identify various steps in the design of a program using object oriented techniques. b) Construct a program to find the highest and average marks of students using array of objects .	CO-1	L3
3.	a) Identify the concept of Memory management in C++. b) Construct a C++ program that demonstrates dynamic memory allocation of objects.	CO-2	L3
4.	Interpret the term Multiple inheritance. Explain ambiguity in multiple inheritance with the help of example.	CO-3	L5

5.	Simplify the term Friend function in C++. Explain its importance with example.	CO-4	L4
6.	Compare error handling with exception handling mechanisms. Write a program to copy the content of two data file to third file. Make use of the exception handling conditions also.	CO-5	L5
	SECTION-C		
7.	Simplify Operators in C++. List different types of operators with example.	CO-1	L4
8.	Evaluate the effectiveness of inheritance in achieving code reusability with suitable example.	CO-3	L4
9.	Explain the concept of polymorphism in C++. Explain with the help of example how do we attain Run Time Polymorphism.	CO-4	L5

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

Total No. of Questions: 09

B.Tech (Information Technology), Semester: 3rd

DATA STRUCTURE AND ALGORITHMS

Subject Code: BTIT-301-18

M.Code: 76391

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 do you understand by time–space trade-off?	CO-1	L1
b.	Outline the term Array and how 2D array are stored in memory?	CO-1	L2
c.	What is push and pop operations?	CO-2	L1
d.	Show the real-life example of priority queue.	CO-2	L2
e.	Define the open addressing in hashing.	CO-3	L1
f.	Explain the steps of Insertion Sort.	CO-3	L2
g.	Define doubly linked list.	CO-4	L1
h.	Outline the term binary tree.	CO-4	L2
i.	Find the time complexity of linear search.	CO-5	L1
j.	Explain the DFS traversal order.	CO-5	L2
	SECTION-B		
2.	Distinguish between Linear Search and Binary Search techniques with their algorithm and complexity.	CO-1	L4
3.	Build complexity of stack operations using arrays vs linked lists.	CO-2	L3
4.	Explain the concept of Hashing and compare open and close hashing.	CO-3	L5
5.	Construct traversal algorithm for a circular linked list.	CO-4	L4
6.	Explain Dijkstra's algorithm be used to find the shortest path between two vertices in a weighted graph?	CO-5	L5
	SECTION-C		
7.	Examine an algorithm to insert a new node in the existing sorted single linked list.	CO-1	L4

8.	Explain quick sort with the use of pivot element and give their suitable example.	CO-3	L5
9.	Compare B-Tree and B+ Tree and justify its Structure.	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 (IT), Semester 3rd

COMPUTER ARCHITECTURE

Subject Code: - BTES 302-18

M.Code: 76394

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.	List functional blocks of a computer.	CO-1	L1
b.	Illustrate signed and unsigned number with example.	CO-1	L2
c.	State serial and Parallel data transmission.	CO-2	L1
d.	Interpret carry look-ahead adder.	CO-2	L2
e.	List stages of an instruction pipeline.	CO-3	L1
f.	Explain instruction stream and data stream.	CO-3	L2
g.	State the purpose of DMA in I/O transfer.	CO-4	L1
h.	Illustrate the term Handshaking.	CO-4	L2
i.	List cache mapping techniques.	CO-5	L1
j.	Explain the concept of miss ratio in cache.	CO-5	L2
	SECTION-B		
2.	Conclude the importance of common bus system with diagram.	CO-1	L4

3.	Show with neat diagram how DMA improves input/output performance.	CO-2	L3
4.	Explain associative memory and virtual memory in detail with diagram.	CO-3	L5
5.	Distinguish between PCI, USB and SCSI I/O Interfaces.	CO-4	L4
6.	Explain the concept of cache mapping techniques in detail with diagram.	CO-5	L5
	SECTION-C		
7.	Examine the different addressing modes of 8085 with example and their impact on CPU design.	CO-1	L4
8.	Compare the four Flynn's taxonomy categories—SISD, SIMD, MISD, and MIMD in terms of instructions and data streams handling and also evaluate their performance characteristics.	CO-3	L4
9.	Conclude a memory hierarchy diagram and explain how it optimizes CPU performance.	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/AIML/AIDS/IOT/CSE DS/CS/RAI), Semester 3rd

DATA STRUCTURE & ALGORITHMS

Subject Code: BTCS-301-18

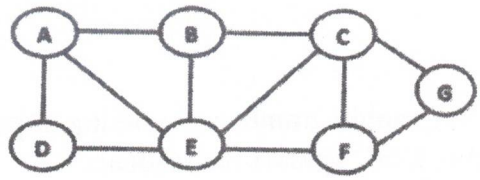
M.Code: 76436

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 Questions:09

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

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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Total No. of Questions: 09

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

OPERATING SYSTEMS

Subject Code: BTCS-402-18

M. Code: 77628

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.	Questions	Course Outcomes	Bloom's Level
	SECTION-A		
1.	**Answer briefly:**		
a.	Define soft RTS.	CO1	L1
b.	Outline any two advantages of LINUX operating systems.	CO1	L2
c.	What do you mean by PCB?	CO2	L1
d.	Illustrate the critical section problem in brief.	CO2	L2
e.	What is convoy effect?	CO3	L1
f.	Compare and Contrast between preemptive and non-preemptive scheduling?	CO3	L2
g.	Explain any two characteristics of virtual memory concept.	CO4	L2
h.	Explain the term file system in brief.	CO5	L2
i.	Summarize the need of I/O traffic controller.	CO6	L2
j.	What is meant by seek time and rotational latency in case of disk drive?	CO6	L1

	SECTION-B		
2.	Make use of a block diagram to discuss the layered structure of an Operating System.	CO1	L3
3.	Examine the role of scheduler in detail. Differentiate among short, medium and long term scheduler.	CO2	L4
4.	Explain the concept of deadlock in Operating System and interpret the four necessary conditions for a deadlock situation to arise.	CO3	L5
5.	A block manager for a variable size region strategy has a free list of blocks of size 600, 1400, 1000, 2200, 1600 and 1050 bytes. Elaborate, which block size will be selected to honor a request for 1605 bytes using best fit policy.	CO4	L6
6.	Analyze the concept of disk scheduling by discussing SSTF, C-SCAN disk scheduling algorithm with the help of an example.	CO6	L4
	SECTION-C		
7.	Consider the following set of processes, with the length of the CPU-burst time given in milliseconds: Process | Burst Time | Arrival time P1 | 5 | 0 P2 | 3 | 1 P3 | 1 | 2 P4 | 3 | 3 P5 | 5 | 4 The processes are assumed to have arrived in the order P1, P2, P3, P4, and P5. a. Apply FCFS and preemptive SJF (Shortest Job First) to draw two Gantt charts illustrating the execution of these processes. b. What is the turnaround time of each process for each of the scheduling algorithms in part a? c. What is the waiting time of each process for each of the scheduling algorithms in part a?	CO3	L3
8.	Discover the number of page faults using First in First Out (FIFO) and Least Recently Used(LRU) page replacement algorithm for given series of page references if the size of frame is 4. 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1	CO4	L4
9.	Explain the Contiguous, Linked and Indexed methods of file allocation in detail with the help of an example.	CO5	L5.

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Total No. of Questions: 09

B.Tech (IT), Semester- 4th

COMPUTER NETWORKS

Subject Code: BTIT 401-18

M.Code: 77543

Date of Examination: 19-11-2025

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.	Name any two functions of Transport layer.	CO 1	L1
b.	Summarize all Multiplexing techniques.	CO 1	L2
c.	Recall any two networking devices used in Wireless LAN.	CO 2	L1
d.	Outline the difference between LAN, MAN and WAN.	CO 2	L2
e.	Omit the differences between CSMA /CA and CSMA /CD.	CO 3	L1
f.	Illustrate the importance of TCP/IP Protocol.	CO 3	L2

Q. No.	Question	Course Outcome	Bloom's Level
g.	Define the term Domain Name System.	CO 4	L1
h.	Classify Bluetooth and its advantages.	CO 4	L2
i.	Define Digital Signature and their importance.	CO 5	L1
j.	Outline the concept of Decryption.	CO 5	L2
	SECTION-B		
2.	Analyze all the topologies with its advantages and disadvantages.	CO1	L3
3.	Contrast between Wired LAN and Wireless LAN.	CO2	L4
4.	Explain the concept of Leaky Bucket Algorithm with neat and clean diagram.	CO3	L5
5.	Examine the following: • Domain Name System • DDNS	CO4	L4
6.	Elaborate the basic concept of cryptography and discuss its significance in information security.	CO5	L6
	SECTION-C		
7.	Simplify all the layers of OSI Model in detail with neat and clean diagram.	CO1	L4
8.	Examine the following: • Go Back N ARQ and Selective repeat ARQ • Switching and its types.	CO3	L3
9.	Interpret TCP and UDP protocols in detail.	CO4	L5

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

Total No. of Questions: 09

B.Tech (IT), Semester- 4th

DESIGN & ANALYSIS OF ALGORITHMS

Subject Code: BTIT-403-18

M.Code: 77540

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.	Define the characteristics of a good algorithm.	CO1	L1
b.	Explain Time Complexity and Space Complexity.	CO1	L2
c.	List different algorithmic strategies with suitable examples.	CO2	L1
d.	Classify various dynamic programming problems.	CO2	L2
e.	Define transitive closure.	CO3	L1
f.	Compare BFS and DFS in terms of traversal order.	CO3	L2
g.	What is NP-complete problem?	CO4	L1
h.	Outline the Principle of optimality.	CO4	L2
i.	List various types of advanced algorithmic techniques	CO5	L1
j.	Summarize Cook's theorem.	CO5	L2
	SECTION-B		
2.	Distinguish between the recursive algorithms using substitution and recursion tree methods.	CO1	L4
3.	Apply greedy and dynamic programming strategies to solve the Knapsack problem. Knapsack instance n = 4, p(1:4) = {1,1,12,18} and Weight w (1:4) = (2,4,6,9) & max capacity m =15	CO2	L3
4.	Explain the working of Dijkstra's algorithm and the Floyd–Warshall algorithm used for computing shortest paths in graphs.	CO3	L5
5.	Analyze the complexity of Cook's theorem and its implications in NP-completeness.	CO4	L4
6.	Assess the role of heuristic algorithm for solving the Travelling Salesman Problem.	CO5	L5
	SECTION-C		
7.	a) Analyze the various asymptotic notations using suitable examples. b) Examine how these notations represent the best-case, average-case, and worst-case complexities for any two standard algorithms.	CO1	L4
8.	Develop an algorithm to compute Minimum Spanning Tree using Kruskal and Prim approaches.	CO3	L3
9.	Explain the following: a) State Space tree & Dead Node b) Give the statement of sum –of subsets problem. Find all sum of subsets for n=4, (w1, w2, w3, w4) = (11, 13, 24, 7) and M=31.Draw the portion of the state space tree using fixed – tuple sized approach.	CO4	L5

NOTE: Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the student.

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

Total No. of Questions: 09

B.Tech (IT), Semester- 4th

COMPUTER NETWORKS

Subject Code: BTIT 401-18

M.Code: 77543

Date of Examination: 19-11-2025

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.	Name any two functions of Transport layer.	CO 1	L1
b.	Summarize all Multiplexing techniques.	CO 1	L2
c.	Recall any two networking devices used in Wireless LAN.	CO 2	L1
d.	Outline the difference between LAN, MAN and WAN.	CO 2	L2
e.	Omit the differences between CSMA /CA and CSMA /CD.	CO 3	L1
f.	Illustrate the importance of TCP/IP Protocol.	CO 3	L2

Q. No.	Question	Course Outcome
g.	Define the term Domain Name System.	CO 4
h.	Classify Bluetooth and its advantages.	CO 4
i.	Define Digital Signature and their importance.	CO 5
j.	Outline the concept of Decryption.	CO 5
	SECTION-B	
2.	Analyze all the topologies with its advantages and disadvantages.	CO1
3.	Contrast between Wired LAN and Wireless LAN.	CO2
4.	Explain the concept of Leaky Bucket Algorithm with neat and clean diagram.	CO3
5.	Examine the following: • Domain Name System • DDNS	CO4
6.	Elaborate the basic concept of cryptography and discuss its significance in information security.	CO5
	SECTION-C	
7.	Simplify all the layers of OSI Model in detail with neat and clean diagram.	CO1
8.	Examine the following: • Go Back N ARQ and Selective repeat ARQ • Switching and its types.	CO3
9.	Interpret TCP and UDP protocols in detail.	CO4

NOTE: Disclosure of Identity by writing Mobile No. or Making of request on any page of Answer Sheet will lead to UMC against the stude

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

Total No. of Questions: 09

B.Tech (CSE/IT/AIML/AIDS/DS/IOT), Semester- 4th

DISCRETE MATHEMATICS

Subject Code: BTCS-401-18

M.Code: 77626

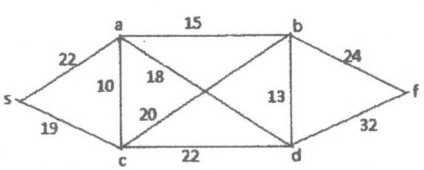
Date of Examination: 11-12-2025

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.	Questions	Course Outcome	Bloom's Level
	SECTION-A		
1.	**Answer briefly:**		
a.	Define equivalent sets with example.	CO1	L1
b.	Explain the domain and range of the relation $R=\{(x,y):x\in N, x<5, y=3\}$.	CO1	L2
c.	From 5 consonants and 4 vowels, how many words can be constructed using 3 consonants and 2 vowels?	CO2	L1
d.	Explain pigeonhole principle.	CO2	L2
e.	Show that $(p\wedge q)\rightarrow p$ is a tautology.	CO3	L1
f.	Explain the Converse and Contrapositive of the implication "if it snows tonight, then I will stay at home".	CO3	L2
g.	Define an abelian group.	CO4	L1
h.	Explain commutative ring with unity with example.	CO4	L2
i.	Does there exists a simple graph with six vertices of degrees 1,1,3,4,6,7? Explain.	CO5	L2
j.	What will be the chromatic number of complete graph with n - vertices?	CO5	L1

	SECTION-B		
2.	Examine whether intersection of two partial order relations is a partial order relation. But union of two partial order relations need not be a partial order relation. Give suitable example.	CO1	L4
3.	a) Examine how many people must you have to guarantee that at least 12 of them will have birthday on the same day of the week? b) Find the number of positive integers from 1 to 1000 which are divisible by none of 5,6 and 8.	CO2	L4
4.	a)Construct the truth table for $(p\wedge q)\vee r=(p\vee r)\wedge(q\vee r)$ b) Test the validity of the following argument: If a man is bachelor, he is unhappy. If a man is unhappy, he dies young. Therefore bachelors die young.	CO3	L3
5.	Solve the set C* of all non-zero complex numbers form an infinite abelian group under the operation of multiplication of complex numbers.	CO4	L3
6.	a) Prove that sum of degree of all vertices in a graph is equal to twice the number of edges in G b) Prove that in a graph the number of vertices of odd degree is even.	CO5	L5
	SECTION-C		
7.	Let $f:R\rightarrow R$ and $g:R\rightarrow R$ be a real valued functions defined by $f(x)=2x^3-1, x\in R$ and $g(x)=\left(\frac{x+1}{2}\right)^{1/3}, x\in R$. Examine whether f and g is inverse of each other?	CO1	L4
8.	Prove that a finite integral domain is a field.	CO4	L5
9.	Estimate shortest path from s to f for the following graph: 	CO5	L6

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

Total No. of Questions: 09

B. Tech (IT), Semester- 4th

DEVELOPMENT OF SOCIETIES

Subject Code: HSMC-101-18

M. Code: 77541

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.	Define development in the current global context.	CO1	L1
b.	Explain barter system function as an exchange mechanism.	CO1	L2
c.	Show social structures and their evolution.	CO1	L2
d.	Define Buddhist economics.	CO2	L1
e.	Summarize models of Governing system.	CO2	L2
f.	Outline the core principles of capitalism and socialism.	CO2	L2
g.	What are the Gandhian principles of development?	CO3	L1

Q. No.	Question	Course Outcome	Bloom's Level
h.	Extend E. F. Schumacher's idea of development	CO3	L2
i.	What is the concept of Swaraj as envisioned by Mahatma Gandhi?	CO4	L1
j.	Illustrate the concepts behind the origin of family.	CO1	L2
	SECTION-B		
2.	Identify the key differences between a clan and a society within the context of societal development.	CO1	L3
3.	Examine the fundamental ideas, characteristics, and functioning of various political systems.	CO2	L4
4.	Explain pre-British, British and post British period in detail.	CO3	L5
5.	Identify how countries address economic growth?	CO4	L3
6.	Explain the fundamental ideas of decentralization, highlighting its principles, advantages, limitations.	CO3	L5
	SECTION-C		
7.	Determine the various models of social structures and analyze their evolution in the context of societal development.	CO2	L4
8.	Categorize the principles of Gandhi non-violence, decentralization, and self-sufficiency within frameworks of modern global development concerns.	CO3	L4
9.	Compare the concept of development in the pre-British, British, and post-British periods with reference to systems such as Barter and Jajmani.	CO4	L5

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

Total No. of Questions: 09

B. Tech (IT), Semester- 4th

DEVELOPMENT OF SOCIETIES

Subject Code: HSMC-101-18

M. Code: 77541

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.	Define development in the current global context.	CO1	L1
b.	Explain barter system function as an exchange mechanism.	CO1	L2
c.	Show social structures and their evolution.	CO1	L2
d.	Define Buddhist economics.	CO2	L1
e.	Summarize models of Governing system.	CO2	L2
f.	Outline the core principles of capitalism and socialism.	CO2	L2
g.	What are the Gandhian principles of development?	CO3	L1

Q. No.	Question	Course Outcome	Bloom's Level
h.	Extend E. F. Schumacher's idea of development	CO3	L2
i.	What is the concept of Swaraj as envisioned by Mahatma Gandhi?	CO4	L1
j.	Illustrate the concepts behind the origin of family.	CO1	L2
	SECTION-B		
2.	Identify the key differences between a clan and a society within the context of societal development.	CO1	L3
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4.	Explain pre-British, British and post British period in detail.	CO3	L5
5.	Identify how countries address economic growth?	CO4	L3
6.	Explain the fundamental ideas of decentralization, highlighting its principles, advantages, limitations.	CO3	L5
	SECTION-C		
7.	Determine the various models of social structures and analyze their evolution in the context of societal development.	CO2	L4
8.	Categorize the principles of Gandhi non-violence, decentralization, and self-sufficiency within frameworks of modern global development concerns.	CO3	L4
9.	Compare the concept of development in the pre-British, British, and post-British periods with reference to systems such as Barter and Jajmani.	CO4	L5

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Total No. of Pages: 02

Total No. of Questions: 09

B.Tech. (IT), Semester- 4th

OPERATING SYSTEM

Subject Code: BTIT-402-18

M.Code: 77539

Date of Examination: 17-12-2025

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 the objectives of Operating System.	CO-1	L1
b.	Label Shell in OS.	CO-1	L2
c.	Illustrate PCB.	CO-2	L1
d.	Outline Compaction.	CO-2	L2
e.	Define Process Scheduling.	CO-3	L1
f.	Demonstrate deadlock with example.	CO-3	L2
g.	Define virtual memory.	CO-4	L1
h.	Compare paging and segmentation.	CO-4	L2
i.	Define term file. List various attributes of file.	CO-5	L1
j.	Compare protection and security.	CO-5	L2

Q. No.	Question	Course Outcome	Bloom's Level
	SECTION-B		
2.	Identify the different functions of operating system.	CO-1	L3
3.	Inspect the Readers' and Writer's problem.	CO-2	L4
4.	Explain the Coffman's conditions that lead to a deadlock.	CO-3	L5
5.	Make use of an example to explain Belady's anomaly in page replacement algorithms.	CO-4	L3
6.	Interpret the various functions of file system and the allocation methods of file management.	CO-5	L5
	SECTION-C		
7.	Illustrate the following structure of Operating system. a) Layered b) Client Server Architecture	CO-1	L3
8.	Examine the deadlock detection for single and multiple instances with the help of example.	CO-3	L4
9.	Discuss how disk can be schedule for its optimum utilization. Elaborate the disk scheduling algorithms using example.	CO-4	L6

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

B.Tech (Information Technology), Semester-5th

FORMAL LANGUAGE AND AUTOMATA THEORY

Subject Code: BTIT 501-18

M.Code: 78256

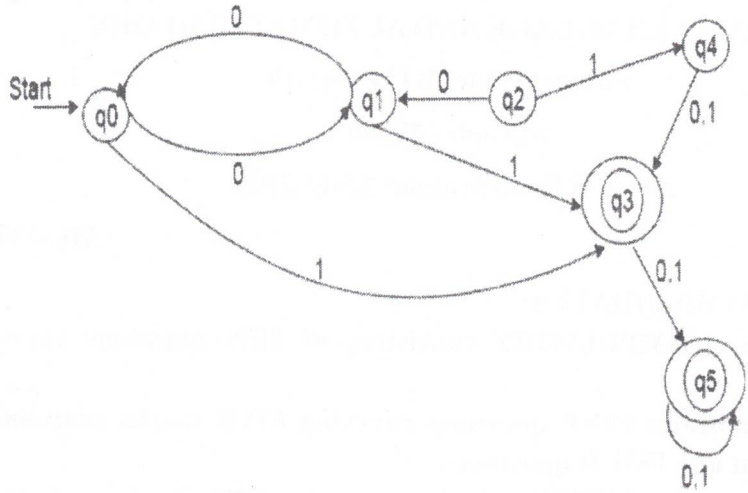
Date of Examination: 27-11-2025

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.**

<table>
<tr><th>Q. No.</th><th>Question</th><th>Course Outcome</th><th>Bloom's Level</th></tr>
<tr><td colspan="4">SECTION-A</td></tr>
<tr><td>1.</td><td>Answer briefly:</td><td></td><td></td></tr>
<tr><td>a.</td><td>Define the term "terminal symbols."</td><td>CO-1</td><td>L1</td></tr>
<tr><td>b.</td><td>Explain concatenation of strings?</td><td>CO-1</td><td>L2</td></tr>
<tr><td>c.</td><td>What is a deterministic finite automaton?</td><td>CO-2</td><td>L1</td></tr>
<tr><td>d.</td><td>Compare DFA and NFA with an example.</td><td>CO-2</td><td>L2</td></tr>
<tr><td>e.</td><td>State an example of a CFL.</td><td>CO-3</td><td>L1</td></tr>
<tr><td>f.</td><td>Compare CNF and GNF.</td><td>CO-3</td><td>L2</td></tr>
<tr><td>g.</td><td>Define recursive language.</td><td>CO-4</td><td>L1</td></tr>
<tr><td>h.</td><td>Summarize how TM accepts a string.</td><td>CO-4</td><td>L2</td></tr>
<tr><td>i.</td><td>What is NP-complete problem?</td><td>CO-5</td><td>L1</td></tr>
<tr><td>j.</td><td>Explain Cook-Levin theorem.</td><td>CO-5</td><td>L2</td></tr>
<tr><td colspan="4">SECTION-B</td></tr>
<tr><td>2.</td><td>Distinguish leftmost and rightmost derivations with an example.</td><td>CO-1</td><td>L4</td></tr>
<tr><td>3.</td><td>Construct Mealy machine from given Moore Machine with explanation of Procedure.
<table>
<tr><th rowspan="2">States(Q)</th><th colspan="2">Next States</th><th rowspan="2">Output</th></tr>
<tr><th>input=0</th><th>input=1</th></tr>
<tr><td>->q1</td><td>q1</td><td>q2</td><td>0</td></tr>
<tr><td>q2</td><td>q1</td><td>q3</td><td>0</td></tr>
<tr><td>q3</td><td>q1</td><td>q3</td><td>1</td></tr>
</table></td><td>CO-2</td><td>L3</td></tr>
<tr><td>4.</td><td>Construct a CNF for given CFG production.</td><td>CO-3</td><td>L5</td></tr>
<tr><td>5.</td><td>Examine the different representations of TM with examples.</td><td>CO-4</td><td>L4</td></tr>
</table>

6.	Judge the significance of NP versus Co-NP problems in computational theory.	CO-5	L5
	SECTION-C		
7.	Apply the Methods of minimization algorithm for DFAs and explain it by given example. 	CO-2	L3
8.	Simplify the concept of PDA for L = $\{a^n b^n \mid n>=0\}$.	CO-3	L4
9.	Explain a design of Turing machine that recognizes the language L=$\{a^n b^n, n>=1\}$. Show an ID for the string 'aabb' with tape symbols.	CO-4	L5

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

B.Tech (IT) Semester 5th
PROGRAMMING IN JAVA
Subject Code: BTIT503-18
M.Code: 78258
Date of Examination: 01-12-2025

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 array in Java.	CO-1	L1
b.	Differentiate between = = and equals() operator.	CO-1	L2
c.	Define constructor in Java.	CO-2	L1
d.	Explain the use of this keyword.	CO-2	L2
e.	List two advantages of inheritance.	CO-3	L1
f.	Differentiate between single and multilevel inheritance.	CO-3	L2
g.	Define thread synchronization.	CO-4	L1
h.	Difference between Process and Thread.	CO-4	L2
i.	What is an applet?	CO-5	L1
j.	Explain server socket.	CO-5	L2
	SECTION-B		
2.	Compare break and continue statements with examples.	CO-1	L4
3.	Apply and Explain method overloading to calculate areas of different shapes.	CO-2	L3
4.	Evaluate the advantages of using packages in modular programming.	CO-3	L5
5.	Analyze and Explain Java Thread Model.	CO-4	L4
6.	Evaluate TCP vs UDP for client-server applications.	CO-5	L5
	SECTION-C		
7.	Analyze in detail that makes java the most popular, preferable language over the years.	CO-1	L4

8.	(a) Compare abstract class and interface. (b) Write a program using interface.	CO-3	L4
9.	Evaluate the advantages of inter-thread communication with the help of a program.	CO-4	L5

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

B.Tech (Information Technology), Semester 5th

SOFTWARE ENGINEERING

Subject Code: BTIT 504-18

M.Code: 78259

Date of Examination:04-12-2025

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.	Why is Requirement Specification called a foundation document?	CO-1	L1
b.	Compare Verification and Validation.	CO-1	L2
c.	Define Scheduling.	CO-2	L1
d.	Explain Project Monitoring techniques.	CO-2	L2
e.	What is the goal of Six Sigma?	CO-3	L1
f.	Explain role of CASE tools.	CO-3	L2
g.	What is Class Diagram in UML?	CO-4	L1
h.	Contrast Error, Fault, and Failure.	CO-4	L2
i.	Define Unit Testing.	CO-5	L1
j.	Explain the importance of Test Case design.	CO-5	L2
	SECTION-B		
2.	Analyze the limitations of Waterfall model and Incremental Model in modern development.	CO-1	L4
3.	Apply the concepts of Project planning, Cost estimation, and Scheduling to propose a complete plan for a software project.	CO-2	L3
4.	Compare SEI-CMMI with ISO standards.	CO-3	L5
5.	Examine Various Code Review Techniques in detail with diagram.	CO-4	L4
6.	Compare Black Box Texting and White Box Texting in detail	CO-5	L5
	SECTION-C		
7.	Analyze various Phases of Software Development Life Cycle in detail.	CO-1	L4

8.	Analyze the role of software reuse in software projects and discuss how Six Sigma principles enhance software quality and defect reduction.	CO-3	L4
9.	Explain the main components of a Data Flow Diagram and draw all level DFD for Library management system.	CO-4	L5

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

B.Tech (IT), Semester 5th

CYBER LAWS & IPR

Subject Code: - BTIT 509-18

M.Code: - 78263

Date of Examination: - 20-11-2025

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.	Define three categories of cybercrime.	CO-1	L1
b.	Compare phishing and malware as cybercrimes.	CO-1	L2
c.	Who are cybercriminals?	CO-2	L1
d.	Demonstrate how law enforcement investigates cybercrimes.	CO-2	L2
e.	What is the jurisdiction of IT Act?	CO-3	L1
f.	Classify different regulators under IT Act.	CO-3	L2
g.	What is IPR?	CO-4	L1
h.	Illustrate with examples how copyright differs from patents.	CO-4	L2
i.	Name two rights of a copyright owner.	CO-5	L1
j.	Compare literary works and derivative works.	CO-5	L2
	SECTION-B		
2.	Distinguish between hacking and cyberstalking by examining their motives.	CO-1	L4
3.	Identify the function of Indian cyber agencies with Interpol.	CO-2	L3
4.	Determine the amendments to address the grey areas of IT Act 2000.	CO-3	L5
5.	Examine the relationships between IPR protection and innovation.	CO-4	L4
6.	Evaluate the effectiveness of fair use doctrine in balancing copyright and innovation.	CO-5	L5
	SECTION-C		
7.	Analyse the evolution of cybercrime from mainframes to the Metaverse. Critically examine how emerging technologies are changing the nature and targets of cybercrime.	CO-1	L4
8.	Classify the organizational structure, powers, and responsibilities of Certifying Authorities under the IT Act	CO-3	L4

9.	Explain IPR. Conclude all IPR types in detail with examples in the form of chart.	CO-4	L5

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

B.Tech (Information Technology) Semester 5th

DATABASE MANAGEMENT SYSTEM

Subject Code: BTIT502-18

M.Code: 78257

Date of Examination: 17-11-2025

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.**
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Q. No.	Question	Course Outcome	Bloom's Level
	SECTION-A		
1.	Answer briefly:		
a.	Recall any two DDL commands.	CO-1	L1
b.	Summarize the importance of data abstraction.	CO-1	L2
c.	Why is normalization required?	CO-2	L1
d.	Compare tuple and domain relational calculus.	CO-2	L2
e.	Label the structure of a B-tree.	CO-3	L1
f.	Compare primary and secondary index.	CO-3	L2
g.	What are ACID properties?	CO-4	L1
h.	Classify Commit and Rollback.	CO-4	L2
i.	Who can grant privileges in SQL?	CO-5	L1
j.	Summarize the benefits of object-oriented DBMS.	CO-5	L2
	SECTION-B		
2.	Compare a)Physical data independence and logical data independence with suitable examples. b)Data models -Hierarchical and Network	CO-1	L4
3.	Make use of SQL to a)Find names of employees whose salary is greater than the average salary of employees in their company. b) Find the names of all employees who live in the same city and the same street as their managers. Consider the following four relations : Employee (person-name, street, city) Works (person-name, company-name, salary) Company (company-name, city) Manages (person-name, manager-name)	CO-2	L3

4.	Explain RAID in storage management.	CO-3	L5
5.	Apply the concept of checkpoint in log-based recovery.	CO-4	L3
6.	Interpret the phases of an Intrusion Detection System.	CO-5	L5
	SECTION-C		
7.	Make use of examples to apply the concept of a)Strong entity sets and weak entity set b) Hierarchical data model and the Relational data model	CO-1	L3
8.	Compare different file organizations Strategies - heap, sorted, and hashed. Discuss their relative advantages and disadvantages for insert-heavy and search-heavy workloads.	CO-3	L4
9.	Deduce the term Serializability in database scheduling. Compare conflict Serializability and view Serializability with suitable examples	CO-4	L5

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

Total No. of Pages:03 Total No. of Questions: 09

B.Tech (Information Technology), Semester-5th

UNIVERSAL HUMAN VALUES 2

Subject Code: HSMC 122- 18

M.Code: 78260

Date of Examination: 22-11-2025

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.	What is meant by recyclability in natural systems? प्राकृतिक प्रणालियों में पुनर्चक्रणशीलता का क्या अर्थ है? ਕੁਦਰਤੀ ਪ੍ਰਣਾਲੀਆਂ ਵਿੱਚ ਰੀਸਾਈਕਲੇਬਿਲਟੀ ਦਾ ਕੀ ਅਰਥ ਹੈ?	CO-1	L1
b.	Extend the concept of harmony within I (Self). मैं (स्वयं) के भीतर सामंजस्य की अवधारणा का विस्तार करें। ਮੈਂ (ਸਵੈ) ਦੇ ਅੰਦਰ ਸਦਭਾਵਨਾ ਦੀ ਧਾਰਨਾ ਦਾ ਵਿਸਤਾਰ ਕਰੋ।	CO-1	L2
c.	List the four orders of nature with examples. प्रकृति के चार क्रमों को उदाहरणों के साथ सूचीबद्ध करें। ਕੁਦਰਤ ਦੇ ਚਾਰ ਕ੍ਰਮ ਨੂੰ ਉਦਾਹਰਣਾਂ ਨਾਲ ਸੂਚੀਬੱਧ ਕਰੋ।	CO-2	L1
d.	Explain the concept of Sanyam. संयम की अवधारणा को समझाइए। ਸੰਯਮ ਦੀ ਧਾਰਨਾ ਦੀ ਵਿਆਖਿਆ ਕਰੋ।	CO-2	L2
e.	Define the meaning of coexistence. सह-अस्तित्व के अर्थ को परिभाषित करें। ਸਹਿ-ਹੋਂਦ ਦੇ ਅਰਥ ਨੂੰ ਪਰਿਭਾਸ਼ਿਤ ਕਰੋ।	CO-3	L1
f.	Illustrate the relationship between human activity and natural imbalance. मानव गतिविधि और प्राकृतिक असंतुलन के बीच संबंध को स्पष्ट कीजिए।	CO-3	L2

Q. No.	Question	Course Outcome	Bloom's Level
	ਮਨੁੱਖੀ ਗਤੀਵਿਧੀਆਂ ਅਤੇ ਕੁਦਰਤੀ ਅਸੰਤੁਲਨ ਦੇ ਵਿਚਕਾਰ ਸਬੰਧਾਂ ਦੀ ਵਿਆਖਿਆ ਕਰੋ।		
g.	List examples of holistic technologies. समग्र प्रौद्योगिकियों के उदाहरणों के नाम बताइए। ਸੰਪੂਰਨ ਟੈਕਨੋਲੋਜੀਆਂ ਦੀਆਂ ਉਦਾਹਰਣਾਂ ਦੇ ਨਾਮ ਦਿਓ।	CO-4	L1
h.	Outline the mutually interacting units in nature. प्रकृति में पारस्परिक रूप से परस्पर क्रिया करने वाली इकाइयों को रेखांकित करें। ਕੁਦਰਤ ਵਿੱਚ ਪਰਸਪਰ ਕ੍ਰਿਆਸ਼ੀਲ ਇਕਾਈਆਂ ਦੀ ਰੂਪ ਰੇਖਾ ਤਿਆਰ ਕਰੋ।	CO-4	L2
i.	Name the method to achieve harmony at various levels – individual, family, society, and nature. विभिन्न स्तरों-व्यक्ति, परिवार, समाज और प्रकृति पर सामंजस्य प्राप्त करने के तरीकों के नाम बताइए। ਵੱਖ-ਵੱਖ ਪੱਧਰਾਂ-ਵਿਅਕਤੀ, ਪਰਿਵਾਰ, ਸਮਾਜ ਅਤੇ ਕੁਦਰਤ ਵਿੱਚ ਸਦਭਾਵਨਾ ਪ੍ਰਾਪਤ ਕਰਨ ਦੇ ਤਰੀਕਿਆਂ ਦੇ ਨਾਮ ਦੱਸੋ।	CO-5	L1
j.	Interpret the relationship between I (Self) and Body. मैं (स्वयं) और शरीर के बीच के संबंध की व्याख्या करें। ਮੈਂ (ਸਵੈ) ਅਤੇ ਸਰੀਰ ਦੇ ਵਿਚਕਾਰ ਸਬੰਧਾਂ ਦੀ ਵਿਆਖਿਆ ਕਰੋ।	CO-5	L2
	SECTION-B		
2.	Examine the Natural Acceptance in the context of human values. मानवीय मूल्यों के संदर्भ में प्राकृतिक स्वीकृति शब्द की जाँच करें। ਮਨੁੱਖੀ ਕਦਰਾਂ-ਕੀਮਤਾਂ ਦੇ ਸੰਦਰਭ ਵਿੱਚ ਕੁਦਰਤੀ ਸਵੀਕਾਰਤਾ ਸ਼ਬਦ ਦੀ ਜਾਂਚ ਕਰੋ।	CO-1	L4
3.	Make use of examples to show how intention differs from competence in relationships? यह दिखाने के लिए उदाहरण का उपयोग करें कि रिश्ते में योग्यता से इरादा कैसे अलग है? ਇਹ ਦਰਸਾਉਣ ਲਈ ਉਦਾਹਰਣ ਦੀ ਵਰਤੋਂ ਕਰੋ ਕਿ ਰਿਸ਼ਤੇ ਵਿੱਚ ਯੋਗਤਾ ਤੋਂ ਇਰਾਦਾ ਕਿਵੇਂ ਵੱਖਰਾ ਹੈ?	CO-2	L3
4.	Explain the universal human values necessary for fearlessness and co-existence. निर्भीकता और सह-अस्तित्व के लिए आवश्यक सार्वभौमिक मानवीय मूल्यों की व्याख्या करें। ਨਿਡਰਤਾ ਅਤੇ ਸਹਿ-ਹੋਂਦ ਲਈ ਜ਼ਰੂਰੀ ਵਿਸ਼ਵਵਿਆਪੀ ਮਨੁੱਖੀ ਕਦਰਾਂ-ਕੀਮਤਾਂ ਦੀ ਵਿਆਖਿਆ ਕਰੋ।	CO-3	L5
5.	Analyze how the depletion of resources affects global coexistence?	CO-4	L4

Q. No.	Question	Course Outcome	Bloom's Level
	विश्लेषण करें कि संसाधनों की कमी वैश्विक सह-अस्तित्व को कैसे प्रभावित करती है? ਵਿਸ਼ਲੇਸ਼ਣ ਕਰੋ ਕਿ ਸਰੋਤਾਂ ਦੀ ਕਮੀ ਵਿਸ਼ਵਵਿਆਪੀ ਸਹਿ-ਹੋਂਦ ਨੂੰ ਕਿਵੇਂ ਪ੍ਰਭਾਵਤ ਕਰਦੀ ਹੈ?		
6.	Explain the role of education in fostering environmental awareness. पर्यावरण जागरूकता को बढ़ावा देने में शिक्षा की भूमिका का मूल्यांकन करें। ਵਾਤਾਵਰਣ ਜਾਗਰੂਕਤਾ ਨੂੰ ਉਤਸ਼ਾਹਿਤ ਕਰਨ ਵਿੱਚ ਸਿੱਖਿਆ ਦੀ ਭੂਮਿਕਾ ਦਾ ਮੁਲਾਂਕਣ ਕਰੋ।	CO-5	L5
	SECTION-C		
7.	Examine the role of technology in ecological and social needs. पारिस्थितिकीय और सामाजिक आवश्यकताओं में प्रौद्योगिकी की भूमिका की जाँच करें। ਵਾਤਾਵਰਣ ਅਤੇ ਸਮਾਜਿਕ ਜ਼ਰੂਰਤਾਂ ਵਿੱਚ ਟੈਕਨੋਲੋਜੀ ਦੀ ਭੂਮਿਕਾ ਦੀ ਜਾਂਚ ਕਰੋ।	CO-1	L4
8.	Analyze how to manage our deprivation in relation to our ecosystem. विश्लेषण करें कि हमारे पारिस्थितिकी तंत्र के संबंध में हमारे अभाव का प्रबंधन कैसे किया जाए। ਵਿਸ਼ਲੇਸ਼ਣ ਕਰੋ ਕਿ ਸਾਡੇ ਵਾਤਾਵਰਣ ਪ੍ਰਣਾਲੀ ਦੇ ਸਬੰਧ ਵਿੱਚ ਸਾਡੀਆਂ ਕਮੀਆਂ ਦਾ ਪ੍ਰਬੰਧਨ ਕਿਵੇਂ ਕੀਤਾ ਜਾਵੇ।	CO-3	L4
9.	Explain why it is essential to move toward institutions that support mutual growth and benefit. समझाएँ कि पारस्परिक विकास और लाभ का समर्थन करने वाले संस्थानों की ओर बढ़ना क्यों आवश्यक है। ਸਮਝਾਓ ਕਿ ਆਪਸੀ ਵਿਕਾਸ ਅਤੇ ਲਾਭ ਦਾ ਸਮਰਥਨ ਕਰਨ ਵਾਲੀਆਂ ਸੰਸਥਾਵਾਂ ਵੱਲ ਵਧਣਾ ਕਿਉਂ ਜ਼ਰੂਰੀ ਹੈ।	CO-4	L5

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

B.Tech IOT, Semester-5th

INFORMATION THEORY AND CODING

Subject Code: BTES 504-20

M.Code: 92358

Date of Examination: 22-11-2025

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.	What is meant by mutual information in Information Theory?	CO-1	L1
b.	Infer the entropy value for a binary source that produces symbols with probabilities 0.6 and 0.4, showing the calculation steps.	CO-1	L2
c.	How is the error-correcting capability of a code mathematically related to its minimum distance?	CO-2	L1
d.	Summarize the applications of block codes in error control.	CO-2	L2
e.	Define error-trapping decoding applied in cyclic codes to identify errors.	CO-3	L1
f.	How does Go-Back-N ARQ protocol ensure reliable communication in case of errors?	CO-3	L2
g.	List the main advantages of convolutional coding adopted in modern communication systems.	CO-4	L1
h.	Outline the state diagram for a (2,1,3) convolutional code.	CO-4	L2
i.	What is a primitive polynomial in BCH coding related to code construction over Galois fields?	CO-5	L1
j.	Explain the concept of the generator polynomial of BCH codes used in encoding.	CO-5	L2
	SECTION-B		
2.	Analyze the mathematical model of information and inspect how it represents the communication process.	CO-1	L4
3.	Identify the concept of a generator matrix in coding theory and its role in generating valid code words for block and cyclic codes.	CO-2	L3

4.	Deduct a (7,4) cyclic code using the generator polynomial g(x) = x^3 + x + 1. Encode the message 1101.	CO-3	L5
5.	Analyze all output steps for a convolutional encoder with generators g1=(1,1,1) and g2=(1,0,1). Encode the input sequence 1101.	CO-4	L4
6.	Interpret how to decode a received word with one error using the standard BCH decoding steps for a (7, 4) BCH code.	CO-5	L5
	SECTION-C		
7.	Inference different types of errors in digital communication (random, burst) and discuss error detection/correction strategies with examples.	CO-1	L4
8.	Inspect the concept of majority-logic decoding in cyclic codes and examine its practical use in identifying and correcting errors in received codewords.	CO-3	L4
9.	Perceive Viterbi decoding using branch metrics and determine the most likely input sequence for a rate 1/2 convolutional code with g1=(1,1,1), g2=(1,0,1) if it receives the sequence: (11,10,01).	CO-4	L5

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Total No. of Pages: 2

Total No. of Questions: 09

B. Tech. (CSE / IT/ ECE / AIML / AIDS), Semester: 6th

WIRELESS COMMUNICATION

Subject Code: BTEC-601-18

M. Code: 79373

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.	Questions	Course Outcomes	Bloom's Level
	SECTION-A		
1.	**Answer briefly:**		
a.	List any two advantages of cell splitting.	CO1	L1
b.	Explain the term frequency reuse.	CO1	L2
c.	What do you understand by the term fading?	CO2	L1
d.	Interpret the concept of Maximum Ratio Combining.	CO2	L2
e.	Define Packet Radio Protocol.	CO3	L1
f.	Summarize the role of SDMA in improving system capacity.	CO3	L2
g.	What is IS -136 Standard?	CO4	L1
h.	How the emerging technologies have changed the communication system?	CO4	L2
i.	Illustrate any two technical aspects of Advanced Mobile Phone System.	CO4	L1
j.	Compare and contrast the differences between 4G and 5G technologies.	CO5	L2

	SECTION-B		
2.	Identify the need for handoff in cellular systems and describe the two types of handoff based on signal strength and carrier-to-interference (C/I) ratio.	CO1	L3
3.	Distinguish between Flat Fading and Frequency Selective Fading, highlighting their key characteristics and impact on signal transmission.	CO2	L4
4.	Compare the working principles of Time Division Multiple Access (TDMA) and Frequency Division Multiple Access (FDMA) along with their technical parameters.	CO3	L5
5.	Classify the key components of CDMA digital cellular standard (IS-95) and describe its frequency and channel specification in detail.	CO4	L4
6.	Explain the ZigBee protocol stack by constructing its architecture and describe the function of each layer. Discuss how effectively these layers work together to support reliable wireless communication.	CO5	L5
	SECTION-C		
7.	Analyze the various signal combining techniques used in wireless communication and explain how each technique improves signal quality, with suitable diagram.	CO2	L4
8.	Classify the various multiple access techniques used in wireless communication and describe the basic principle of each.	CO3	L4
9.	Assess the evolution of digital cellular land mobile systems and explain how they address the limitations of AMPS standards.	CO4	L5

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Total No. of Pages: 2

Total No. of Questions: 09

B.Tech (Information Technology), Semester- 6th

WEB TECHNOLOGIES

Subject Code: BTIT602-18

M.Code: 79624

Date of Examination: 27-11-2025

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.	Define the term URL.	CO-1	L1
b.	Illustrate ISP and DNS.	CO-1	L2
c.	List various types of tags in HTML.	CO-2	L1
d.	Outline the new features of HTML5.	CO-2	L2
e.	List various features of CSS.	CO-3	L1
f.	Compare ID and Class in CSS.	CO-3	L2
g.	What is the use of JavaScript in Web Development?	CO-4	L1
h.	Explain various inbuilt functions in JavaScript.	CO-4	L2
i.	List various operators in PHP.	CO-5	L1
j.	Compare Client Side and Server-Side Scripting Language.	CO-5	L2

Q. No.	Question	Course Outcome	Bloom's Level
	SECTION-B		
2.	List and analyze various Tools for web site creation.	CO-1	L4
3.	Construct registration forms and explain various elements of forms in HTML 5.	CO-2	L3
4.	Explain different types of CSS with suitable examples.	CO-3	L5
5.	Examine in detail the concept of Cookies in JavaScript with suitable example.	CO-4	L4
6.	Explain various types of Operators and Statements in PHP.	CO-5	L5
	SECTION-C		
7.	Compare IPV4 and IPV6. List and analyze various types of Internet addressing classes with suitable example.	CO-2	L4
8.	Discover the various CSS properties in web development explain in detail.	CO-3	L4
9.	Explain in detail the concept of dialog boxes in JavaScript with a suitable JavaScript code.	CO-4	L5

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B.Tech IT, Semester-6th

BIG DATA

Subject Code: BTIT 601-18

M.Code:79623

Date of Examination: 20-11-2025

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.	List various Challenges in Big Data.	CO1	L1
b.	Demonstrate the concept of Map reduce.	CO1	L2
c.	Show the future scope of ERP.	CO2	L1
d.	Explain Data Node.	CO2	L2
e.	Define PIG.	CO3	L1

Q. No.	Question	Course Outcome	Bloom's Level
f.	Illustrate the term Clustering.	CO3	L2
g.	What is HIVE?	CO4	L1
h.	Interpret the term Yarn.	CO4	L2
i.	Define Histogram.	CO5	L1
j.	Contrast the terms vector and List.	CO5	L2
	SECTION-B		
2.	Model 3V's of Big Data in detail.	CO1	L3
3.	Classify the Word Count Problem with an example.	CO2	L4
4.	Explain about various CRUD operations in MongoDB.	CO3	L5
5.	Distinguish between Hive and Pig with example.	CO4	L4
6.	Explain about Data Visualization and its modern tools used in data Visualization.	CO5	L5
	SECTION-C		
7.	Build various phases of mapreduce i.e Map, combiner, shuffle and reducer phase with one common example.	CO2	L3
8.	Discover various features of Cassandra in and how these features make it suitable for managing large-scale applications.	CO3	L4
9.	Explain the architecture of Hadoop Ecosystem in detail.	CO4	L5

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Total No. of Pages: 2

Total No. of Questions: 09

B. Tech (IT), Semester- 6th

CLOUD COMPUTING

Subject Code: BTIT 613-18

M.Code: 79632

Date of Examination: 17-11-2025

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.	List any four major characteristics of cloud computing.	CO-1	L1
b.	Summarize the historical developments that led to the cloud computing paradigm.	CO-1	L2
c.	Classify the key components of virtualization technology.	CO-1	L2
d.	How does the hypervisors enable virtual machine management in cloud system?	CO-2	L1
e.	Explain the three service models of cloud computing.	CO-2	L2
f.	Explain the functionality of PaaS with a real-time example.	CO-2	L2
g.	Show any two benefits of using hybrid cloud deployments.	CO-3	L1
h.	Compare private and community clouds with examples.	CO-3	L2
i.	Name common security risks in cloud environments.	CO-4	L1
j.	Illustrate methods used to prevent unauthorized access in cloud applications.	CO-4	L2

Q. No.	Question	Course Outcome	Bloom's Level
	SECTION-B		
2.	Simplify how the vision and driving factors of cloud computing influence modern IT infrastructure.	CO-1	L4
3.	Compare different types of virtualization and assess their impact on resource utilization.	CO-2	L3
4.	Construct a comparison between IaaS, PaaS and SaaS based on control, scalability and management.	CO-3	L6
5.	Develop a plan for implementing secure access control in multi-tenant cloud applications.	CO-4	L3
6.	Evaluate the effectiveness of existing security strategies in hybrid cloud platforms and propose improvements.	CO-3	L5
	SECTION-C		
7.	Inspect cloud concepts and virtualization principles to design an enterprise-level migration plan for legacy applications.	CO-2	L4
8.	Analyze different cloud service and deployment models to recommend a cost-effective solution for a health-care startup.	CO-3	L4
9.	Compose a detailed cloud security policy addressing threat mitigation, user authentication, and data protection mechanisms.	CO-3	L6

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Total No. of Questions: 09

B.Tech (IT), Semester- 6th

MACHINE LEARNING

Subject Code: BTIT 608-18

M.Code: 79627

Date of Examination: 15-12-2025

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 data Reduction?	CO1	L1
b.	Outline various issues in Machine learning.	CO1	L2
c.	Define the terms Feature scaling and Data cleaning	CO2	L1
d.	Compare feature extraction and feature selection with an example.	CO2	L2
e.	Show the use and advantages of Logistic Regression.	CO3	L1
f.	Illustrate the evaluation metrics used for regression models.	CO3	L2
g.	Define Precision and Recall.	CO4	L1
h.	Summarize decision tree in Machine Learning.	CO4	L2
i.	Recall support and confidence in association rule learning.	CO5	L1
j.	Define activation function.	CO5	L2

Q. No.	Question	Course Outcome	Bloom's Level
	SECTION-B		
2.	Analyze the basic machine learning workflow. Discuss the advantages and challenges of Machine Learning.	CO1	L4
3.	Examine the importance of splitting a dataset into training and testing sets in machine learning. Describe the process of randomly splitting a dataset into training and testing sets and explain the potential issues with this approach.	CO2	L4
4.	Compare Simple Linear Regression, Multiple Linear Regression, and Polynomial Regression.	CO3	L5
5.	Identify the importance and use of decision trees in Machine Learning.	CO4	L3
6.	Explain the importance of activation functions in neural networks.	CO5	L5
	SECTION-C		
7.	Identify the role of data pre-processing in improving the performance of machine learning algorithm with suitable examples.	CO2	L3
8.	Evaluate the performance of a regression model using RMSE, MAE, R-Square, and Correlation coefficient. Explain how these metrics provide insights into model accuracy.	CO3	L4
9.	Explain the concept of classification in detail.	CO4	L5

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Total No. of Pages: 02

Total No. of Questions: 09

B. Tech (IT), Semester 7th

ARTIFICIAL INTELLIGENCE

Subject Code: BTEC 908A-18

M. Code: 90678

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 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.	Recall the concept of intelligent control with an example.	CO-1	L1
b.	Explain the need for a rule base in artificial intelligence.	CO-1	L2
c.	Compare deductive and inductive reasoning.	CO-1	L2
d.	What is a Hopfield network?	CO-2	L1
e.	Summarize the working of Madaline.	CO-2	L2
f.	Interpret error-correction learning.	CO-2	L2
g.	State the role of parameters in genetic algorithm.	CO-3	L1
h.	Distinguish between single and multi-point crossover.	CO-3	L2
i.	List the MATLAB tools used in AI.	CO-4	L1
j.	Demonstrate time-series prediction using ANN.	CO-4	L2
	SECTION-B		
2.	Analyze the impact of different intelligent control approaches on industrial automation performance.	CO-1	L4
3.	Make use of perceptron learning rule to solve a binary classification problem with example values.	CO-2	L3
4.	Assess the effectiveness of genetic algorithm based optimization versus classical optimization techniques.	CO-3	L5
5.	Inspect genetic algorithm for Traveling Salesperson Problem (TSP) route optimization and implement chromosome encoding and fitness with examples.	CO-4	L4
6.	Explain the significance of an artificial neural network based model for time-series prediction in MATLAB.	CO-3	L5

SECTION-C			
7.	Classify various knowledge representation schemes and determine their suitability for intelligent control systems.	CO-1	L4
8.	Analyze how different selection strategies in genetic algorithms affect the convergence speed and the quality of the final solution.	CO-3	L4
9.	(a) Judge the suitability of fuzzy logic toolbox and neural network toolbox for industrial decision systems. (b) Appraise the various artificial neural network training parameters and analyze their influence on the system.	CO-4	L5

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

B.Tech (CSE/IT/AIML/AIDS), Semester-7th

ROUTING AND SWITCHING

Subject Code: BTEC-905A-18

M.Code: 90691

Date of Examination: 06-11-2025

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.	Define client-server network.	CO-1	L1
b.	Explain the function of a router in a computer network and describe how it determines the path for data transmission.	CO-1	L2
c.	Identify the role of the Destination MAC Address in an Ethernet frame.	CO-1	L2
d.	List any two advantages and disadvantages of circuit switching.	CO-2	L1
e.	Show the working of RIP with an example.	CO-2	L2
f.	Compare link state and distance vector routing protocol.	CO-2	L2
g.	What is the main concept behind creating VLANs?	CO-3	L1
h.	Explain how RAN solutions improve connectivity for remote or mobile users?	CO-3	L2
i.	How GRE is used in enterprise networks to connect remote branch offices or support multiprotocol traffic?	CO-4	L1
j.	Outline the role of Access Control List (ACL) in network security.	CO-4	L2
	SECTION-B		
2.	Identify and explain with an example how Ethernet framing is applied to ensure reliable data transfer across a LAN.	CO-1	L3
3.	Classify the various responsibilities of a Transport Layer. Explain the Connection establishment and termination process by describing the three-way handshaking method.	CO-2	L4
4.	Evaluate the effectiveness of utilizing enterprise RAN technology to extend wireless services across a corporate	CO-3	L5

	campus, and justify its advantages over traditional WLAN solutions.		
5.	Identify the various WAN Protocols that are used in network communication.	CO-4	L3
6.	Judge the effectiveness of VLAN principles in enhancing enterprise network security and efficiency, and defend their importance against alternative network structuring methods.	CO-4	L5
	SECTION-C		
7.	A network has 4 routers with the following link costs: * R1–R2 = 2 * R1–R3 = 5 * R2–R3 = 1 * R2–R4 = 2 * R3–R4 = 3 Given the same topology above, calculate the **OSPF cost** from R1 to R4.	CO-2	L5
8.	Identify the various principles of Frame relay in detail. Explore its Advantages and Disadvantages.	CO-3	L3
9.	Critically evaluate the future of network security by comparing ACLs, IPsec VPNs, and GRE with modern SD-WAN solutions.	CO-4	L5

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

B.Tech IT, Semester-7th

SOFTWARE TESTING AND QUALITY ASSURANCE

Subject Code: BTIT701-18

M.Code: 90569

Date of Examination: 28-11-2025

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.	Define the term "test case".	CO-1	L1
b.	Illustrate the steps involved in a typical testing process.	CO-1	L2
c.	What is code functional testing?	CO-2	L1
d.	Explain the need for configuration testing.	CO-2	L2
e.	List any two quality management metrics.	CO-3	L1
f.	Summarize the benefits of Six-Sigma for testing.	CO-3	L2
g.	List any four Quality Control tools.	CO-4	L1
h.	Compare between CMM and CMMI.	CO-4	L2
i.	Define PSP and TSP in software process.	CO-5	L1
j.	Explain the effect of CASE tools on software quality.	CO-5	L2
	SECTION-B		
2.	Solve a test design problem using defect examples as input.	CO-1	L3
3.	Explain regression testing in software testing. Give the importance of regression testing in large-scale projects.	CO-2	L4
4.	Assess the effectiveness of Total Quality Management (TQM) in modern testing environments and explain how it ensures to keep a software defect-free.	CO-3	L5
5.	Distinguish between CMM and SPICE frameworks.	CO-4	L4
6.	Compare PSP and TSP and explain how they support continuous improvement.	CO-5	L5
	SECTION-C		
7.	Examine the relationship between error, fault, and failure using practical incidents.	CO-1	L4

8.	Inspect the importance of debugging in test automation with a real world example. Show how debugging is different from testing with the help of example and also draw the flow chart of the process.	CO-3	L4
9.	Explain the following: a) Test Maturity model for improving test capability. b) Applications of Software Quality Assurance basics in preparing a project plan.	CO-4	L5

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Total No. of Questions: 09

B.Tech (Information Technology) Semester-7th

DATAWAREHOUSING AND MINING

Subject Code: BTIT 706-18

M.Code: 90558

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 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 data preprocessing?	CO-1	L1
b.	Classify the types of data that ~~can be~~ mined.	CO-1	L2
c.	What is pruning in decision trees?	CO-2	L1
d.	Interpret the usage of Gini index in decision trees.	CO-2	L2
e.	Define partition method.	CO-3	L1
f.	Compare different clustering methods used in data mining.	CO-3	L2
g.	What is a cluster centroid?	CO-4	L1
h.	Illustrate the process of data clustering with an example dataset.	CO-4	L2
i.	List examples of web mining tools.	CO-5	L1
j.	Compare web content, structure, and usage mining.	CO-5	L2
	SECTION-B		
2.	Analyze different data models and determine which is most suitable for a retail organization.	CO-1	L4
3.	Identify how support and confidence values are calculated in association rule mining.	CO-2	L3
4.	Assess the effectiveness of similarity measures used in clustering.	CO-3	L5
5.	Analyze the role of association rule mining in improving customer targeting strategies.	CO-4	L4
6.	Evaluate the usefulness of web content mining for analyzing online consumer behaviour.	CO-5	L5
	SECTION-C		
7.	Examine the role of OLAP and data cube computation in improving decision-making in business environments.	CO-1	L4

8.	Discover the role of cluster software tools in simplifying data analysis and decision-making.	CO-3	L4
9.	Evaluate the effectiveness of web usage mining in understanding customer behaviour patterns.	CO-4	L5

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

B.Tech (Information Technology), Semester 7th

SOFTWARE PROJECT MANAGEMENT

Subject Code: BTIT702-18

M.Code: 90550

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 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 project planning?	CO-1	L1
b.	Define software development process.	CO-1	L2
c.	List two advantages of risk evaluation.	CO-2	L1
d.	Illustrate the concept of cashflow forecasting?	CO-2	L2
e.	What is PERT technique?	CO-3	L1
f.	Classify risks as technical and non-technical.	CO-3	L2
g.	List stages in contract placement.	CO-4	L1
h.	Discuss the role of SCM in software projects.	CO-4	L2
i.	What is ISO model?	CO-5	L1
j.	Explain the meaning of software reliability.	CO-5	L2
	SECTION-B		
2.	Identify how project evaluation assists in decision-making.	CO-1	L3
3.	Compare Putnam's equation with Capers Jones rules of thumb.	CO-2	L4
4.	Judge the effectiveness of Monte Carlo simulation in project risk assessment.	CO-3	L6
5.	Apply project termination review to assess project outcomes.	CO-4	L3
6.	Elaborate how stress management improves team performance.	CO-5	L6

SECTION-C			
7.	Apply stepwise project planning to prepare a simple project plan for an online shopping system.	CO-1	L3
8.	Analyze how project risks can be identified and reduced at the planning stage.	CO-3	L4
9.	Discuss Contract management steps and the importance of contract terms in project success.	CO-4	L6

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