MANAV RACHNA UNIVERSITY

END SEMESTER EXAMINATION

SCHOOL OF ENGINEERING

CSE

DECEMBER – 2023

(1^{st} /3^{rd} /5^{th} /7^{th})

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MANAV RACHNA UNIVERSITY

MANAV RACHNA UNIVERSITY
SCHOOL OF SCIENCES
DEPARTMENT OF SCIENCES
"End Semester Examination, Dec-2023"

SEMESTER	**I**	**DATE OF EXAM/SESSION**	11.12.2023 (I)
COURSE NAME	**Probability and Statistics**	**COURSE CODE**	**MAH124B-T**
PROGRAM	**B.Tech.**	**CREDITS**	**4**
TIME DURATION	**3 Hrs.**	**MAX. MARKS**	**100**
NAME OF FACULTY	**Dr. Ramapati Maurya**	**NAME OF COURSE COORDINATOR**	**Dr. Advin Masih**

Note: All questions are compulsory

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	1(A)	A couple has two children. Find the probability that both are boys, if it is known that at least one of the children is boy.	5	CO1	BT2	1.1.1 1.1.2
	1(B)	A bag contains 8 items of which 2 are defective. A man selects 3 items at random. Find the expected number of defective items he had drawn.	5		BT2	1.2.1 1.1.2
	1(C)	Two cards are drawn successively with replacement from a well shuffled pack of 52 cards. Find the mean and variance of the number of Kings.	5			1.1.1 1.1.2
PART-B	2(A)	Consider a sample of size 2 drawn without replacement from an urn containing three ball numbered 1,2 and 3 . Let X be the number on the first ball drawn and Y the larger of the two number drawn a) Find joint discrete density function of X and Y b) Find $\rho[X, Y]$	5	CO2	BT3	1.2.1 1.1.2
	2(B)	In a normal distribution 31% of the items are under 45 and 8% are over 64. Find mean and standard deviation of the distribution.	5		BT3	1.1.1 1.2.1
	2(C)	X and Y are two random variables having joint density function = $\frac{1}{27}(2x + y)$ where x and y can assume only integer value 0, 1 and 2. Find the conditional distribution of Y for X= x.	5		BT3	1.2.1 1.2.1

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PART-C

3(A) Find the missing frequency from the following data , it is being given that 19.92 is the average number of tablets for being cured

No. of Tablets	No of Persons cured	No. of Tablets	No of Persons cured
4-8	11	24-28	9
8-12	13	28-32	17
12-16	16	32-36	6
16-20	14	36-40	4
20-24	?		

9 | CO3 | BT3 | 1.1.1 1.1.2

3(B) Find the Lower quartile (Q_1) and upper quartile(Q_3) from the following data

Overtime Hours	Number of Employees	Overtime Hours	Number of Employees
20-25	50	40-45	150
25-30	70	45-50	120
30-35	100	50-55	70
35-40	180	55-60	60

9 | BT4 | 1.2.1 1.1.2

3(C) A random sample of 5 students were selected and their grades in Mathematics and Statistics were found to be

	1	2	3	4	5
Maths.	85	60	73	40	90
Stats.	93	75	65	50	80

Calculate Spearman's rank correlation coefficients.

8 | BT4 | 1.1.1 1.1.2

3(D) From the given data obtain two regression equations using the method of least squares

X	2	4	6	8	10
Y	5	7	9	8	11

9 | BT3 | 1.2.1 1.1.2

PART-D

4(A) Fit a second degree parabola to the following data

x	1929	1930	1931	1932	1933	1934	1935	1936	1937
y	352	356	357	358	360	361	361	360	359

12 | CO4 | BT4 | 1.1.1 1.1.2

4(B) The demand for a particular spare part in a factory was found to vary from day to day as given below. Test the hypothesis that the number of parts demanded does not depends on the day of the week

Days	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.
No. of Parts demanded	124	125	110	120	126	115

11 | BT3 | 1.2.1 1.1.2

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4(C)	To test whether extra classes in mathematics improved performance , a similar test was given to 11 students, their scores both before and after the extra classes are given Test 5% level of significance if the extra classes were useful in terms of performance on the test.	12		BT4	1.1.1 1.1.2

Before	23	20	19	21	18	20	18	17	23	16	19
After	24	19	21	18	20	22	20	20	23	20	17

********** END **********

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MANAV RACHNA UNIVERSITY
SCHOOL OF SCIENCES
DEPARTMENT OF SCIENCES
"End Semester Examination, Dec-2023"

SEMESTER	**I**	**DATE OF EXAM/SESSION**	11.12.2023 (I)
COURSE NAME	**Calculus and Linear Algebra**	**COURSE CODE**	**MAH101B-T**
PROGRAM	**B.Tech CSE, R & AI**	**CREDITS**	**4**
TIME DURATION	**3 hrs**	**MAX. MARKS**	**100**
NAME OF FACULTY	**Dr. Kamlesh Kumar**	**NAME OF COURSE COORDINATOR**	**Dr. Ramapati Maurya**

Note: All questions are compulsory.

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
V-UNIT	1(A)	Using Taylor's series, compute the value of $\sin 31^0$ to four decimal places.	5	CO1	BT2	1.1.1 1.1.2
	1(B)	Find the radius of curvature of the curve $y = e^x$ at the point where it crosses the y-axis.	5	CO1	BT1	1.2.1 1.1.2
	1(C)	If $u = \frac{x^2y}{x+y}$, show that $x\frac{\partial^2 u}{\partial x^2} + y\frac{\partial^2 u}{\partial y \partial x} = \frac{\partial u}{\partial x}$.	5	CO1	BT2	1.1.2
II-UNIT	2(A)	Evaluate $\int_0^1 \int_x^{\sqrt{2-x^2}} \frac{x\,dy\,dx}{\sqrt{x^2+y^2}}$ by changing the order of integration.	5	CO2	BT2	1.1.1 1.1.2
	2(B)	Find the volume of the solid generated by the revolution of the plane area bounded by $y^2 = 9x$ and $y = 3x$ about the x-axis.	5	CO2	BT3	1.1.1
	2(C)	Evaluate $\int\int\int (x+y+z)dx\,dy\,dz$ over the tetrahedron bounded by the planes $x = 0, y = 0, z = 0$ and $x + y + z = 1$.	5	CO2	BT2	1.1.1 1.1.2
I-UNIT	3(A)	Test whether the following matrix is invertible. If so, use Gauss-Jordan method, to find the inverse of the matrix $A = \begin{bmatrix} 2 & 0 & -1 \\ 5 & 1 & 0 \\ 0 & 1 & 3 \end{bmatrix}$. Also verify $AA^{-1} = I_3$.	9	CO3	BT3	1.1.1 1.1.2
	3(B)	Test for the consistency of the following equations and if possible find the solution: $x + y + z = 3$	14	CO3	BT4	1.2.1 1.1.2

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		$x + 2y + 3z = 4$ $x + 4y + 9z = 6.$				
	3(C)	Find two non-singular matrix P and Q such that PAQ is in the normal form for the matrix $A = \begin{bmatrix} 2 & 1 & -3 & 6 \\ 3 & -3 & 1 & 2 \\ 1 & 1 & 1 & 2 \end{bmatrix}$.	12	CO3	BT4	1.1 1.1
PART-D	4(A)	Are the following vectors linearly dependent? If so, find a relation between them. $X_1 = (1,2,1), X_2 = (2,1,4), X_3 = (4,5,6).$	9	CO4	BT4	1.1. 1.1.
	4(B)	Find the Eigen values and Eigen vectors of the matrix $A = \begin{bmatrix} 3 & 1 & 4 \\ 0 & 2 & 0 \\ 0 & 0 & 5 \end{bmatrix}$.	14	CO4	BT3	1.2. 1.1.
	4(C)	Verify Cayley Hamilton theorem for the matrix $A = \begin{bmatrix} 1 & 0 & 2 \\ 0 & 2 & 1 \\ 2 & 0 & 3 \end{bmatrix}$ and hence find A^{-1}.	12	CO4	BT3	1.1. 1.1.

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MANAV RACHNA UNIVERSITY

MANAV RACHNA UNIVERSITY
SCHOOL OF SCIENCES
DEPARTMENT OF SCIECNES (Program-Physics)
"End Semester Examination, Dec-2023"

SEMESTER	1st	DATE OF EXAM/SESSION	14.12.2023 (I)
COURSE NAME	Quantum Mechanics for Engineers	COURSE CODE	PHH101B-T
PROGRAM	B.Tech. CSE A/B/C/R&AI	CREDITS	4
TIME DURATION	3hrs	MAX. MARKS	100
NAME OF FACULTY	Dr. Jaiparkash	NAME OF COURSE COORDINATOR	Dr. Jaiparkash

Note: "All questions are compulsory. *SET –A*

	Q. No.	QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	1(a)	What voltage must be applied to an electron to produce electrons of wavelength o 0.5 Å?	2	CO1	BT3	
	1(b)	Calculate the de-Broglie wavelength associated with electrons, which are accelerated by a voltage of 50kV.	3		BT3	
	1(c)	What is the minimum uncertainty in the energy state of an atom if an electron remains in this state for 10^{-8}sec?	3		BT3	
	1(d)	Derive an expression for time dependent Schrodinger wave equation.	7		BT2	
PART-B	2	Find the probability of finding a particle in a region 0 · 4L to 0.6L trapped in an infinite potential well of width L.	5	CO2	BT3	
	3	Solve Schrodinger equation for a particle confined to an infinite potential box of width 'L' in order to derive the expression for energy eigen values.	10		BT2	
PART-C	4	Apply Schrödinger wave equation to find the eigen values and eigen functions for a particle trapped in three dimensional potential box.	10	CO3	BT3	
	5(a)	Calculate the energy difference between the first two rotational energy levels of the $^{12}C^{16}O$ molecule if the intermolecular separation is 1.2 Å. Assume the molecule to be rigid rotator. (Given: h = 6.63×10^{-34} Js, N_A= 6.02×10^{23})	5		BT4	
	5(b)	Apply the Schrodinger equation for the H- atom and hence obtain the solution for θ and ϕ – dependent parts, respectively.	10+3		BT2	
	6	Show that $[L_x, L_y] = i\hbar L_z$.	7		BT3	
PART-D	7	Realize the basic logic classical gates (NAND, NOR and NOT logic gates) along with truth table using diode and transistor logics.	5+5+5= 15	CO4	BT2	
	8	Write the notes on the following: (i) Entropy (ii) Entanglement (iii) Qubits (iv) $(1010)_{10}$= ( )$_2$	2.5×4 = 10		BT2, BT3	
	9	Discuss the following: (i) Identity gate, (ii) Identity gate, (iii) Phase shift gate, (iv) Hadamard gate (v) CNOT gate	2×5 = 10		BT2	

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MANAV RACHNA UNIVERSITY

DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY

SEMESTER (I)

END TERM EXAMINATION

COURSE NAME: Introduction To Information Security	**COURSE CODE: CSH109B-T**	**CREDIT: 4**	**MAX. MARKS:100**	**TIME DURATION:3 Hrs**	**DATE OF EXAM: 14.12.2023**
PROGRAM: B.Tech (CSTI)		**SEMESTER: 1st**			
FACULTY NAME: Ms. Sanjeeda Saifi			**NAME OF COURSE COORDINATOR: Mr. Agha Imran Husain**		

Manbeet Kau

	Q.NO.	QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	1(A)	What are the primary objectives of information security? Explain with the help of example.	2	CO1	L2	1.1.1
	1(B)	What is the difference between Attacker and Defender? Support your answer with the help of case senarios.	2	CO3	L3	1.1.2
	1(C)	An organization wants to check the possible vulnerabilities in the network and server so what can you suggest and name of tools?	2	CO1	L4	1.1.1
	1(D)	What do you understand by Phishing? What are the possible countermeasure to save ourselves from phishing?	2	CO3	L3	1.1.2
	1(E)	Explain the term cyber stalking with the help of real-life case scenario	2	CO3	L3	1.2.1
	1(F)	What do you understand by the sociology of cyber criminals? Explain with the help of a case study.	2	CO2	L3	1.2.2
	1(G)	Explain the terms Risk, Threat, and Vulnerability with the help of real-life case scenarios.	2	CO1	L2	1.2.3
	1(H)	What are the differences between White Hat hackers and Black Hat hackers? Give a real-life example to support your answer.	2	CO3	L3	1.2.1
	1(I)	What do you understand by Distribution Attack? Why it is hard to track and counter?	2	CO3	L3	1.2.1
	1(J)	What do you understand by insider attacks? Explain each with the help of suitable examples.	2	CO1	L2	1.2.2
PART-B	2(A)	A fresh graduate who just put his/her first step toward cyber security comes under which type of hacker? Which OS will be helpful in cyber security?	2	CO1	L4	2.2.1
	2(B)	Write a short on IT Act 2000 with suitable case study.	4	CO2	L3	2.1.2
	2(C)	What do you understand by Ethical Hacking? Explain with the help of example.	4	CO2	L2	2.1.1

PART-C	3(A)	What do you understand by the term CIA Triad? What are the different elements of information security? How Parkerian Hexad is better compared to CIA Triad. Explain with suitable examples.	10	CO1	L3	2.1.3
	3(B)	Briefly explain the different job roles available in the field of information security. Which job role will be suitable for you and why. Support your answer with the help of real-life case scenarios.	10	CO2	L4	2.2.2
	3(C)	Explain different types of hackers in information security. Which type of hacker inspires you the most and why. Give suitable case studies or examples to support your answer.	10	CO3	L4	2.1.2
	3(D)	An organization wants to implement RBAC for restricting its network access. What are your view and benefits of the RBAC over other types of Access control?	10	CO4	L4	2.1.2
PART-D	4(A)	What do you understand by the term VAPT? Explain various steps involved in VAPT with suitable examples.	10	CO1	L2	3.1.1
	4(B)	Explain all the terms mentioned below with the help of case study: 1. Ethics 2. Morals 3. Values 4. Law	10	CO2	L3	3.2.1
	4(C)	**Scenario:** You have recently been appointed as the Information Security Officer for a multinational technology corporation. The organization is undergoing a digital transformation, and there's a need to enhance awareness of information security jargon among employees. Develop a scenario-based plan to educate employees on key information security jargon, emphasizing their relevance in the context of the company's evolving digital landscape. **Question:** As the Information Security Officer, outline a scenario-based plan to educate employees on essential information security jargon. Choose three pieces of jargon relevant to the organization's digital transformation, and provide real-world scenarios to illustrate the practical application of each term. How would you ensure that employees not only understand these jargon but also incorporate them into their daily work practices to enhance information security?	10	CO3	L5	3.2.2
	4(D)	What are the difference between Mandatory Access Control and Discretionary Access Control? Give a suitable example to support your answer.	10	CO4	L3	4.1..1

********** END **********

MANAV RACHNA UNIVERSITY

MANAV RACHNA UNIVERSITY

SCHOOL OF LAW

DEPARTMENT OF LAW

"End Semester Examination, Dec-2023"

SEMESTER	I/III	DATE OF EXAM	15/12/2023 (II)
COURSE NAME	Indian Constitution	COURSE CODE	LWS324
PROGRAM	B.Tech CSE/ECE/ME	CREDITS	
TIME DURATION	1:30 hours	MAX. MARKS	60
NAME OF FACULTY	Mr. Shubhank Sanjeev, Mr. Bharatendu Agarwal, Ms. Sampriti Phukan, Ms Sumbul Fatima, Ms Surbhi.	NAME OF COURSE COORDINATOR	Mr. Shubhank Sanjeev, Mr. Bharatendu Agarwal

Note: There are four sections in the paper. Attempt all questions from each part.

	Q.NO.	QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL
PART A	Q1	Constitution of India borrows heavily from other constitutions of the world. Discuss.	5	CO1	BT2
	Q2(A)	Fundamental Duties are a constant reminder for us to be model citizens. Do you agree? Also explain Fundamental Duties in Constitution of India.	5	CO2	BT 2
	Q2(B)	Position of President in Indian Constitution is special. Discuss.	5	CO 2	BT 3
PART B	Q3	Explain the position and importance of preamble to the Constitution of India in your own words..	5	CO 1	BT 2
	Q4(A)	Elaborate upon the federal features of the Constitution of India	5	CO 3	BT 1
	Q4(B)	Analyse the Emergency provisions of the Indian Constitution.	5	CO 3	BT 3
PART C	Q5	Amending the constitution of India is a complicated process. Give your opinion highlighting the limitations therein.	5	CO 4	BT 3
	Q6	How are Directive Principles of State Policy in the Indian Constitution inter-connected with Fundamental Rights? **OR** Explain the position and concept of Fundamental Rights in Indian Constitution?	5	CO 2	BT 3
	Q7	Explain 'Right to Life' as provided for in the Constitution of India.	5	CO 2	BT 3

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PART B	Q8	What is National Emergency? Explain its impact on Fundamental Rights.	5	CO 3	BT 2
	Q9	What are Fundamental Duties? Are they enforceable in India?	5	CO 2	BT 1
	Q10	What do you understand by 'Right to Equality' as provided for in the Constitution of India? **OR** Explain the position of Prime Minister under the Constitution of India.	5	CO 4	BT2

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MANAV RACHNA UNIVERSITY

SCHOOL OF SCIENCES

DEPARTMENT OF SCIENCES

"End Semester Examination , Dec-2023"

SEMESTER	1st	DATE OF EXAM	16.12.2023 (I)
SUBJECT NAME	ODSML	SUBJECT CODE	CSH107B-T
BRANCH	AIML, Robotics & AI	SESSION	I
TIME	3 hrs.	MAX. MARKS	100
PROGRAM	B.Tech.	CREDITS	4
NAME OF FACULTY	Dr. Ankita Gaur	NAME OF COURSE COORDINATOR	Dr. Ankita Gaur

Note: All questions are compulsory.

	Q.NO.	QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL
PART-A	Q.1(a)	Find the median, Q_1, Q_3, D_7 and P_{85} from the following data: x: 200-400 | 400-600 | 600-800 | 800-1000 | 1000-1200 | 1200-1400 | 1400-1600 | 1600-1800 | 1800-2000 f: 6 | 9 | 11 | 14 | 20 | 15 | 10 | 8 | 7	8	CO1	BT-3
	Q.1(b)	Calculate mean median and mode of the following data pertaining to marks in statistics out of 140 marks for 80 students in a class Marks more than: 0 | 20 | 40 | 60 | 80 | 100 | 120 No. of Students: 80 | 7 | 50 | 28 | 18 | 9 | 3	7	CO1	BT-3
PART-B	Q.2(a)	A random variable X has the following probability distribution: x: 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 $p(x)$: A | 3a | 5a | 7a | 9a | 11 a | 13a | 15a | 17a (i) Determine the value of a. (ii) Find $P(X < 3), P(X \geq 3), P(2 \leq X < 5)$.	8	CO2	BT-3
	Q.2(b)	Assume that on an average one telephone number out of fifteen is busy. What is the probability that if six randomly selected telephone numbers are selected randomly are called (i) Not more than three will be busy?	7	CO2	BT-4

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		(ii) At least three of them will be busy?			
PART-C	Q.3	Use the Gauss-Jordan method to find the inverse of the following matrix $A = \begin{bmatrix} 1 & 2 & -1 \\ -1 & 1 & 2 \\ 2 & -1 & 1 \end{bmatrix}$.	11	CO3	BT-3
	Q.4	Find nonsingular matrices P and Q such that PAQ is in the normal form for the matrix $A = \begin{bmatrix} 3 & 1 & 2 & 1 \\ 1 & 4 & 6 & 1 \\ 2 & -3 & 1 & -2 \end{bmatrix}$.	12	CO3	BT-3
	Q.5	State Cayley Hamilton theorem. Using Cayley Hamilton theorem find inverse of $\begin{bmatrix} 0 & 0 & 1 \\ 3 & 1 & 0 \\ -2 & 1 & 4 \end{bmatrix}$	12	CO3	BT-3
PART-D	Q.6	Find the value of λ , the equations $x + y + z = 6$, $x + 2y + 3z = 10$, $x + 2y + \lambda z = \mu$ have (i) no solution (ii) unique solution (iii) more than one solution?	11	CO3	BT-4
	Q.7	Diagonalize the matrix $A = \begin{bmatrix} 1 & 6 & 1 \\ 1 & 2 & 0 \\ 0 & 0 & 3 \end{bmatrix}$, and hence find A^4.	12	CO4	BT-3
	Q.8	Solve the system of equations $x + y + z = 1$, $3x + y - 3z = 5$, $x - 2y - 5z = 10$ by writing the coefficient matrix as a product of the lower and the upper triangular matrix.	12	CO4	BT-4

********** END **********

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MANAV RACHNA UNIVERSITY

MANAV RACHNA UNIVERSITY

SCHOOL OF SCIENCES

DEPARTMENT OF SCIENCES

"End Semester Examination, Dec-2023"

SEMESTER	I/III	DATE OF EXAM	19.12.2023 (II)
COURSE NAME	ENVIRONMENTAL SCIENCE	COURSE CODE	CHH137/CHH107B
PROGRAM	B.TECH. CSE/BBA/B.Sc. B.ED./B.A. B.ED.	CREDITS	NIL/04
TIME DURATION	120 MINUTES	MAX. MARKS	50
NAME OF FACULTY	PROF. MEENA KAPAHI/DR. V. V. PATHAK/DR. PRITI GUPTA/DR. EKTA RAWAT/DR. HARSHA DEVNANI/Dr. VINOD KUMAR/ MS. ANJU SHARMA	NAME OF COURSE COORDINATOR	PROF. (DR.) MEENA KAPAHI

Note: All questions are compulsory. Some questions may offer internal choice.

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL
PART A	1(A)	Can you analyze the advantages and disadvantages of ex-situ conservation methods, providing examples of how these approaches contribute to the preservation of biodiversity in natural habitats.	5	CO3	BT3
	1(B)	Explain the multidisciplinary nature of Environmental Studies. Provide at least two examples to explain the collaboration between different disciplines to address environmental challenges.	5	CO1	BT2
	1(C)	Compare and contrast the levels of biodiversity, including genetic, species, and ecosystem diversity, highlighting their functional significance in ecological systems.	5	CO3	BT5
PART B	2(A)	Briefly outline the salient features of the water (prevention and control of pollution) Act 1974.	5	CO2	BT1
	2(B)	Compare and contrast point and non-point sources of water pollution considering their characteristics and impacts. Discuss the challenges associated with pollution from agricultural runoff considering its impact.	3+2=5	CO4	BT3
	2(C)	Apply your knowledge of pollution prevention by outlining the specific roles and responsibilities an individual can undertake to contribute to environmental well-being.	5	CO2	BT3
	3(A)	Write a short note on following population characteristics: (i) Doubling time (ii) HIV/AIDS	2.5+2.5=5	CO4	BT1
	3(B)	Discuss the variation of a country's population having urn shaped age pyramid. How does this demographic pattern impact factors such as workforce distribution and economic development?	2+3=5	CO4	BT4
	3(C)	What is population explosion? How does it affect the overall development of a country?	2+3=5	CO4	BT2
	3(D)	What are agents responsible for ozone depletion? Comment on the long-term consequences and propose mitigation strategies to address the challenges posed by ozone depletion.	2+3=5	CO2	BT2

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MANAV RACHNA Vidyaparishad

MANAV RACHNA UNIVERSITY
Declared as State Private University vide Haryana Act 26 of 2014

DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY

"End Term Examination, Dec-2023"

SEMESTER	**1st**	**DATE OF EXAM**	**20.12.2023**
SUBJECT NAME	**INTRODUCTION TO ROBOTICS**	**SUBJECT CODE**	**MEH108B-T**
BRANCH	**R&AI**	**SESSION**	**Morning**
TIME	**08.30AM - 11.30AM**	**MAX. MARKS**	**100**
PROGRAM	**B.Tech**	**CREDITS**	**3**
NAME OF FACULTY	**Dr. Ajit**	**NAME OF COURSE COORDINATOR**	**Dr. Ajit**

Note: All questions are compulsory.

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL
PART-A	1(A)	Define degrees of freedom. Mention its importance in robotics.	5	CO1	BT1
	1(B)	Describe the Laws of robots.	5	CO1	BT2
	1(C)	With the help of line diagram explain basic components of a robot system.	5	CO1	BT2
PART-B	2(A)	Discuss the working principle of hydraulic actuators.	5	CO2	BT3
	2(B)	Discuss the Mechanical and hydraulic drives associated for transmission of power for robot.	5	CO2	BT3
	2(C)	Elaborate role of stepper motor in robotics .	5	CO2	BT2
PART-C	3(A)	Explain use of robot in assembly operation.	8	CO3	BT2
	3(B)	What are the types of End effectors?	9	CO3	BT1
	3(C)	What do you mean by sensor and transducer explain with the example?	9	CO4	BT2

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PART-D	3(D)	What is a proximity sensor, explain in details the temperature and electric sensors.	9	CO4	BT2
	4(A)	What are the material handling applications of robot?	9	CO3	BT1
	4(B)	Discuss are the future applications of Robot?	8	CO3	BT2
	4(C)	Justify the applications of robots in continuous arc welding and spray painting.	9	CO4	BT5
	4(D)	Analyze the robot economics and safety of robot.	9	CO4	BT4

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MANAV RACHNA UNIVERSITY

DEPARTMENT OF EDUCATION AND HUMANITIES

End Term Examination -B. Tech Sem 1

SEMESTER	**1**	**DATE OF EXAM**	**21.12.2023**
SUBJECT NAME	**Professional English (Set-A)**	**SUBJECT CODE**	**EDS 166**
BRANCH	**Computer Science**	**SESSION**	**I**
TIMING	**2 Hrs**	**MAX. MARKS**	**50**
PROGRAM	**B. Tech**	**CREDITS**	**02**
NAME OF FACULTY	**Dr. Chhavi Kulshrestha**	**COURSE COORDINATOR**	**Dr. Akhilesh Dwivedi**

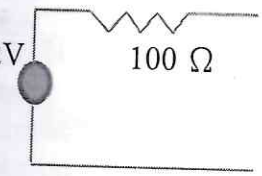
Note: All the questions are compulsory.

Q.NO.		QUESTIONS	MARKS	CO	BT
PART-A	1	Differentiate between simple and Complex sentences. Explain them with the help of examples.	05	CO1	BT2
	2	Explain the use of stress in communication.	05	CO2	BT2
PART-B	3 (a)	"Effective communication is obligatory for professional life," Justify this statement.	02	CO3	BT5
	3 (b)	"Decoding is key in the process of communication," Discuss.	02	CO3	BT4
	3 (c)	What do you understand by expository writing? Exemplify it.	02	CO4	BT2
	3 (d)	How does presentation make communication more effective? Give reasons in support of your answer.	02	CO3	BT4
	3 (e)	Exemplify the difference between semi-colon and full stop.	02	CO4	BT2
	4	Barriers and filters are keys for effective communication. How do they make communication ineffective? Explain their types as well.	5+5	CO1	BT2
	5	What do you understand by Verbal Communication? Explain their types in details.	5+5	CO3	BT2
	6	Write an essay in 500 words on "Pollution and Urbanization." Discuss with contemporary examples. Or "Writing needs to make effective introduction and informative conclusion," justify the statement. Write an example of 200 words on the topic "Digital Literacy."	5+5	CO4	BT5

MANAV RACHNA UNIVERSITY
SCHOOL OF ENGINEERING
DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING
"End Semester Examination, Dec-2023"

SEMESTER	**I**	**DATE OF EXAM**	**22.12.2023 (I)**
COURSE NAME	**BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING**	**COURSE CODE**	**ECH103B-T**
PROGRAM	**B.TECH ECE/CSTI/AIML/R&AI**	**CREDITS**	**4**
TIME DURATION	**3 hrs**	**MAX. MARKS**	**100**
NAME OF FACULTY	**LOKESH BHARDWAJ, BHANU PRATAP CHAUDHARY, K.DEEPA, PIYUSH CHARAN, SUNANDA MENDIRATTA**	**NAME OF COURSE COORDINATOR**	**LOKESH BHARDWAJ** Lokesh Parthak

Note: All questions are compulsory.

	Q.NO.	QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	1(A)	Which theorem is used to simplify complex linear circuits into an equivalent circuit with a single current source and a single resistor? Also write the statement.	2	CO1	L2	1.2.1
	1(B)	What is current division rule? Explain with the help of a circuit.	2	CO1	L2	1.2.1
	1(C)	Convert the following voltage source into equivalent current source. 	2	CO1	L2	1.2.1
	1(D)	What is the significance of Volt equivalent of temperature V_{TH}	2	CO1	L2	1.2.1
	1(E)	Why the PN junction diode is considered as a non-linear device?	2	CO1	L3	1.3.1

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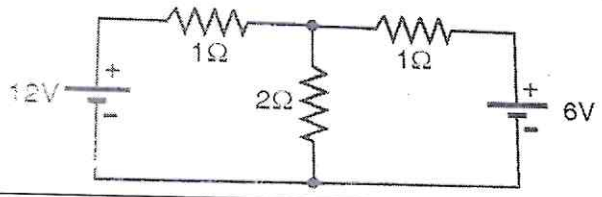
	1(F)	For the following circuit, find the value of current through 2 Ω resistance through Norton's theorem. 	5	CO1	L3	1.3.1
PART-B	Q2(A)	Why Bridge type full wave rectifier is preferred over center tap full wave rectifier.	2	CO2	L1	1.3.1
	Q2(B)	Write the relationship between current amplification factors of CE and CB transistors.	2	CO2	L2	1.1.1, 1.3.1
	Q2(C)	What is the basic difference between LED and photodiode?	2	CO2	L2	1.2.1
	Q2(D)	Voltage regulation is possible with Zener diode. Explain the reason.	2	CO2	L2	1.2.1
	Q4(E)	Draw a symbol of OP-AMP with proper labeling.	2	CO2	L3	1.2.1
	Q4(F)	Derive the equation of current in a purely capacitive circuit. Draw the phasor diagram along with current and voltage waveforms.	5	CO2	L2	1.1. 1, 1.3.1
PART-C	Q3(A)	Determine the value of forward voltage across a Silicon based PN-Junction diode if the forward current through the diode is 5 mA and the reverse saturation current is 2 μ A.	4	CO3	L4	1.3.1, 1.4.1, 2.3.1, 3.1.1
	3(B)	Explain the working of a Full Wave bridge type rectifier in detail with suitable waveforms and diagram.	6	CO3	L2	1.3.1, 2.3.1
	Q3(C)	Explain the working of CE transistor amplifier in detail. Also, discuss the output characteristics and explain the different regions of operation.	6+5+4	CO3	L2	2.3.1, 3.2.1
	Q3(D)	Find the value of collector and base currents for the transistor circuit given below. Assume that the transistor is working in active region. β=90	10	CO3	L1	2.3.1, 2.3.2

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		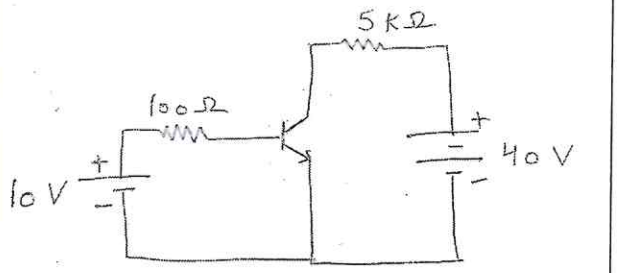				
PART-D	Q4(A)	Explain the RC-Phase shift oscillator with the help of labeled diagram.	7	CO4	L2	1.3.1, 1.4.1, 2.3.1, 3.1.1
	Q4(B)	List down the applications of Operational Amplifier. Why OP-AMP is called differential amplifier. Write the ideal characteristics of OP-AMP.	3+5	CO4	L1, L2	1.4.1
	Q4(C)	Derive the expression for the output voltage of a non-inverting OP-AMP. What is slew rate?	7+3	CO4	L2	1.4.1, 2.3.1
	Q4(D)	Explain the working of OP-AMP as subtractor with properly labeled diagram. Draw an OP-AMP circuit such that $V_0 = V_i$.	7+3	CO4	L2	1.4.1, 2.3.1, 2.3.2
		********** END **********				

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MANAV RACHNA UNIVERSITY

MANAV RACHNA UNIVERSITY
SCHOOL OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY
"End Semester Examination, Dec-2023"

SEMESTER	**I**	**DATE OF EXAM**	**26/12/2023 (I)**
COURSE NAME	Programming for Problem Solving using C	**COURSE CODE**	**CSH101B-T**
PROGRAM	CSE/AIML/FSD/CSTI/R&AI/ECE	**CREDITS**	**4**
TIME DURATION	**3 hrs**	**MAX. MARKS**	**100**
NAME OF FACULTY	**Dr. Susmita Ray** **Dr. Manpreet Kaur** **Dr. Parneeta Dhaliwal** **Ms. Chandni Magoo** **Dr. Shalu** **Dr. Meena Chaudhary**	**NAME OF COURSE COORDINATOR**	**Dr. Meena Chaudhary** Manpreet Kaur

Note: All questions are Compulsory.

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
Part-A	1(A)	Can one type of data be converted into another? If Yes, explain with an example.	3	CO1	BT1	1.4.1
	1(B)	Differentiate between Structure and Union.	3	CO3	BT2	1.3.1
	1(C)	State the use of break and continue statements along with an example.	3	CO1	BT2	1.4.1

	1(D)	Define the term keyword.
		Find the output of the following code snippet:
		main ()
		{
		int x, y;
		x = 5;
		y = x++ / 2;
		printf("%d", y);
		return 0;
		}
			1+2	CO1	BT3	2.1.3

	1(E)	Differentiate between Pre and Post increment operator with suitable example.	3	CO2	BT2	1.4.1

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Part-B	2(A)	Why functions are needed ? Differentiate between Local and Global variable using suitable example.	3	CO3	BT2	1.4.1
	2(B)	Write a program to enter two numbers. Make a comparison between them with the conditional operator. If the first number is greater than the second, perform division operation otherwise multiplication operation.	3	CO2	BT3	1.4.1
	2(C)	Differentiate between selection and iteration statements in C along with their syntax and examples.	3	CO2	BT2	1.4.1
	2(D)	Write a program in C to calculate power of a number inputted by the user.	3	CO2	BT3	1.4.1
	2(E)	What are Pointers? What are the benefits of using pointers? Explain with an example.	1+2	CO3	BT2	1.4.1
Part-C	Q3	What is Recursion? WAP to find the sum of n numbers using recursion.	1+4	CO3	BT3	1.4.1
	Q4	Write a C program to search a particular roll no. in an array. If that roll no. exist in an array print "number is present" else print "number is absent".	10	CO3	BT3	1.4.1
	Q5	a) Consider a scenario of convocation of 5 M.tech students holding the score 60,54,83,75,66 respectively .For the distribution of the degree they have to sit in ascending order as the topper has to be specially honoured with an award in the end .Apply Bubble sort to order the sequence for the smooth conduction of the process with stepwise execution. b) Write a program to subtract two matrices and get the result in third matrix.	10+10	CO3	BT3	2.1.3
Part-D	Q6	Explain any 5 different operations performed on a file with the help of an example.	5	CO4	BT2	1.4.1

	Q7	Consider the following declaration for Structure employee,
		struct employee {
		int emp_id;
		char name[20];
		float salary;
		};
		Write the C program for displaying above information for four employees given by the user using the concept of array of structure.
			10	CO3	BT3	2.1.3

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	Q8	Why call by reference method is preferred over call by value method? Write a C program to swap contents of two variables using call by reference..	2+8	CO3	BT3	1.4.1
	Q9	Briefly explain the significance of dynamic memory allocation. Differentiate the following functions using examples 1)malloc() and calloc() 2)free() and realloc()	2+8	CO4	BT2	1.4.1

********** END **********

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MANAV RACHNA UNIVERSITY

SCHOOL OF SCIENCES

DEPARTMENT OF SCIENCES

"End Semester Examination, Dec-2023"

SEMESTER	**Ist**	**DATE OF EXAM**	**11.12.2023 (I)**
COURSE NAME	**Mathematics-I(Calculus and Linear Algebra)**	**COURSE CODE**	**MAH103B**
PROGRAM	**B.Tech- ECE & VLSI**	**CREDITS**	**4**
TIME DURATION	**3 Hours**	**MAX. MARKS**	**100**
NAME OF FACULTY	**Dr. Y K Sharma**	**NAME OF COURSE COORDINATOR**	**Dr. Y K Sharma**

Note: Attempt All Questions.

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	1(A)	Find the radius of curvature at $(\frac{a}{4}, \frac{a}{4})$ of the curve $\sqrt{x} + \sqrt{y} = a$	5	CO1	BT1	1.1.1 1.2.1
	1(B)	Verify $\frac{\partial^2 u}{\partial x \partial y} = \frac{\partial^2 u}{\partial y \partial x}$ for $u(x,y) = sin^{-1}(\frac{y}{x})$	5	CO1	BT2	1.1.2 1.3.1
	1(C)	Compute to three decimal places, the value of $\sqrt{26}$ by use of Taylor's series.	5	CO1	BT2	1.1.2 1.3.1 2.1.3
PART-B	1(D)	Find $div(3x^2\hat{\imath} + 5xy^2 + x\,y\,z^3)$ at the point (1,2,3)	5	CO2	BT1	1.1.2 1.3.1 2.1.3
	1(E)	If $\vec{r} = x\hat{\imath} + y\hat{\jmath} + z\hat{k}$, show that div $\hat{r} = 3$	5	CO2	BT3	1.1.2 1.3.1 2.1.3
	1(F)	Change the order of integration $\int_0^a \int_x^a \frac{x\,dx\,dy}{x^2+y^2}$ and hence solve.	5	CO2	BT2	1.1.2 1.3.1 2.1.3
PART-C	Q2	Examine the convergence/ divergence of the series $\sum_{n=1}^{\infty}[\sqrt{n^3+1} - \sqrt{n^3}]$	9	CO3	BT4	1.1.2 1.3.1 2.1.3
	Q3	Examine the convergence/ divergence of the series $\frac{1}{2} + \frac{1.3}{2.4} + \frac{1.3.5}{2.4.6} + \cdots \ldots \infty$	10	CO3	BT4	1.1.2 1.3.1 2.1.3
	Q4	Examine the convergence/ divergence of the series	8	CO3	BT4	1.1.2 1.3.1

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		$\Sigma\left(\frac{n}{n+1}\right)^{n^2}$				2.1.3
	Q5	Examine the convergence/ divergence of the series $1-\frac{1}{2}+\frac{1}{3}-\frac{1}{4}+\cdots.\infty$	8	CO3	BT4	1.1.2 1.3.1 2.1.3
PART-D	Q6	Find the inverse of the matrix $\begin{bmatrix} 8 & 4 & 3 \\ 2 & 1 & 1 \\ 1 & 2 & 1 \end{bmatrix}$ By Gauss –Jordan method.	7	CO4	BT1	1.1.2 1.3.1 2.1.3
	Q7	With the help of matrix , solve the simultaneous equations $x+y+z=3, x+2y+3z=4, x+4y+9z=6.$	8	CO4	BT3	1.1.2 1.3.1 2.1.3
	Q8	Find the Eigen values and Eigen vectors of the matrix A, Where A $\begin{pmatrix} 2 & 3 & -2 \\ -2 & 1 & 1 \\ 1 & 0 & 2 \end{pmatrix}$	10	CO4	BT3	1.1.2 1.3.1 2.1.3
	Q9	Verify Cayley- Hamilton theorem for the matrix A $=\begin{pmatrix} 2 & 1 & 1 \\ 0 & 1 & 0 \\ 1 & 1 & 2 \end{pmatrix}$. Also find the invers of A.	10	CO4	BT3	1.1.2 1.3.1 2.1.3

********** END **********

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MANAV RACHNA UNIVERSITY

SCHOOL OF SCIENCES

DEPARTMENT OF SCIENCES

"End Semester Examination, Dec-2023"

SEMESTER	Ist	DATE OF EXAM/SESSION	11.12.2023 (I)
COURSE NAME	Mathematics – I (CALCULUS & LINEAR ALGEBRA)	COURSE CODE	MAH102B-T
PROGRAM	B.TECH. - SMA	CREDITS	4
TIME DURATION	3 Hrs.	MAX. MARKS	100
NAME OF FACULTY	Dr. ADVIN MASIH	NAME OF COURSE COORDINATOR	Dr. Ankita Gaur

Note: All questions are compulsory.

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	Q.1(a)	If $x^x + y^y + z^z = c$, show that at $x = y = z$, $\frac{\partial^2 z}{\partial x \partial y} = -(x \log ex)^{-1}$.	7	CO1	BT-3	1.1. 9.1.
	Q.1(b)	If $u = \sin^{-1}\left(\frac{x+2y+3z}{\sqrt{x^8+y^8+z^8}}\right)$, show that $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} + z\frac{\partial u}{\partial z} + 3\tan u = 0$.	8	CO1	BT-3	1.1. 9.1.
	Q.2(a)	Discuss the convergence of the series : $\frac{1}{2} + \frac{1}{3} + \frac{1}{5} + \cdots + \frac{1}{2^{n-1}+1} + \cdots$.	8	CO2	BT-2	1.1. 9.1.
	Q.2(b)	Test the convergence of the series $\frac{1}{2} + \frac{1.3}{2.4} + \frac{1.3.5}{2.4.6} + \cdots$.	7	CO2	BT-4	1.1. 9.1.
PART-B	Q.3	Use the Gauss-Jordan method to find the inverse of the following matrix $A = \begin{bmatrix} 1 & 2 & -1 \\ -1 & 1 & 2 \\ 2 & -1 & 1 \end{bmatrix}$.	8	CO3	BT-3	1.1. 9.1.
	Q.4	Find nonsingular matrices P and Q such that PAQ is in the normal form for the matrix $A = \begin{bmatrix} 3 & 1 & 2 & 1 \\ 1 & 4 & 6 & -1 \\ 2 & -3 & 1 & -2 \end{bmatrix}$.	12	CO3	BT-3	1.1. 9.1.

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	Q.5	Find the value of λ , the equations $x + y + z = 6$ $x + 2y + 3z = 10$ $x + 2y + \lambda z = \mu$ have (i) no solution (ii) unique solution (iii) more than one solution?	15	CO3	BT-4	1.1.1 9.1.1
PART-D	Q.6	Show that $div\ (grad\ r^n) = n\ (n+1)r^{n-2}$.	12	CO4	BT-3	1.1.1 9.1.1
	Q.7	Find the angle between the surfaces $x^2 + y^2 + z^2 = 9$ and $z = x^2 + y^2 - 3$ at the point $(2, -1, 2)$.	12	CO4	BT-3	1.1.1 9.1.1
	Q.8	How do you find a vector is irrotational? If $\vec{V} = (\sin y + z)\,\hat{\imath} + (x\cos y - z)\,\hat{\jmath} + (x - y)\hat{k}$ is irrotational.	6	CO4	BT-3	1.1.1 9.1.1
	Q.9	Evaluate $\int_C \vec{f}.\ d\vec{r}$ where $\vec{f} = (x^2 + y)\hat{\imath} + (x + y^2)\hat{\jmath}$ C is the arc of the parabola of $y = 2x^2$ from(0,0) to (1,2).	5	CO4	BT-3	1.1.1 9.1.1
		********** END **********				

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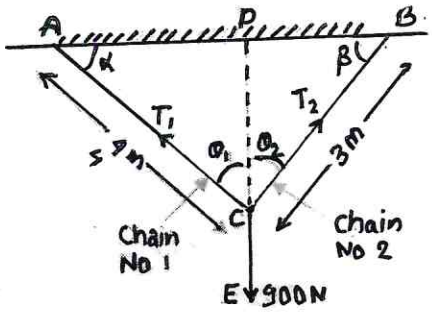
MANAV RACHNA UNIVERSITY

SCHOOL OF ENGINEERING

DEPARTMENT OF MECHANICAL

"End Semester Examination, Dec-2023"

SEMESTER	**1st**	**DATE OF EXAM/SESSION**	**14/12/2023(Morning)**
COURSE NAME	**Engineering Mechanics**	**COURSE CODE**	**MEH101B**
PROGRAM	**B.TECH**	**CREDITS**	**4**
TIME DURATION	**3 HOURS**	**MAX. MARKS**	**100**
NAME OF FACULTY	**PRADEEP KR. MOURIA**	**NAME OF COURSE COORDINATOR**	**PRADEEP KR. MOURIA**

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL
PART-A	Q:1	Q:1 (a) Explain and drive parallelogram law.	5	CO1	BT2
		Q:1 (b) A weight of 900 N is supported by two chains of length 4 m and 3 m as shown in fig. Determine the tension in each chain. 	10		BT4

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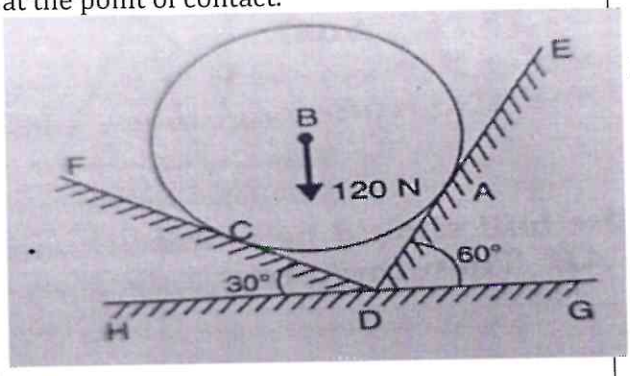
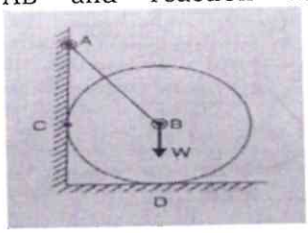
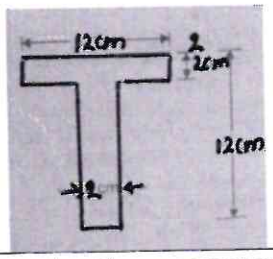
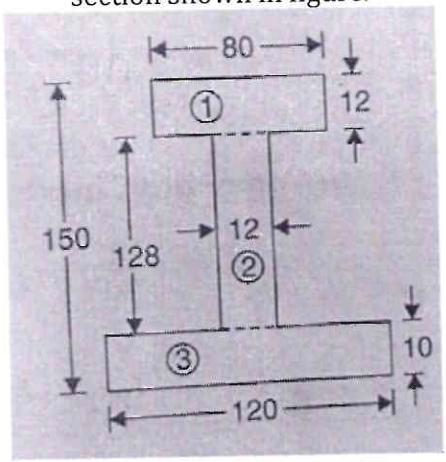
PART-B	Q:2	Q:2 (a) A ball of weight 120N rests in a right-angled grooves, as shown in figure. The sides of the groove are inclined to an angle of 30° and 60°to the horizontal. If all the surface are smooth, then determine the reaction R_A and R_c at the point of contact. 	10	CO2	BT4
		Q: 2 (b) Draw the free body diagram of a ball of weight W=500N also calculate tension in string AB and reaction at point C and D. 	5		BT2
PART-C	Q:3	Q:3 (a) Find out the moment of inertia of rectangular section about the C.G of the section. 	15	CO3	BT2
		Q:3 (b) Determine the moment of inertia of I section shown in figure. 	20		BT4

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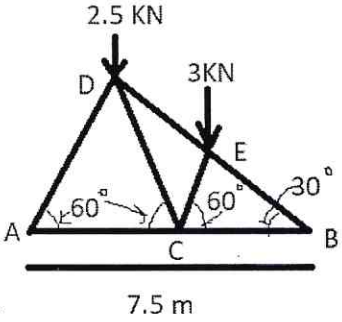
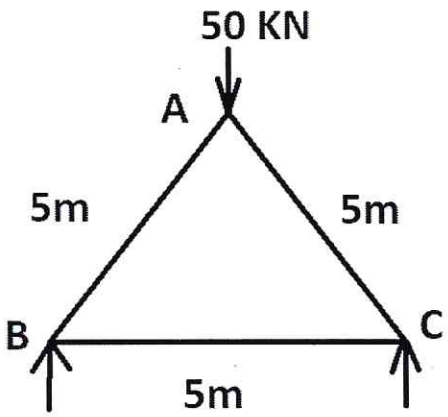
PART-D	Q:4	Q:4(a) A truss AB of span 7.5 m is loaded as shown in fig. Find the reactions and forces in the member of the truss.  	20	CO4	BT4
		Q:4(b) Find the forces in the member AB, AC and BC of the truss shown in fig.  	15		BT4

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MANAV RACHNA UNIVERSITY
SCHOOL OF SCIENCES
DEPARTMENT OF SCIENCES
"End Semester Examination, Dec-2023"

SEMESTER	**I**	**DATE OF EXAM**	18/12/2023
COURSE NAME	**CHEMISTRY-1**	**COURSE CODE**	**CHH144B-T (I)**
PROGRAM	**B.Tech ECE,VLSI & SMA**	**CREDITS**	**3**
TIME DURATION	**3 hrs**	**MAX. MARKS**	**100**
NAME OF FACULTY	**Dr. Vinod Kumar**	**NAME OF COURSE COORDINATOR**	**Dr. A. Jayamani** Arpit Sand

Note:Part A is compulsory. Part B- Questions will be of descriptive type or numerical. Sandeep Kumar

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	1(A)	Deduce de-Broglie equation for dual nature of particle and state its importance.	5	CO1	BT2	
	1(B)	Define acid and base on the basis of Arhenius theory and Lewis concept with examples.	5	CO2	BT2	
	1(C)	Briefly explain Born-Openheimer approximation.	5	CO4	BT1	
	1(D)	What are three purposes of green chemistry?	5	CO3	BT1	
PART-B	Q2(A)	Discuss the screening constant and effective nuclear charge and its significance.	6	CO1	BT2	
	2(B)	What do you know about (i) Hund's rule (ii) Pauli's exclusion Principle	4	CO1	BT2	
	2(C)	What are the two theories of corrosion? Explain with suitable examples. Also discuss the methods of its preventions.	6+4	CO2	BT3	
	Q3(A)	Discuss the methods of synthesis of Ibuprofen and Biodiesel	5+5=10	CO3	BT1	

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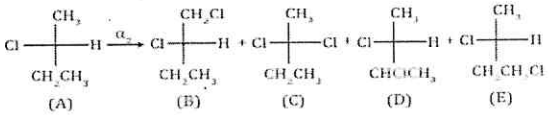
3(B)	Explain with minimum two examples of each (i) enantiomers (ii) distereomers	5+5	CO3	BT4	
Q4(A)	Assign the R and S configurations of the following compounds  (A) (B) (C) (D) (E)	2*5=10	CO3	BT3	
4(B)	Explain degrees of freedom of linear and non-linear molecule. Calculate the vibrational degrees of freedom for CO_2 and H_2O molecule.	4+3+3	CO4	BT3	
Q5(A)	The pure rotational constant for CN molecule is 1.8 cm^{-1}. Calculate bond length of C-N bond. (molar masses are: C = 12 g/mol, N = 14 g/mol)	8	CO4	BT3	
5(B)	Explain selection rule for P,Q,R branches of IR spectra.	6	CO4	BT4	
5(C)	What types of molecules exhibit rotational spectra? Out of H_2, N_2, HCl, CO_2, H_2O, CO and CH_4 which will give rotational spectra.	6	CO4	BT4	

********** **END** **********

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MANAV RACHNA UNIVERSITY
SCHOOL OF ENGINEERING
DEPARTMENT OF MECHANICAL ENGINEERING
"End Semester Examination, Dec-2023"

SEMESTER	**1st**	**DATE OF EXAM/SESSION**	**26.12.2023/MORNING**
COURSE NAME	**Thermodynamics**	**COURSE CODE**	**MEH105B**
PROGRAM	**B.Tech ME-SMA**	**CREDITS**	**04**
TIME DURATION	**3 Hours**	**MAX. MARKS**	**100**
NAME OF FACULTY	**GIANENDER KAJAL**	**NAME OF COURSE COORDINATOR**	**GIANENDER KAJAL**

Note: All questions are compulsory. Questions will be of the descriptive type or numerical.

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART (A)	1(A)	A cylinder contains 5 m^3 of an ideal gas at a pressure of 1 bar. This gas is compressed in a reversible isothermal process till its pressure increases to 5 bar. Calculate the work in KJ required for the process is?	05	CO1	BT4	
	1(B)	Define the following (a) Microscopic & Macroscopic View Points (b) Thermodynamic Equilibrium (c) Process and Cycle	05	CO1	BT1	
	1(C)	Explain two statements of second law of thermodynamics. Establish its equivalence.	05	CO1	BT2	
PART (B)	2(A)	An industrial heat pump operates between the temperature of 27°C and -13°C. The rate of heat addition and heat rejection are 750W and 1000W, respectively. Calculate the COP for the heat pump is?	05	CO2	BT4	
	2(B)	Write short notes on following associated with S.F.E.E. (i) Nozzle (ii) Throttle Valve (iii) Turbine	05	CO2	BT2	
	2(C)	A carnot cycle is having an efficiency of 0.75. If the temperature of the high temperature reservoir is 727°C, Calculate the temperature of low temperature reservoir?	05	CO2	BT4	

PART (C)	3(A)	What do you mean by Ton of refrigeration? Derive expression for the refrigeration system, heat pump and heat engine with neat sketch.	07	CO3	BT3	
	3(B)	Explain the working of carnot cycle using P-V and T-S diagram. State why Carnot cycle can't be realized? Also explain the relation in between C_p, C_v, Adiabatic index and 'R'.	07	CO3	BT2	
	3(C)	Determine the work done and heat transfer for following process: a) C-V Process, b) C-P process, c) C-T process, d) Adiabatic process, e) Polytrophic process.	07	CO3	BT5	
	3(D)	Determine the heat transfer for following process: a) C-V Process, b) C-P process, c) C-T process, d) Adiabatic process, e) Polytrophic process.	07	CO3	BT5	
	3(E)	Define thermodynamic work. Write similarities & dissimilarities between Heat and Work	07	CO3	BT1	
PART (D)	4(A)	A heat reservoir at 700 K is brought into contact with the ambient at 200 K for a short time. During the period 7000 KJ of heat is lost by the heat reservoir. Calculate the total loss in availability due to this process is?	07	CO4	BT4	
	4(B)	How the First Law of Thermodynamics is applied to a process? Show how this formulation changes when it completes a thermodynamic cycle. Also explain the limitation of first law of thermodynamics.	07	CO4	BT2	
	4(C)	Develop the diesel cycles on P-V diagram and T-S diagram, and mark the various process and find out its efficiency.	07	CO4	BT6	
	4(D)	Define the following with examples. i) Open system ii) Closed system iii) Isolated system	07	CO4	BT1	
	4(E)	Define physical significance of entropy and explain Principle of increase of entropy.	07	CO4	BT1	

********** END **********

MANAV RACHNA UNIVERSITY

MANAV RACHNA UNIVERSITY

SCHOOL OF LAW

DEPARTMENT OF LAW

"End Semester Examination, Dec-2023"

SEMESTER	**I/III**	**DATE OF EXAM**	15/12/2023 (II)
COURSE NAME	**Indian Constitution**	**COURSE CODE**	**LWS324**
PROGRAM	**B.Tech CSE/ECE/ME**	**CREDITS**	
TIME DURATION	**1:30 hours**	**MAX. MARKS**	**60**
NAME OF FACULTY	**Mr. Shubhank Sanjeev, Mr. Bharatendu Agarwal, Ms. Sampriti Phukan, Ms Sumbul Fatima, Ms Surbhi.**	**NAME OF COURSE COORDINATOR**	**Mr. Shubhank Sanjeev, Mr. Bharatendu Agarwal**

Note: *There are four sections in the paper. Attempt all questions from each part.*

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL
PART-A	Q1	Constitution of India borrows heavily from other constitutions of the world. Discuss.	5	CO1	BT2
	Q2(A)	Fundamental Duties are a constant reminder for us to be model citizens. Do you agree? Also explain Fundamental Duties in Constitution of India.	5	CO2	BT 2
	Q2(B)	Position of President in Indian Constitution is special. Discuss.	5	CO 2	BT 3
PART-B	Q3	Explain the position and importance of preamble to the Constitution of India in your own words..	5	CO 1	BT 2
	Q4(A)	Elaborate upon the federal features of the Constitution of India	5	CO 3	BT 1
	Q4(B)	Analyse the Emergency provisions of the Indian Constitution.	5	CO 3	BT 3
PART-C	Q5	Amending the constitution of India is a complicated process. Give your opinion highlighting the limitations therein.	5	CO 4	BT 3
	Q6	How are Directive Principles of State Policy in the Indian Constitution inter-connected with Fundamental Rights? **OR** Explain the position and concept of Fundamental Rights in Indian Constitution?	5	CO 2	BT 3
	Q7	Explain 'Right to Life' as provided for in the Constitution of India.	5	CO 2	BT 3

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PART-D	Q8	What is National Emergency? Explain its impact on Fundamental Rights.	5	CO 3	BT 2
	Q9	What are Fundamental Duties? Are they enforceable in India?	5	CO 2	BT 1
	Q10	What do you understand by 'Right to Equality' as provided for in the Constitution of India? **OR** Explain the position of Prime Minister under the Constitution of India.	5	CO 4	BT2

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MANAV RACHNA UNIVERSITY

MANAV RACHNA UNIVERSITY

SCHOOL OF SCIENCES

DEPARTMENT OF SCIENCES

"End Semester Examination, Dec-2023"

SEMESTER	**I/III**	**DATE OF EXAM**	**19.12.2023 (II)**
COURSE NAME	**ENVIRONMENTAL SCIENCE**	**COURSE CODE**	**CHH137/CHH107B**
PROGRAM	**B.TECH. CSE/BBA/B.Sc. B.ED./B.A. B.ED.**	**CREDITS**	**NIL/04**
TIME DURATION	**120 MINUTES**	**MAX. MARKS**	**50**
NAME OF FACULTY	**PROF. MEENA KAPAHI/DR. V. V. PATHAK/DR. PRITI GUPTA/DR. EKTA RAWAT/DR. HARSHA DEVNANI/Dr. VINOD KUMAR/ MS. ANJU SHARMA**	**NAME OF COURSE COORDINATOR**	**PROF. (DR.) MEENA KAPAHI** Asst Scm cl Sandeep

Note: All questions are compulsory. Some questions may offer internal choice.

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL
PART-A	1(A)	Can you analyze the advantages and disadvantages of ex-situ conservation methods, providing examples of how these approaches contribute to the preservation of biodiversity in natural habitats.	5	CO3	BT3
	1(B)	Explain the multidisciplinary nature of Environmental Studies. Provide at least two examples to explain the collaboration between different disciplines to address environmental challenges.	5	CO1	BT2
	1(C)	Compare and contrast the levels of biodiversity, including genetic, species, and ecosystem diversity, highlighting their functional significance in ecological systems.	5	CO3	BT5
	2(A)	Briefly outline the salient features of the water (prevention and control of pollution) Act 1974.	5	CO2	BT1
	2(B)	Compare and contrast point and non-point sources of water pollution considering their characteristics and impacts. Discuss the challenges associated with pollution from agricultural runoff considering its impact.	3+2=5	CO4	BT3
	2(C)	Apply your knowledge of pollution prevention by outlining the specific roles and responsibilities an individual can undertake to contribute to environmental well-being.	5	CO2	BT3
PART-B	3(A)	Write a short note on following population characteristics: (i) Doubling time (ii) HIV/AIDS	2.5+2.5=5	CO4	BT1
	3(B)	Discuss the variation of a country's population having urn shaped age pyramid. How does this demographic pattern impact factors such as workforce distribution and economic development?	2+3=5	CO4	BT4
	3(C)	What is population explosion? How does it affect the overall development of a country?	2+3=5	CO4	BT2
	3(D)	What are agents responsible for ozone depletion? Comment on the long-term consequences and propose mitigation strategies to address the challenges posed by ozone depletion.	2+3=5	CO2	BT2

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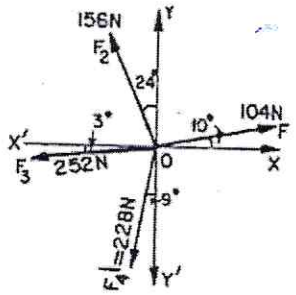
MANAV RACHNA UNIVERSITY
Declared as State Private University vide Haryana Act 26 of 2014

DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY

"End term Examination, Dec-2023"

SEMESTER	**3rd**	**DATE OF EXAM**	**08.12.23 (II)**
SUBJECT NAME	**ENGINEERING MECHANICS**	**SUBJECT CODE**	**MEH215B-P**
BRANCH	**Robotics and Artificial Intelligence**	**SESSION**	**2nd**
TIME	**12:30 – 3:30**	**MAX. MARKS**	**100**
PROGRAM	**B.TECH**	**CREDITS**	**3**
NAME OF FACULTY	**J P SHARMA**	**NAME OF COURSE COORDINATOR**	**J P SHARMA**

Note: Part A, B,C& D : All questions are compulsory.

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	1(A)	State and prove law of parallelogram of forces with block diagram.	5	CO1	BT2	
	1(B)	Find the magnitude and direction of the resultant force 	5	CO1	BT4	
PART-B	Q2(A)	The resultant of four forces which are acting at a point O is along Y axis. The magnitude of forces F1, F3 and F4 are 10kN, 20KN and 40 KN respectively. The angels made by 10kN, 20KN and 40 KN with X axis are 30°, 90° and 120° respectively. Find the magnitude and direction of force F2 if resultant is 72KN.	5	CO2	BT3	
	Q2(B)	Find the resultant moment about point A.	5	CO2	BT3	

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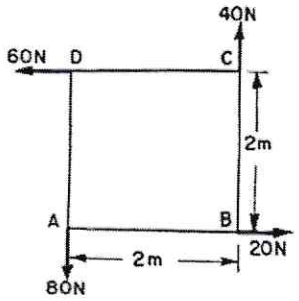
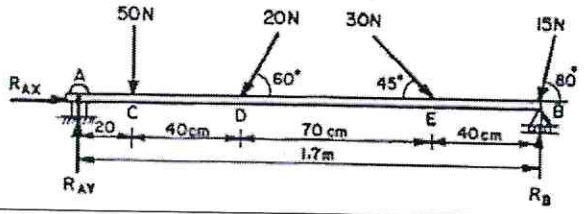
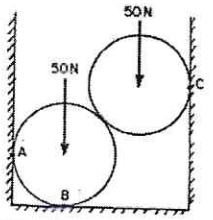
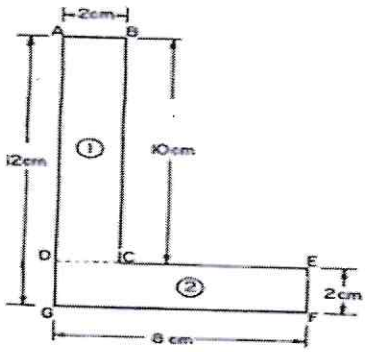
						
PART C	Q3(A)	A beam AB 1.7 m long is loaded as shown in figure. Determine the reactions at A and B 	8	CO3	BT4	
	3(B)	Two sphere, each of weight 50N and of radius 10 cm rest in a horizontal channel of width 36 cm as shown in figure. Find the reactions at the point of contact A, B and C. 	7	CO3	BT4	
	Q4(A)	Calculate the CG of L section. 	8	CO3	BT4	
	4(B)	From a rectangular lamina ABCD 10 cm*12 cm a rectangular hole of 3 cm *4 cm is cut as shown in figure. Calcualte the CG of the remainder lamina.	7	CO3	BT4	

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		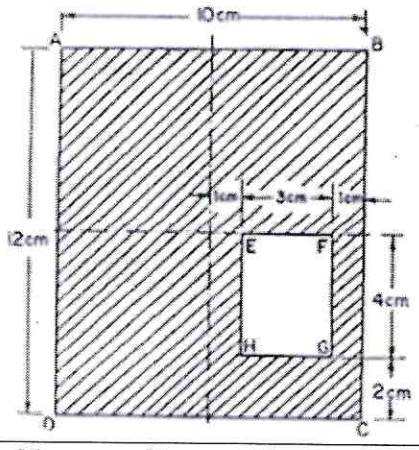				
PART-D	Q5(A)	Determine Moment of Inertia of a rectangular section a) About a line passing through the base	8	CO4	BT3	
	A5(B)	State an prove expression for b)Theorem of parallel axis	7	CO4	BT2	
	Q6(A)	An effort of 200 N is required just to move a certain body up an inclined plane of angle 15°, the force acting parallel to the plane. If the angle of inclination of the plane is made 20°, the effort required again applied parallel to the plane is found to be 230 N. Calculate the weight of the body and the coefficient of friction.	8	CO4	BT4	
	Q6(B)	Define angle of friction, angle of repose and cone of friction.	7	C04	BT2	

********** END **********

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MANAV RACHNA UNIVERSITY

MANAV RACHNA UNIVERSITY

SCHOOL OF Engineering

DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY

"End Semester Examination, Dec-2023"

SEMESTER	**III**	**DATE OF EXAM**	11/12/2023 (II)
COURSE NAME	**MORDEN WEB AND MOBILE FRAMEWORK**	**COURSE CODE**	**CSH211B-T**
PROGRAM	**B. TECH CDFD 3A**	**CREDITS**	**3**
TIME DURATION	**3 HOURS**	**MAX. MARKS**	**75**
NAME OF FACULTY	**MS. ESHA KHANNA**	**NAME OF COURSE COORDINATOR**	**MS. ESHA KHANNA**

Note: Attempt all the questions.

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	Q1(A)	Write code to create HTML ordered List.	5	CO1	BT2	1.4.1
	Q1(B)	Explain the importance of JavaScript. Also state the usage of CSS Float property	5	CO2	BT1	1.4.1
	Q2	Can we validate email address using JavaScript? If yes how? If not why? Explain by giving suitable Examples.	10	CO2	BT4	2.4.3
	Q3	Create a web page for displaying class time table using HTML tags.	5	CO1	BT3	3.1.1
PART-B	Q4	Write a class Person in JavaScript with name and age fields. Write a function displaydata to display name and age. Create a subclass student with rollnumber field. Create a method displayroll to return the rollno. Create 2 objects and implement the functions.	10	CO4	BT3	3.1.1
	Q5(A)	Differentiate between ECMA let and Var.	3	CO4	BT2	2.2.4
	Q5(B)	Define the Document Object Model (DOM)?	2	CO5	BT1	1.4.1

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	Q6(A)	What is Asynchronous JavaScript? Why is it required?.	5			
	Q6(B)	Explain setTimeout( ) and setInterval( ) methods with examples	5	CO5	BT2	2.2.4
PART-C	Q7(A)	What are the steps to create and run Http server program in Node JS?	5	CO3	BT3	4.2.1
	Q7 (B)	Write JS code run on port number 123456 and listen to client request, if the request URL maps reply with response.	5	CO3	BT4	3.1.1
	Q8(A)	Describe the various features of Node Js?	2	CO3	BT4	3.1.1
	Q8(B)	Explain the REPL environment of Node Js?	3	CO5	BT2	5.1.1
	Q9	Write JS code to export and import variable, functions and assess the output of function call.	10	CO3	BT3	3.1.1

********** END **********

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MANAV RACHNA UNIVERSITY

SCHOOL OF ENGINEERING

DEPARTMENT OF ECE

"End Semester Examination, Dec-2023"

SEMESTER	**3**	**DATE OF EXAM**	11/12/2023 (CII)
COURSE NAME	**MICROPROCESSOR & MICROCONTROLLER**	**COURSE CODE**	**ECH215B-T**
PROGRAM	**B.Tech. CST (R &AI)**	**CREDITS**	**4**
TIME DURATION	**3 hrs**	**MAX. MARKS**	**80**
NAME OF FACULTY	**Dr. Nitika**	**NAME OF COURSE COORDINATOR**	**Dr. Nitika**

Note: All questions are compulsory.

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Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	Q1(a)	Develop a Programme in assembly language for the multiplication of two 8-bit numbers stored in memory from location 3000H. Store the 16-bit result at memory location 5000H OR Develop a Programme in assembly language to get the 2's complement of an 8-bit number stored in memory location 3050H. Store the result at memory location 3052H	5	CO2	L3	1.4.1, 2.2.2, 2.2.3
	Q1(b)	Draw the architecture of 8085 microprocessor.	5	CO1	L2	1.4.1, 2.2.2, 2.2.3
PART-B	Q2(a)	Analyze and Connect 8K byte EPROM and 4K byte RAM with the systems lines of 8085 microprocessor. The memory ICs available are a) 4K x 8 EPROM b) 4K X 4 RAM	6	CO3	L4	1.4.1, 2.2.2, 2.2.3
	Q2(b)	Draw the Timing diagram for the instruction MOV A, B **Or** Calculate the no. of T-states for following instructions DCR B LHLD 4000 PUSH B HLT	4	CO4	L2	1.4.1, 2.2.2, 2.2.3
PART-C	Q3(A)	Draw & discuss the internal block diagram of 8086. OR Draw & discuss typical minimum mode 8086 systems.	8	CO1	L2	1.4.1, 2.2.2, 2.2.3
	3(B)	How many interrupts are available in 8086? Explain the predefined software interrupts available in 8086.	8	CO1	L2	1.4.1, 2.2.2, 2.2.3

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	3(C)	Select the instruction for each of the following i)Rotate register BH left 4 times. ii)Multiply AL by 08H. iii)Signed division of BL and AL. iv)Move 4000H in BX register. v)Load offset 1000H in register BX. vi)Rotate BX to left 4 times through carry. **OR** a) The value of Code Segment (CS) Register is 4042H and the value of different offsets is as follows: BX: 2025H, IP: 0580H, DI: 4247H Calculate the effective address of the memory location pointed by the CS register. b) Calculate the Physical address for the given Instruction. MOV AH,1907H [BX][DI] Here DI=2910, BX=1823, DS=9100H	8	CO1, CO2	L3	1.4.1, 2.2.2, 2.2.3
	3(D)	Explain the functions of following pins of 8086. • LOCK • NMI	6	CO1	L2	1.4.1, 2.2.2, 2.2.3
PART-D	Q4(A)	Define and explain the addressing modes of 8051 microcontroller.	8	CO1, CO2	L2	1.4.1, 2.2.2, 2.2.3
	4(B)	Write an assembly language program for 8051 to convert BCD number to ASCII CODE.	8	CO1, CO2	L2	1.4.1, 2.2.2, 2.2.3
		Draw the Architecture of 8051 Microcontroller and explain the function of DPTR and PC registers. **OR** Write the function of following Instructions of 8051 Microcontroller (a) CJNE destination, source, relative address (b) SWAP A (c) SETB (d) DIV AB	8	CO1, CO2	L2	1.4.1, 2.2.2, 2.2.3
	Q4(C)	Draw & explain the PSW register of 8051 Microcontroller.	6	CO1	L2	1.4.1, 2.2.2, 2.2.3

********** END **********

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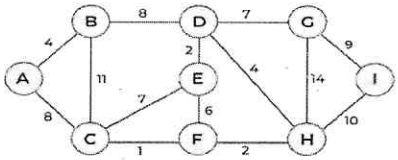
MANAV RACHNA UNIVERSITY

DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY

ODD SEMESTER (DEC-2023)

END TERM EXAMINATION

COURSE NAME: COMPUTER NETWORKS	**COURSE CODE:CSH227B-T**	**CREDIT:4**	**MAX. MARKS:100**	**TIME DURATION:3 hrs.**	**DATE OF EXAM: 12/12/2023**
PROGRAM:BTECH		**SEMESTER: 3rd**			**SESSION: II**
FACULTY NAME:MR. AGHA IMRAN HUSSAIN			**NAME OF COURSE COORDINATOR:MS. DEEPANSHI GUPTA**		

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	Q1(A)	(i)Draw a hybrid topology with a ring backbone and three bus networks. (ii)Which are the different factors that affect the performance of a network?	4+4	CO1	BT2	1.1.2
	1(B)	You have two computers connected by an Ethernet hub at home.Is this a LAN, a MAN or a WAN? Explain your reason with example.	7	CO1	BT2	1.3.1
PART-B	1(C)	Why collision is an issue in random access protocol but not in controlled access or channelizing protocols .Explain with diagram.	7	CO2	BT2	1.3.1
	1(D)	Difference between (i)Multiplexing and De-Multiplexing(with diagram) (ii)Guided Media and Un-Guided Media(with diagram)	8	CO2	BT2	1.1.1
PART-C	Q2(A)	(i)What is a Link State Routing Algorithm?(ii)Explain Phases of Link State Routing.(iii)Calculate Shortest Path of the given diagram.  	2+3+5	CO3	BT3	1.1.2
	2(B)	A company is granted the site address 255.56.0.0/24. The company needs 1200 subnets. (i) Design the subnets.(ii)Calculate total number of hosts that can be configured, (iii) Find range of the IP addresses.	3+3+2	CO3	BT4	1.4.1
	2(C)	With neat sketch explain the ICMP and its services and message format of ICMP with example.	7	CO3	BT3	1.3.1
	2(D)	(i)Change the following IPV4 addresses from dotted-decimal notation to binary notation 111.56.45.78 (ii)Find the error in given IP address 75.300.301.14 (iii)Find the class of 252.5.15.11(iv)Write the mask in slash notation(/n) 255.255.224.0(v)Find the netid & host id of the ip address 117.34.3.8	2*5	CO3	BT3	1.3.1
PART-D	Q3(A)	(i.)Discuss the Transport Control Protocol header and TCP connection management modeling (ii) Quality of Services	(7+8)	CO4	BT1	1.3.1
	3(B)	Write short note on the following (a)DNS(b)SNMP(c)HTTP (d)Proxy Server	(5+5+5+5)	CO4	BT1	1.3.1

********** END **********

MANAV RACHNA UNIVERSITY

MANAV RACHNA UNIVERSITY
SCHOOL OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY
"End Semester Examination, Dec-2023"

SEMESTER	**3/5/7**	**DATE OF EXAM**	**16/12/2023 (II)**
COURSE NAME	**ARTIFICIAL INTELLIGENCE**	**COURSE CODE**	**CSH205B-T**
PROGRAM	**B.TECH** COA/CSTI - V, COA/CSTI - VII, R&AI - III	**CREDITS**	**4**
TIME DURATION	**3 HOURS**	**MAX. MARKS**	**100**
NAME OF FACULTY	**DR. NARENDER DR. NEELU**	**NAME OF COURSE COORDINATOR**	**DR. NARENDER**

Note: All questions are Compulsory.

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
Part-A	1(A)	What is the significance of a machine passing the Turing Test?	3	CO1	L1	1.1.
	1(B)	How does one solve the N-Queen problem using the concept of backtracking.	3	CO2	L2	1.3.
	1(C)	Describe state space representation using the Water-Jug problem.	3	CO2	L3	1.1.
	1(D)	State the Guided search techniques? What are different algorithms come into this category?	3	CO3	L1	2.1.
	1(E)	Local maxima are one of the problem associated with Hill Climbing procedure. Suggest the solution for the problem.	3	CO3	L2	2.2.
Part-B	2(A)	Briefly describe the different components of architecture of the Intelligent agent.	3	CO2	L1	1.3.
	2(B)	Describe the Max-Min strategy of Game playing algorithms.	3	CO3	L2	2.2.
	2(C)	What do you understand by a good control strategy? What are the requirements of a good control strategy?	3	CO3	L2	2.2.
	2(D)	What do you mean by inductive learning? Why do we still use it even though it is not a valid form of learning?	3	CO4	L2	3.3.
	2(E)	Explain why human beings are able to recognize an object better and better each time they observe the object.	3	CO4	L2	1.3.

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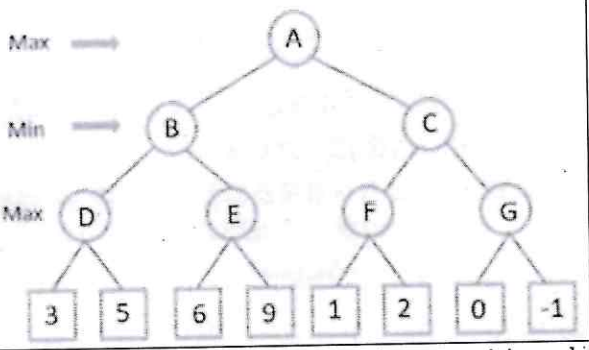
Part-C	Q3	a) Consider the following problem and perform Alpha-Beta Pruning. b) Draw the solution path. 	8+2	CO3	L3	2.
	Q4	Represent the following in partitioned semantic networks: a) All players like the referee. b) Every dog in town has bitten the ice-cream vendor. Give an appropriate FOPL representation for both of the information.	5+5	CO4	L3	2.
	Q5	Consider the following set of knowledge: 1. Marcus was a man. 2. Marcus was a Pompeian. 3. All Pompeians were Romans. 4. Caesar was a ruler. 4. All Pompeians were either loyal to Caesar or hated him. 6. Everyone is loyal to someone. 5. People only try to assassinate rulers they are not loyal to. 6. Marcus tried to assassinate Caesar. a) Convert the above set of knowledge into FOPL. b) Convert the FOPL in CNF. c) Prove "Marcus hated Caesar" using resolution proof.	5+5+5	CO5	L4	1
Part-D	Q6	Discuss the role of genetic algorithms in AI. Provide an example scenario where a genetic algorithm could be applied.	10	CO5	L3	1
	Q7	Discuss the architecture, characteristics, and types of expert systems. Evaluate the advantages and drawbacks of using expert systems.	10	CO5	L4	2
	Q8	Explain the principles of neural networks and discuss one real-world application where neural networks are commonly used.	10	CO6	L3	2
	Q9	Discuss the major applications of artificial intelligence in various fields.	5	CO6	L3	1

********** END **********

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MANAV RACHNA UNIVERSITY

DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY

ODD SEMESTER (DEC-2023)

END TERM EXAMINATION

COURSE NAME: DATABASE MANAGEMENT SYSTEM	COURSE CODE: CS122687	CREDIT: 4	MAX. MARKS: 100	TIME DURATION: 3:00 hrs	DATE OF EXAM: 16/12/2023
PROGRAM: B.Tech - CSE/AIML/ CDFS/ CST		SEMESTER: 3rd		Session - II	
FACULTY NAME: Ms. Tamanna Sachdeva			NAME OF COURSE COORDINATOR: Ms. Tamanna Sachdeva		

All questions are compulsory.

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	1(A)	Search keys-43,135,72,23,99,19,82 h(k)=k mod 10 Draw hash table for above search keys by using Chaining.	5	CO1	BT3	1.4.1
	1(B)	Explain three level architecture of DBMS and Data Independence among them.	5	CO1	BT2	1.4.1
	1(C)	Differentiate between Primary and Secondary Indexing.	5	CO1	BT2	1.4.1
PART-B	2(A)	Write Sql Queries for the following: Student(Student_ID, SName, Subject, Faculty_ID, city) Faculty(Faculty_ID, FName, Salary) i) List the names of all students whose names end with "an" ii) List the names of faculties whose salary lies within the range 10,000 - 50,000 iii) Rename the student name of student with student id 101 iv) List all the faculties with salary greater than 50000 v) List all the students who are not from Delhi	5	CO2	BT3	1.4.1
	2(B)	Differentiate between Natural Join and Theta Join. Explain with the help of example.	5	CO2	BT2	1.4.1
	2(C)	Consider two relations R1(A,B) with the tuples (1,5), (3,7), (2,4) and R2(A,C) = (1,7),(4,9),(2,5). Show full outer join and natural join of R1 and R2.	5	CO2	BT3	1.4.1
PART-C	Q3(A)	Draw symbols for following in E-R diagram: a. Weak Entity set, Derived attribute, Multivalued b. Relationship Set, and Primary key attribute Also draw ER Diagram for School Management System.	10	CO3	BT3	1.4.1
	Q4(A)	Explain what is functional dependency with examples. Given a relation R(A, B, C, D, E) and Functional Dependency set FD = { A → B, B → E, C → D}, check the given relation for 2NF and 3NF.	10	CO4	BT3	1.4.1
	5(A)	Explain different types of keys in a database.(Super key, Candidate key, Alternate Key, Primary Key, Foreign key).	5	CO4	BT2	1.4.1
	Q5(B)	Given a relation R(A, B, C, D) and Functional Dependency set FD = { A → B, C → D}, determine Super key, Candidate key, Alternate Key, Primary Key in this relation	5	CO4	BT3	1.4.1
	Q5(C)	Explain Armstrong Axioms and their significance in DBMS with examples.	5	CO4	BT2	1.4.1
	6(A)	Consider the following schedule, S: R1(X), W1(X), R2(X), R1(Y), W2(X), W1(Y), commit1, commit2. Check given schedule for recoverable schedule and Cascadeless Schedule.	5	CO5	BT3	1.4.1
	6(B)	What do you understand by conflict serializability? How can you check if given schedule is conflict Serializable or not?	5	CO5	BT2	1.4.1
	6(C)	Check whether the given schedule S is conflict serializable or not- S1: S : R1(A) , R2(A) , R1(B) , R2(B) , R3(B) , W1(A) , W2(B), W3(A)	5	CO5	BT3	1.4.1

PART-D	Q7(A)	Differentiate between two phase locking and strict locking concurrency control techniques with proper example. Check whether given schedule is following two phase locking and strict locking protocols or not. S: X_Lock1(A), r1(A), w1(A), X_Lock2(B), r2(B), w2(B), Commit1, Commit2, X_Unlock1(A), X_Unlock2(B).	10	CO5	BT3	1.4.1
	Q8(A)	Explain Immediate Database modification Recovery Algorithm and solve the following question. Consider the following log sequence of two transactions on a bank account, with initial balance 12000, that transfer 2000 to a mortgage payment and then apply a 5% interest. 1.T1 start 2.T1 B old =12000 new =10000 3.T1 M old =0 new =2000 4.T1 commit 5.T2 start 6.T2 B old =10000 new =10500 7.T2 commit Suppose the database system crashes just before log record 7 is written, now decide which record will get under the operation of UNDO and REDO.	10	CO5	BT3	1.4.1

********** END **********

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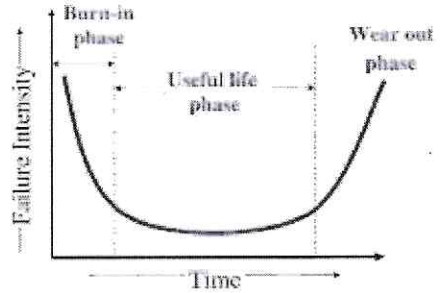
MANAV RACHNA UNIVERSITY
SCHOOL OF ENGINEERING
DEPARTMENT OF COMPUTER ENGINEERING
"End Semester Examination, Dec-2023

SEMESTER	**3rd**	**DATE OF EXAM**	**18.12.2023 (II)**
SUBJECT NAME	**Software Engineering**	**SUBJECT CODE**	**CSH221B**
BRANCH	**CST**	**SESSION**	**Evening**
TIME	**12.30PM - 03.30PM**	**MAX. MARKS**	**100**
PROGRAM	**B.tech**	**CREDITS**	**4**
NAME OF FACULTY	**Dr. Sachin Lakra, Dr. Deepti Thakral, Mr. Ram Chatterjee, Ms. Anu Priya Sharma**	**NAME OF COURSE COORDINATOR**	**Ms. Anu Priya Sharma**

Please go through the following instructions before the start of the exam:

a. *All questions are compulsory. Explain with diagrams wherever required. More weightage will be given to answers supported with examples and diagrams.*

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	P
PART-A	1(A)	What do you understand by the term SDLC? Why is it important to adhere to the life cycle model while developing a large software product?	5	CO1	BT1	1.3
	1(B)	Which SDLC model is best if risk is involved in a project and why?	5	CO1	BT1	1.3
	1(C)	What is the name of the curve given in the graph? Explain what does the graph indicate about software development 	5	CO1	BT1	1.3

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PART-B	Q2(A)	Draw a Context diagram for a restaurant management system.	5	CO4	BT3	1.3.1
	2(B)	Draw a flowchart for the process of adding a new doctor to the doctor-details table in a hospital management system.	5	CO4	BT3	1.3.1
	2(C)	Explain the notation of a use case diagram with the help of an example.	5	CO3	BT2	1.3.1
PART C &D	3(A)	Draw the use case diagram for library management system.	10	CO2	BT3	1.3.1
	3(B)	Enlist any 2 Requirement Gathering Techniques for a web-based project for registering candidates for a contest.	5+5	CO2	BT3	1.3.1
	3(C)	What is the difference between cohesion and coupling? Enlist the types of cohesion and mention which type is the worst type of cohesion and why?	2+5+3	CO4	BT2	1.3.1
	3(D)	Discuss typical software risks. How staff turnover problem affects software projects?	5	CO5	BT2	1.3.1
	Q4(A)	For a problem which has 2 variables, namely x and y, such that both x and y lie in the range [50,250], find the number of test cases required for boundary value analysis and robustness testing. Also, give the test suite required for both the types of testing.	4+6	CO5	BT3	3.3.1
	4(B)	Give 2 differences between each of the following: a. Validation and Verification. b. Design phase and Analysis phase of SDLC c. Structural and Functional testing d. Alpha and Beta testing e. Fault and failure	2*5=10	CO5	BT2	3.3.1

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4 (C)	What is Equivalence Class Partitioning and Worst case testing? For a software that computes the cube of an input integer that can assume a value in the range [100, 500], determine the equivalence class and worst case test suite.	2+8	CO6	BT3	3.3.1
4(D)	Compute the unadjusted function points for a project with the following numbers for project elements: Number of user inputs = 24 Number of user outputs = 46 Number of inquiries = 8 Number of files = 4 Number of external interfaces = 2 The weighting factor for all the project elements is "Average". Measurement parameter / Weighting factor Simple / Average / Complex Number of user inputs: 3 / 4 / 6 Number of user outputs: 4 / 5 / 7 Number of user inquiries: 3 / 4 / 6 Number of files: 7 / 10 / 15 Number of external interfaces: 5 / 7 / 10	5	CO3	BT3	1.3.1

********** END **********

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MANAV RACHNA UNIVERSITY
SCHOOL OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
"End Semester Examination, Dec-2023"

SEMESTER	**III**	**DATE OF EXAM/SESSION**	21.12.2023 (II)
COURSE NAME	**OOPs using Java**	**COURSE CODE**	**CSH225B-T**
PROGRAM	**B.Tech. CSE/All specialization**	**CREDITS**	**3**
TIME DURATION	**3 hours**	**MAX. MARKS**	**75**
NAME OF FACULTY	**CSE3A, 3CSTI: Ms. Esha, CSE3B: Dr. Meena, CSE3C: Mr. Ram, CSE3AIMLA, B: Dr. Abhishek, 3CDFD: Ms. Gunjan**	**NAME OF COURSE COORDINATOR**	**Mr. Ram Chatterjee**

Attempt all questions. All questions are compulsory.

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	Q1(A)	Define Java Token. Differentiate between Identifier and Literal in java.	2	CO1	BT1	1.3.1

	(B)	What will be the output of the following Java program?
		public class Main
		{ public static void main(String args[]) {
		byte b; int i = 423; double d = 720.16;
		b = (byte) i;
		System.out.println(+b);
		i = (int) d;
		System.out.println(+i); } }
			2	CO2	BT1	1.4.1

	(C)	How the Java String is different from the 'C' String.	2	CO1	BT1	1.3.1

	(D)	What is the output of this program?
		class Main{
		public static void main (String[] args)
		{ int arr1[] = {1, 2, 3}; int arr2[] = {1, 2, 3};
		if (arr1.equals(arr2))
		System.out.println("Same");
		else
		System.out.println("Not same"); }}
			2	CO2	BT1	1.4.1

	(E)	Differentiate between Class and Object. Write three properties of the object.	2	CO1	BT1	1.3.1
	(F)	What will be the output of the following Java program? class main_class { public static void main(String args[]) { int x = 9; if (x == 9) { int x = 8; System.out.println(x); } } }	1	CO2	BT1	1.4.1
PART-B	Q2(A)	Differentiate between multiple and multilevel inheritance.	2	CO1	BT2	1.4.1

	(B)	Write and explain the output of the following code:
		class X { // Class X Members }
		class Y { // Class Y Members }
		class Z extends X, Y { // Class Z Members }
			2	CO2	BT2	1.3.1

	(C)	What are interfaces? Describe the advantages of interfaces in java.	2	CO1	BT2	1.4.1

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	(D)	Write a code to implement multiple inheritance in java.	2	CO2	BT2	1.4.1
	(E)	Write java predefined API packages. Which package is auto imported by the javac compiler?	2	CO1	BT2	1.4.1
	(F)	Create a package named MRU with class BTech and method endterm(). Import the package in class CSE & reuse the method endterm.	2	CO2	BT2	1.4.1

PART-C	Q3(A)	Rewrite the complete code given below with correct logic & syntax by filling in the blanks and underline the same in your answer:
		_____ java.io.*;
		class Main {
		// declaring the type of exception
		public static void findFile() _____ IOException {
		// code that may generate IOException
		File newFile = _____ File("test.txt");
		FileInputStream stream = new FileInputStream(___); }
		public static void main(String[] args) {
		try {
		findFile(); }
		catch (_____ e) {
		System.out.println(e); }}}
			10	CO3	BT3	2.1.2

	(B)	What is the purpose of finally block in java?	5	CO3	BT2	1.3.1
	(C)	Differentiate between throw and throws keywords.	5	CO3	BT2	1.3.1
	(D)	Write a program in Java signifying the handling of ArithmeticException, ArrayIndexOutOfBoundsException along with Exception class using multiple catch blocks. What should be the order of the catch blocks and what will happen if the order is not followed?	6	CO3	BT4	3.2.2

PART-D	Q4(A)	Rewrite the complete code given below with correct logic & syntax by filling in the blanks and underline the same in your answer:
		class TestJoinMethod3 extends Thread{
		public void run(){
		System.out.println("running..."); }
		public static void main(String args[]){
		TestJoinMethod3 t1=new TestJoinMethod3();
		System.out.println("Name of t1:"+t1._____);
		System.out.println("id of t1:"+t1._____);
		t1._____; //starting the thread
		t1._____("MyThread"); // new name
		System.out.println("After changing name of t1:"+t1._____); //printing new name } }
			10	CO3	BT3	2.1.2

	(B)	Differentiate start() and run() method of Thread class.	5	CO3	BT3	1.3.1
	(C)	Briefly explain why buffered input streams are needed.	5	CO3	BT3	1.3.1
	(D)	Write a program for putting end user given content into a File using FileOutputStream in Java.	6	CO3	BT3	3.2.2

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MANAV RACHNA UNIVERSITY

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SCHOOL OF SCIENCES

DEPARTMENT OF SCIENCES

"End Semester Examination, Dec-2023"

SEMESTER	III	**DATE OF EXAM**	26.12.2023 (II)
COURSE NAME	**CALCULUS, PROB.&STATISTICS**	**COURSE CODE**	**MAH201B-T**
PROGRAM	**B.Tech- CSE**	**CREDITS**	**4**
TIME DURATION	**3 Hours**	**MAX. MARKS**	**100**
NAME OF FACULTY	**Dr. Advin Masih**	**NAME OF COURSE COORDINATOR**	**Dr. Y.K Sharma**

Note: Attempt All Questions.

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	1(A)	Find the radius of curvature at $(\frac{a}{4}, \frac{a}{4})$ of the curve $\sqrt{x} + \sqrt{y} = a$	5	CO1	BT1	1.1.1 1.2.1
	1(B)	Verify $\frac{\partial^2 u}{\partial x \partial y} = \frac{\partial^2 u}{\partial y \partial x}$ for $u(x,y) = sin^{-1}(\frac{y}{x})$	5	CO1	BT2	1.1.2 1.3.1
	1(C)	Compute to three decimal places, the value of $\sqrt{26}$ by use of Taylor's series.	5	CO1	BT2	1.1.2 1.3.1 2.1.3
PART-B	1(D)	Evaluate $\int_0^{\frac{\pi}{2}} \int_0^{a\cos\theta} r \sin\theta \, d\theta$.	5	CO2	BT1	1.1.2 1.3.1 2.1.3
	1(E)	Evaluate $\int\int y \, dx \, dy$, Where the region bounded by the parabolas $x^2 = 4y$ and $y^2 = 4x$	5	CO2	BT3	1.1.2 1.3.1 2.1.3
	1(F)	Change the order of integration $\int_0^a \int_x^a \frac{x \, dx \, dy}{x^2+y^2}$ and hence solve.	5	CO2	BT2	1.1.2 1.3.1 2.1.3
PART-C	Q2	A random variable X has the following probability distributions : x: -2, -1, 0, 1, 2, 3 p(x): 0.1, k, 0.2, 2k, 0.3, k Find the value of k and calculate mean and variance.	10	CO1	BT2	1.1.2 ,2.1. 3,4.4 .1
	Q3	The joint probability distribution of X and Y is given as	12	CO3	BT4	1.1.2 1.3.1

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		Y ⇒ / X ⇩ | 1 | 3 | 9 2 | 1/8 | 1/24 | 1/12 4 | 1/4 | 1/4 | 0 6 | 1/8 | 1/24 | 1/12 (i) Find the marginal probability distribution of Y. (ii) Find the conditional probability distribution of Y given X=2. (iii) Are X and Y are independent?				2.1.3
	Q4	The joint probability distribution of two random variables X and Y is given by $P(X=0,Y=1)=\frac{1}{3}$, $P(X=1,Y=1)=\frac{1}{3}$, and $P(X=1,Y=1)=1/3$ Find (i) Marginal distributions of X and Y (ii) The conditional probability distribution of X given Y=1.	13	CO3	BT4	1.1.2 1.3.1 2.1.3
PART-D	Q5	Fit a straight line to the following data X | 0 | 5 | 10 | 15 | 20 | 25 Y | 12 | 15 | 17 | 22 | 24 | 30	11	CO4	BT4	1.1.2 1.3.1 2.1.3
	Q6	A random sample of 1000 workers from south india show that their mean wages are Rs 47 per week with standard deviation of Rs 28. A random sample of 1500 workers from north india gives a mean wages of Rs 49 per week with standard deviation of Rs.40. Is there any significant difference between their mean level of wages.	12	CO4	BT1	1.1.2 1.3.1 2.1.3
	Q7	A die is thrown 276 times and the result of these throws are given below No appeared | 1 | 2 | 3 | 4 | 5 | 6 Frequency | 40 | 32 | 29 | 59 | 57 | 59 Test whether the die is biased or not using χ^2 test.	12	CO4	BT3	1.1.2 1.3.1 2.1.3

********** END **********

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Declared as State Private University vide Haryana Act 26 of 2014

MANAV RACHNA UNIVERSITY
SCHOOL OF EDUCATION & HUMANITIES
DEPARTMENT OF EDUCATION & HUMANITIES
"End Semester Examination, Dec-2023"
Set-B

SEMESTER	V / VII / III	DATE OF EXAM	15/12/2023
SUBJECT NAME	Applied Psychology	SUBJECT CODE	EDS289
BRANCH	Management, Applied Sciences	SESSION	II
TIME	1:50 Hours	MAX. MARKS	50
PROGRAM	BBA/B.Tech/BSc	CREDITS	2
NAME OF FACULTY	Mr. Sharv Datt Anand/Dr Mira Mishra	NAME OF COURSE COORDINATOR	Dr. Mira Mishra

Note: Part A: All questions are compulsory. Each question will be 2 Marks.
Part B: All questions are compulsory. Each question will be 2 Marks.
Part C: Questions will be of 5 marks. Internal choice will be there
Part D: Questions will be of 5 marks. Internal choice will be there.

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL
PART-A	1(A)	Differentiate between aptitude and attitude with the help of suitable example.	2	CO3	BT2
	1(B)	Discuss the role of social factors in the formation of personality.	2	CO4	BT2
	1(C)	Differentiate between introvert and extrovert traits of personality.	2	CO4	BT2
	1(D)	Illustrate the difference between stereotype and prejudice with the support of suitable example.	2	CO1	BT2
	1(E)	"Your attitude, not your aptitude, will determine your altitude." Comment.	2	CO2	BT3
	2(A)	Describe the role of psychology across multi-disciplinary aspects.	2	CO3	BT2

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PART-B	2(B)	Describe the term social conflict?	2	CO 3	BT2
	2(C)	Explain the application of psychology in various professional organization.	2	CO 3	BT2
	2(D)	Examine the significance of the effective "team management" in day-to-day life.	2	CO2	BT4
	2 (E)	Describe the concept of Attitude.	2	CO2	BT2
PART-C	3(A)	Analyze the concept of organizational psychology and its significance in professional world. OR Explain Carl Jung's Theory of personality and its implications.	5	CO4	BT2
	3(B)	"Personality is conscious" comment in the light of characteristic features of personality. OR Explain the strategies that can be for stress management in organizations.	5	CO 5	BT3
	3(C)	Discuss the significance of Cooperation and Competition in group. Or Describe any trait theory of Personality of your choice.	5	CO 3	BT2
PART-D	4(A)	Analyse the process of Group formation with the focus on the factors that affect effective group dynamics.	5	CO5	BT 4
	4(B)	"Family is an organization with its own unique problems of human behavior". Justify this statement.	5	CO 4	BT 5
	4 (C)	How do incorporate the concept of social conflicts in your organization? Explain the same with the help of an example. **Or** Analyze the situational factors that lead to the development of prejudice and discrimination	5	CO6	BT4

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		evident in the personality of an individual.			CO 1	

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MANAV RACHNA UNIVERSITY
SCHOOL OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY
"End Semester Examination, Dec-2023"

SEMESTER	3/5/7	DATE OF EXAM	16/12/2023 (II)
COURSE NAME	ARTIFICIAL INTELLIGENCE	COURSE CODE	CSH205B-T
PROGRAM	B.TECH COA/CST1 - V, COA/CST1 - VII, R&AI - III	CREDITS	4
TIME DURATION	3 HOURS	MAX. MARKS	100
NAME OF FACULTY	DR. NARENDER DR. NEELU	NAME OF COURSE COORDINATOR	DR. NARENDER

Note: All questions are Compulsory.

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
Part-A	1(A)	What is the significance of a machine passing the Turing Test?	3	CO1	L1	1.1.1
	1(B)	How does one solve the N-Queen problem using the concept of backtracking.	3	CO2	L2	1.3.1
	1(C)	Describe state space representation using the Water-Jug problem.	3	CO2	L3	1.1.1
	1(D)	State the Guided search techniques? What are different algorithms come into this category?	3	CO3	L1	2.1.2
	1(E)	Local maxima are one of the problem associated with Hill Climbing procedure. Suggest the solution for the problem.	3	CO3	L2	2.2.2
Part-B	2(A)	Briefly describe the different components of architecture of the Intelligent agent.	3	CO2	L1	1.3.1
	2(B)	Describe the Max-Min strategy of Game playing algorithms.	3	CO3	L2	2.2.3
	2(C)	What do you understand by a good control strategy? What are the requirements of a good control strategy?	3	CO3	L2	2.2.4
	2(D)	What do you mean by inductive learning? Why do we still use it even though it is not a valid form of learning?	3	CO4	L2	3.3.1
	2(E)	Explain why human beings are able to recognize an object better and better each time they observe the object.	3	CO4	L2	1.3.1

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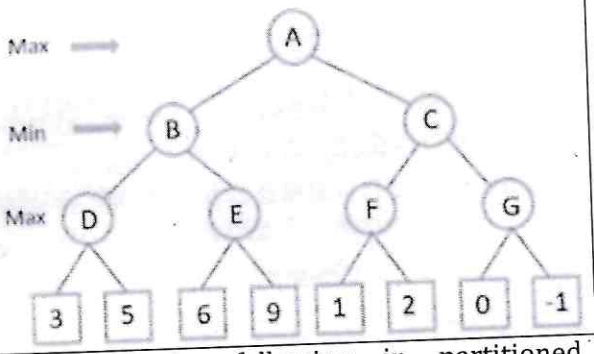
Part-C	Q3	a) Consider the following problem and perform Alpha-Beta Pruning. b) Draw the solution path. 	8+2	CO3	L3	2.2
	Q4	Represent the following in partitioned semantic networks: a) All players like the referee. b) Every dog in town has bitten the ice-cream vendor. Give an appropriate FOPL representation for both of the information.	5+5	CO4	L3	2.
	Q5	Consider the following set of knowledge: 1. Marcus was a man. 2. Marcus was a Pompeian. 3. All Pompeians were Romans. 4. Caesar was a ruler. 4. All Pompeians were either loyal to Caesar or hated him. 6. Everyone is loyal to someone. 5. People only try to assassinate rulers they are not loyal to. 6. Marcus tried to assassinate Caesar. a) Convert the above set of knowledge into FOPL. b) Convert the FOPL in CNF. c) Prove "Marcus hated Caesar" using resolution proof.	5+5+5	CO5	L4	
Part-D	Q6	Discuss the role of genetic algorithms in AI. Provide an example scenario where a genetic algorithm could be applied.	10	CO5	L3	
	Q7	Discuss the architecture, characteristics, and types of expert systems. Evaluate the advantages and drawbacks of using expert systems.	10	CO5	L4	
	Q8	Explain the principles of neural networks and discuss one real-world application where neural networks are commonly used.	10	CO6	L3	
	Q9	Discuss the major applications of artificial intelligence in various fields.	5	CO6	L3	

********** END **********

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SCHOOL OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY
"End Semester Examination, Dec-2023"

SEMESTER	5th	DATE OF EXAM	12/12/2023
COURSE NAME	ADVANCED JAVA	COURSE CODE	CSH-308B-T
PROGRAM	B.Tech - CSE	CREDITS	2
TIME DURATION	1.5 Hrs	MAX. MARKS	50
NAME OF FACULTY	Dr. RANJNA JAIN	NAME OF COURSE COORDINATOR	Dr. RANJNA JAIN

Note: Part A and Part B are compulsory.

	Q.NO.	QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	1(A)	Differentiate between Set and List.	3	CO1	BT1	1.4.1
	1(B)	How are lambda expressions related to functional interfaces?	3	CO2	BT2	2.1.1
	1(C)	What are the steps to create Java Database Connectivity?	3	CO1	BT1	1.4.1
	1(D)	Explain the internal working of Map Interface.	3	CO1	BT2	2.2.2
	1(E)	WAP Program to implement the InetAddress class.	3	CO2	BT3	3.1.1
PART-B	Q2(A)	Create a Client- Server application where the client sends a message to the server and server responds with a modified version of a message (reverse the string).	5	CO2	BT3	3.2.2
	2(B)	Create a servlet that uses URL rewriting to track user sessions. Display a personalized message based on the session information.	5	CO4	BT3	4.1.1
	Q3(A)	Write a JSP program which reads username and password input by user on a HTML page. On submission, check username and password against any default value in servlet program. If both details match; redirect user to the new	5	CO4	BT4	3.1.1

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	page otherwise redirect to an error page.				
3(B)	Explain the Lifecycle of Servlet.	5	CO3	BT2	1.4.1
Q4(A)	How does servlet context contribute to the sharing of data among different servlets in the same web application.	3	CO3	BT3	3.2.2
4(B)	Differentiate between Get() and Post() method.	2	CO3	BT2	1.4.1
Q5(A)	Explain MVC design pattern in detail. Write a java code to implement MVC architecture in Java.	5	CO5	BT3	1.4.2
5(B)	How are servlet mapping specified in the web.xml file and why are they important?	5	CO4	BT3	2.1.1

********** END **********

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SCHOOL OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY
"End Semester Examination, Dec-2023"

SEMESTER	**5**	**DATE OF EXAM**	**13/12/2023 (I)**
COURSE NAME	**ANALYSIS OF DESIGN AND ALGORITHM**	**COURSE CODE**	**CSH204B-T**
PROGRAM	**B.Tech CSE-AIML**	**CREDITS**	**4**
TIME DURATION	**3 HRS**	**MAX. MARKS**	**100**
NAME OF FACULTY	**Mr.Anup Singh Kushwaha**	**NAME OF COURSE COORDINATOR**	**Mr.Anup Singh Kushwaha**

Note: All questions are compulsory.

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	1(A)	Write general strategy of divide and conquer method.	3	CO1	BT1	1.4.1
	1(B)	What are the performance analysis techniques of an algorithm?	3	CO2	BT4	1.4.1
	1(C)	For T(n)=7T(n/2)+18 n^2 Solve the recurrence relation and find the time complexity.	3	CO2	BT2	1.4.1
	1(D)	What is union and find?	3	CO3	BT1	1.4.1
	1(E)	Write in detail about Hamiltonian cycles.	3	CO3	BT2	1.4.1
PART-B	1(F)	What is a graph coloring problem?	3	CO4	BT1	1.2.1
	1(G)	List the advantages of dynamic programming.	3	CO4	BT2	1.2.1
	1(H)	What is general backtracking method?	3	CO2	BT1	1.2.1

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	1(I)	Distinguish between polynomial vs exponential running time.	3	CO5	BT2	1.4.1
	1(J)	Calculate the worst case complexity for binary search.	3	CO3	BT3	1.2.1
PART-C	Q2(A)	Explain in detail about asymptotic notations.	5	CO3	BT2	1.3.1
	2(B)	Explain how solution will be provided for all pairs shortest path problem using dynamic programming.	10	CO5	BT4	2.3.1
	Q3(A)	How do you construct a minimum Spanning tree using kruskal's algorithm explain? List any two applications.	10	CO5	BT4	2.1.2
	3(B)	Write algorithm for LCS and Apply LCS on the following strings to compute length- S1- **amputation** S2- **sgnlknap**	10	CO3	BT3	1.3.1
PART-D	Q4(A)	Explain General method of Greedy method. Find the greedy solution for following job sequencing with deadlines problem n = 7, (p1,p2,p3,p4,p5,p6,p7) = (3,5,20,18,1,6,30), (d1,d2,d3,d4,…,d7) = (1,3,4,3,2,1,2)	10	CO3	BT3	1.2.1
	4(B)	Explain the Travelling salesmen problem using Branch and bound technique. Explain with an example.	10	CO5	BT4	2.1.3
	Q5(A)	Explain Bubble sort technique. Give the time complexity of Bubble sort.	5	CO2	BT3	2.4.1
	5(B)	Discuss in detail about the class P, NP, NP-hard and NP-complete problems. Give examples for each class.	10	CO4	BT2	2.1.

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MANAV RACHNA UNIVERSITY

DEPARTMENT OF DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY

"End Term Examination, Dec-2023"

SEMESTER	5		
SUBJECT NAME	Network Security	DATE OF EXAM	13.12.2023 (I)
		SUBJECT CODE	CSH329B-T
BRANCH	CSE (CSTI)		
TIME	8:30AM-11:30AM	SESSION	Morning
PROGRAM	B.Tech	MAX. MARKS	75
NAME OF FACULTY	Mr. Sujeet Kumar	CREDITS	3.5
		NAME OF COURSE COORDINATOR	Agha Imran

Note: Part 1: All questions are compulsory. Questions will be of short answer type (3 Marks).

Part 2: All questions are compulsory. Questions will be of short answer type and brief answer type (3,4 Marks).

Part 3: All questions are compulsory. Questions will be of descriptive type or scenarios based .Each question will be of (6.5 Marks).

Part 4: All questions are compulsory. Questions will be of descriptive type or scenarios based. Each question will be of (6.5 Marks).

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM 'S LEVEL	PI
PART-1	1(A)	What are the difference between packet analysis and packet forwarding? Explain each with the help of example.	3	CO1	L2	1.1.1
	1(B)	Differentiate between network security and wireless network security. Explain each with the help of real life scenarios.	3	CO1	L3	1.1.2
	1(C)	What are the difference between Morris Worm and Mellissa Worm? Explain in detail.	3	CO1	L2	1.1.1

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	1(D)	Explain the difference between Denial of Service Attack and Man In The Middle attack with the help case study.	3	CO1	L3	1.1.2
PART-2	1(A)	What do you understand by Email Encryption? Explain with the help of example.	3	CO2	L2	1.2.1
	2(B)	Write a short note on SMTP, HTTP, HTTPS FTP, SSH, SSL, TCP and UDP with port number?	4	CO2	L2	1.2.2
	2(C)	Define Mobile device security. Explain with the help of case study.	4	CO2	L2	1.2.3
PART-3	3(A)	What do you understand common lower-layer protocols and common upper-layer protocols? Explain both with the help of real world scenarios.	6.5	CO3	L3	1.2.1
	3(B)	Describe in brief about Access control. What do you understand by one factor authentication, two factor authentication and multifactor authentication? Explain each with the help of real life scenarios.	6.5	CO3	L4	1.2.1
	3(C)	Define open systems interconnection layer. Explain each layer with the help of diagram. What are the difference between TCP/IP model and OSI model? Explain with the help of real life scenarios.	6.5	CO3	L3	1.2.2
	3(D)	What do you understand by proxy? Discuss the advantages and disadvantages of configuring the proxy with the help of example and also mention the few tools that can be used for setting up.	6.5	CO3	L3	2.2.1
PART-4	4(A)	Define scanning. Explain different types of Scanning and Analysis tools available. Describe in brief Port Scanners with help of example.	6.5	CO4	L2	2.1.2

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4(B)	How we can enhance the network security with respect to network physical devices and software's (tools, updates and patches)? Explain in points.	6.5	CO4	L3	2.1.1
4(C)	Tina used their Microsoft account on a lab computer. She made sure her account was no longer open in the browser before leaving the lab. Someone came in behind her and used the same browser to re-access her account. How it was possible?	6.5	CO4	L4	2.1.3
4(D)	Briefly explain the hardware and behavioural countermeasures and their importance in network security. Give suitable example to support your answer.	6.5	CO4	L3	2.2.2

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SCHOOL OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY
"End Semester Examination, Dec-2023"

SEMESTER	**5th**	**DATE OF EXAM**	**14 DEC 2023 (II)**
COURSE NAME	**Advanced Database Management System**	**COURSE CODE**	**CSH304B-T**
PROGRAM	**B,Tech CSE**	**CREDITS**	**3**
TIME DURATION	**3 hrs**	**MAX. MARKS**	**75**
NAME OF FACULTY	**Ms.Gunjan**	**NAME OF COURSE COORDINATOR**	**Ms.Gunjan Chandwani**

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	Q1(A)	Differentiate between DDL, DML, ODL and OQL.	2	CO1	L2	1.3
	Q1(B)	Differentiate between OODBMS and ORDBMS.	2	CO1	L2	1.3
	Q1(C)	Differentiate between List, Tuple and Set-in Object-oriented database.	2	CO1	L2	1.3
	Q1(D)	ABC company has database having Complex data type and simple relationship among the data. The company want to manage the database using SQL query. Among the three (RDBMS, OODBMS, ORDBMS) which one you will suggest to the company.	6	CO1	L4	2.3
PART-B	Q2(A)	Consider a database with three transactions: T1, T2, and T3, and the following schedule of their operations: T1: Read(A) T2: Write(B) T3: Read(A) T1: Write(B) T2: Commit T3: Write(C) T1: Commit Draw the precedence graph corresponding to the schedule. Clearly label the nodes and edges,	3	CO2	BT3	2.3

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		representing the operations and their dependencies				
	Q2(B)	Consider a relation R(A,B,C,D) where A is the primary key and the following FDs hold: { A→ BCD ; BC→AD ; D→B}. Normalize the relation into appropriate normal form.	5	CO2	BT3	2.
	Q2(C)	You are given the below set of functional dependencies for a relation R(A,B,C,D,E,F,G), F = {AD → BF, CD → EGC, BD → F, E → D, F → C, D → F }. Find the minimal cover for the above set of functional dependencies using the algorithm.	5	CO2	BT3	2.
PART-C	Q3	Consider an e-commerce platform that operates globally, with data centers in different regions. The company relies on a distributed database system to manage product information, customer orders, and inventory. A. Discuss the significance of reliability in the context of the e-commerce distributed database.[**6 MARKS**] B. Propose and explain two commit protocols suitable for ensuring data consistency in transactions within the e-commerce platform. [6 **MARKS**]	6+ 6=12	CO3	BT3	1. 1
	Q4	A. Describe how the e-commerce platform handles view integration given the distributed nature of its database. .[**6 MARKS**] B. Discuss challenges related to integrating views in a heterogeneous database environment where different regions may use different database systems. [7 **MARKS**]	6+ 7=13	CO3	BT4	1. 1
PART-D	Q5	Imagine you are tasked with designing a multimedia database system for a global news broadcasting network. The system needs to efficiently manage and retrieve multimedia content such as text, images, audio, and video. **A.** Define a multimedia database and elaborate on the specific needs of a news broadcasting network for incorporating multimedia elements.**[4 marks]** B. Discuss the role of Multimedia Database Management Systems	4+ 6=10	CO4	BT4	1 1

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		(MDBMS) in handling diverse types of content. Provide examples of multimedia components relevant to news content and explain the structure of the multimedia database. **[6 marks]**				
	Q6	Imagine you are tasked with designing a multimedia database system for a global news broadcasting network. The system needs to efficiently manage and retrieve multimedia content such as text, images, audio, and video. i. Explain the basic concepts of temporal databases and how they facilitate the storage and retrieval of time-sensitive information in a news broadcasting network.[**2 marks]** ii. Identify the components that make a temporal database suitable for managing the evolving nature of news archives. [**4 marks]** iii. Discuss the merits and demerits of incorporating temporal aspects into the multimedia database. [4 **marks]**	2+4+ 4= 10	CO4	BT4	1.2 1
	Q7	A. Introduce the concept of digital libraries, outlining their objectives and types. Discuss the essential components of a digital library and debunk any myths associated with their implementation. [**2 marks]** B. Explore the services that a digital library can offer and compare them with traditional libraries in terms of advantages and limitations. [**3 marks]**	2+3=5	CO4	BT4	1.2 1

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MANAV RACHNA UNIVERSITY
SCHOOL OF EDUCATION & HUMANITIES
DEPARTMENT OF EDUCATION & HUMANITIES
"End Semester Examination, Dec-2023"
Set-B

SEMESTER	V / VII / III	DATE OF EXAM	15/12/2023
SUBJECT NAME	Applied Psychology	SUBJECT CODE	EDS289
BRANCH	Management, Applied Sciences	SESSION	II
TIME	1:50 Hours	MAX. MARKS	50
PROGRAM	BBA/B.Tech/BSc	CREDITS	2
NAME OF FACULTY	Mr. Sharv Datt Anand/Dr Mira Mishra	NAME OF COURSE COORDINATOR	Dr. Mira Mishra

Note: Part A: All questions are compulsory. Each question will be 2 Marks.
Part B: All questions are compulsory. Each question will be 2 Marks.
Part C: Questions will be of 5 marks. Internal choice will be there
Part D: Questions will be of 5 marks. Internal choice will be there.

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL
PART-A	1(A)	Differentiate between aptitude and attitude with the help of suitable example.	2	CO3	BT2
	1(B)	Discuss the role of social factors in the formation of personality.	2	CO4	BT2
	1(C)	Differentiate between introvert and extrovert traits of personality.	2	CO4	BT2
	1(D)	Illustrate the difference between stereotype and prejudice with the support of suitable example.	2	CO1	BT2
	1(E)	"Your attitude, not your aptitude, will determine your altitude." Comment.	2	CO2	BT3
	2(A)	Describe the role of psychology across multi-disciplinary aspects.	2	CO3	BT2

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PART-B	2(B)	Describe the term social conflict?	2	CO 3	BT2
	2(C)	Explain the application of psychology in various professional organization.	2	CO 3	BT2
	2(D)	Examine the significance of the effective "team management" in day-to-day life.	2	CO2	BT2
	2 (E)	Describe the concept of Attitude.	2	CO2	BT2
PART-C	3(A)	Analyze the concept of organizational psychology and its significance in professional world. OR Explain Carl Jung's Theory of personality and its implications.	5	CO4	BT2
	3(B)	"Personality is conscious" comment in the light of characteristic features of personality. OR Explain the strategies that can be for stress management in organizations.	5	CO 5	BT3
	3(C)	Discuss the significance of Cooperation and Competition in group. Or Describe any trait theory of Personality of your choice.	5	CO 3	BT2
PART-D	4(A)	Analyse the process of Group formation with the focus on the factors that affect effective group dynamics.	5	CO5	BT 4
	4(B)	"Family is an organization with its own unique problems of human behavior". Justify this statement.	5	CO 4	BT 5
	4 (C)	How do incorporate the concept of social conflicts in your organization? Explain the same with the help of an example. **Or** Analyze the situational factors that lead to the development of prejudice and discrimination	5	CO6	BT4

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		evident in the personality of an individual.		CO 1		

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"End Semester Examination, Dec 2023"

SEMESTER	5th (AIML,CDA,CSTI) & 7th AIML	DATE OF EXAM/SESSION	18/12/2023 (II)
COURSE NAME	Theory of Automata & Compiler Design	COURSE CODE	CSH311B-T
PROGRAM	B.TECH CSE: AIML/ CDA/CSTI	CREDITS	4
TIME DURATION	3 hour	MAX. MARKS	100
NAME OF FACULTY	Mr. Sanjay Kumar, Ms. Deepanshi Gupta	NAME OF COURSE COORDINATOR	Mr. Sanjay Kumar

Q. No		Questions	Marks	CO	BT	PI
PART-A	1(a)	Design Chomsky hierarchy with respect to recognizer, grammar, language.	[3]	CO1	L2	1.1.2
	1(b)	Construct a DFA for a Regular Expression: $a(a+b)^*(aa+bb)b^*$	[3]	CO1	L3	1.1.3
	1(c)	Given the language L= {ab, aa, baa}, which of the following strings are in L^*? 1) abaabaaabaa 2) aaaabaaaa 3) baaaaabaaaab 4) baaaaabaa A. 1, 2 and 3 B. 2, 3 and 4 C. 1, 2 and 4 D. 1, 3 and 4	[3]	CO1	L2	1.1.2
	1(d)	Design a DFA of vending machine over input $\sum$ = {Rs.10, Rs.20} that can withdraw items like Biscuit, Juice and Chocolate. The cost of Biscuit, Juice and Chocolate are Rs.10, Rs.20 and Rs.30 respectively.	[3]	CO1	L3	3 .1.1
	1(e)	Remove left recursion from the grammar from the grammar $E \rightarrow E + n \mid n$	[3]	CO2	L1	1.1.3
PART-B	2(a)	What is the responsibilities of FA and RE compiler design ?	[3]	CO2	L1	2.1.2
	2(b)	Explain the tuple set of PDA and Turing machine.	[3]	CO2	L2	1.2.4
	2(c)	Differentiate between GNF and CNF	[3]	CO2	L2	1.1.3

	2(d)	How many number of tokens present in the following code?
		switch (input value)
		{
		case 1: b = c*d; break;
		default: b = b++; break;
		}
			[3]	CO3	L2	1 .2.3

	2(e)	Consider the augmented grammar $S' \rightarrow S$ $S \rightarrow S + R \mid R$ $R \rightarrow R*P \mid P$ $P \rightarrow (S) \mid \text{id}$ If I_3 is the set of two LR (0) items {[S' → S.], [S → S. + R]}, then find the goto $(I_3, +)$	[3]	CO3	L2	2.1.2

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	3(a)	Explain the concepts of reduce-reduce conflict in LR parsing with example.	[5]	CO3	L2	2.1.3
PART-C	3(b)	Consider a grammar G having production rules: $S \rightarrow a \mid (L)$ $L \rightarrow L, S \mid S$ Where terminals are (,), a and , 1. Find LR (0) items set for the grammar. 2. Design a DFA for items set	[7+3]	CO3	L3	2.1.1
	3(c)	Design precedence relation table with the help of lead and trail function of non-terminals of the following grammar: $S \rightarrow aAcBe$ $A \rightarrow dAbD \mid bBa$ $B \rightarrow g \mid h$ $D \rightarrow g$	[3+7]	CO 4	L3	4.2.3
	3(d)	Consider the grammar G: $S \rightarrow A \mid B$ $A \rightarrow n \mid m$ $B \rightarrow (E)$ $E \rightarrow E\ S \mid S$ 1. Create left recursion free grammar G '. 2. Construct the first and follow set of the resulting grammar G'. 3. Design a LL (1) Parsing Table.	[3+3+4]	CO4	L3	2.1.3
PART-D	4(a)	Design quadruple, triple and indirect triples table for the following assignment statement: $a = b^* - c + b * - c$	[5]	CO 5	L2	2.1.4
	4(b)	Find the canonical Item set and design a CLR (1) parsing table for the following productions rules in the grammar: 1. $S \rightarrow L = R$ 2. $S \rightarrow R$ 3. $L \rightarrow * R$ 4. $L \rightarrow id$ 5. $R \rightarrow L$	[5+5]	CO 4	L3	4.2.3
	4(c)	Translate the following intermediate representation(IR) form: $-(a + b) * (c + d) + (a + b + c)$ 1. 3 address code 2. syntax tree 3. DAG	[3+3+4]	CO 5	L3	4.1.2
	4(d)	What is local optimization? Explain with example any three local optimization techniques.	[1+3*3]	CO 5	L2	2.1.3

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DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY
"End Semester Examination, Dec-2023"

SEMESTER	5th	**DATE OF EXAM/SESSION**	18/12/2023 (I)
COURSE NAME	Computer Networks	**COURSE CODE**	CSH301 B-T
PROGRAM	B.Tech	**CREDITS**	03
TIME DURATION	3 Hrs	**MAX. MARKS**	75
NAME OF FACULTY	Dr. Prinima, Dr. Manoj, Mr. Anup Singh	**NAME OF COURSE COORDINATOR**	Dr Prinima

Note: All the questions are Compulsory.

Manpreet Kaur

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	Q1 (a)	What are the protocols associated with various layers in TCP/IP model?	2.5	CO1	BT2	1.4.1
	(b)	Consider a scenario where a company is planning to set up a new office and needs to design the network topology. Answer the following questions based on network topology concepts: Explain the factors that should be considered when choosing a network topology for the new office. Discuss the advantages and disadvantages of at least two different topologies and recommend the most suitable one based on the company's requirements.	5	CO1	BT2	1.4.1
	(c)	What is the difference between a port address, a logical address, and a physical address?	5	CO1	BT2	1.4.1
	Q2 (a)	Explain how Selective Repeat ARQ overcomes the limitations of Go-Back-N ARQ protocol.	2.5	CO2	BT2	1.4.1
	(b)	Explain Carrier sense multiple access with collision detection (CSMA/CD).	5	CO2	BT1	1.3.1
	(c)	Calculate CRC Bits: Assume that (a) data is 10110. (b) code generator is x^3+x^2+1 Also check the data is received correctly or not?	5	CO2	BT3	2.4.1

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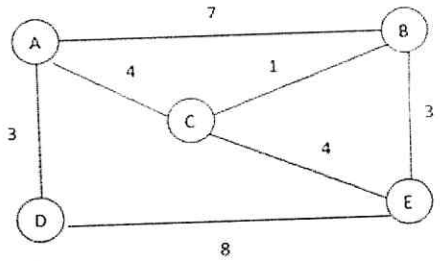
PART-B	Q3 (a)	Consider a network that falls into the Class B address range. The organization is assigned the IP address 150.10.5.3 with a subnet mask of 255.255.0.0. a) Identify the class of the IP address. b) Determine the network address. c) Find the range of host addresses available in this network. Calculate the total number of host addresses that can be accommodated in this network.	5	CO3	BT3	1.4.1
	(b)	Write short notes on any two: 1. ARP 2. NAT 3. Mobile IP	5	CO3	BT2	1.2.1
	Q4 (a)	You are given the IP address block 172.16.0.0/16. You need to create two subnets: Subnet A and Subnet B. Subnet A requires at least 50 host addresses, while Subnet B needs to accommodate up to 20 host addresses. Describe how you would subnet the given address block classlessly to create Subnet A and Subnet B. Provide details on the subnet masks, the range of usable IP addresses.	10	CO3	BT3	1.2.1
	(b)	Difference between Circuit Switching, Packet Switching and Message Switching.	5	CO4	BT2	1.2.1
PART-C	Q5 (a)	Discuss the steps for Distance vector Routing. Consider the image given below and show the Routing table for node D, and E using Link State Routing Protocol.  	10	CO5	BT2,BT3	2.1.2
	(b)	Difference between Leaky bucket and Token bucket Algorithm.	5	CO5	BT2	1.4.1
	Q6 (a)	Explain the conceptual differences between SMTP (Simple Mail Transfer Protocol) and POP (Post Office Protocol) in the context of email communication. Illustrate how these protocols work together to enable the sending and receiving of emails.	5	CO4	BT2	1.4.1
	(b)	How a firewall can monitor the incoming and outgoing traffic? Explain the different types of firewalls.	5	CO4	BT2	2.1.3

********** END **********

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MANAV RACHNA UNIVERSITY

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ODD SEMESTER (DEC-2023)

END TERM EXAMINATION

COURSE NAME: DIGITAL ELECTRONICS AND MICROCONTROLLERS	COURSE CODE: ECH308B-T	CREDIT: 4	MAX. MARKS: 100	TIME DURATION: 3 HRS	DATE OF EXAM: 20/12/2023
PROGRAM: B.TECH CSE/AIML/CDA/CSTI		SEMESTER: 5	Session-I		
FACULTY NAME: DR. NIHARIKA, DR. NITIKA, MR. VIJAY GILL			NAME OF COURSE COORDINATOR: DR. NIHARIKA THAKUR		Chau Rethels

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	1(A)	Reduce the following function using K Map. f(A,B,C,D) = ∑m (0,1,2,5,6,11,12,13) +d(3,15)	8	CO1	BT2	1.3.1,2.3.1
	1(B)	Reduce the following function using K Map. f(A,B,C,D) = πM (1,2,3,6,8,12,14,15) +d(0,4,5)	7	CO1	BT2	1.3.1,2.3.1
PART-B	Q2(A)	Design a 3 bit gray to binary code converter using basic gates.	8	CO2	BT4	1.4.1,2.1.1, 3.2.2,5.2.2
	2(B)	Develop a BCD to Decimal Decoder using basic gates.	7	CO2	BT3	1.4.1,2.1.1, 3.2.2,5.2.2
PART-C	Q3(A)	Implement the conversion of D to JK Flip Flop	7	CO3	BT3	1.4.1,2.1.1, 3.2.2,5.2.2
	3(B)	Discuss the process of converting an Analog Signal to a Digital Signal. Also design a Counter Type A/D Converter.	8	CO3	BT4	1.4.1,2.1.1, 3.2.2,5.2.2
	Q4(A)	Design a Parellel In Serial Out Shift Register using D Flip Flops	7	CO3	BT5	1.4.1,2.1.1, 3.2.2,5.2.2
	4(B)	Design a Mod-7 synchronous Up counter using J-K Flip-Flops.	8	CO3	BT5	1.4.1,2.1.1, 3.2.2,5.2.2
	4(C)	Design and explain the excitation table of SR Flip Flop	5	CO3	BT4	1.4.1,2.1.1, 3.2.2,5.2.2
PART-D	Q5(A)	Compare a Microprocessor and a Microcontroller. Explain the block diagram of 8051 Mictrocontroller in detail.	8	CO4	BT4	1.4.1,2.1.1, 3.2.2,5.2.2
	5(B)	Develop an Assembly language program to toggle all the bits of port 1 by sending to its values 55H and AAH continuously. Put a time delay in between each issuing of data to port1.	7	CO4	BT3	1.4.1,2.1.1, 3.2.2,5.2.2
	Q6(A)	Explain the significance of various addressing modes in 8051 Microcontroller with examples.	8	CO4	BT2	1.4.1,2.1.1, 3.2.2,5.2.2
	6(B)	Discuss the RAM allocation in 8051 and the significance of program counter.	5	CO4	BT4	1.4.1,2.1.1, 3.2.2,5.2.2
	6(C)	Build a program to add two 16-bit numbers. The numbers are JCE7H and 3B8DH. Place the sum in R7 and R6; R6 should have the lower byte.	7	CO4	BT3	1.4.1,2.1.1, 3.2.2,5.2.2

********** END **********

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SCHOOL OF ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE AND TECHNOLOGY

"End Semester Examination, Dec-2023"

SEMESTER	**V**	**DATE OF EXAM/SESSION**	**21.12.2023 (I)**
COURSE NAME	**CYBER LAW**	**COURSE CODE**	**LWS323**
PROGRAM	**BTECH CSE**	**CREDITS**	**2**
TIME DURATION	**90 MINUTES**	**MAX. MARKS**	**40**
NAME OF FACULTY	**Ms. SIMRAN SINGH**	**NAME OF COURSE COORDINATOR**	**Ms. SIMRAN SINGH**

Carefully

PART – A (5 Marks- All Questions are Compulsory)

Q. NO.	QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL
1.	Define the following in not more than 15-20 words: a) Cyber Law b) Constructive Criticism c) Actus Reus d) Mens Rea e) Hate Speech	5	CO1	BT1

PART – B (5 Marks- Attempt any one Questions)

Q. NO.	QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL
2.	**"We are living in a digital world where everything has now been taken to the internet. Whether it is storing data or getting access to information, we seek assistance from the internet to get things done. The growing involvement in the cyber world makes us prone to cyber threats.."** In the light of this statement, explain why do we need cyber law?	5	CO4	BT2
3.	Briefly explain *any two* of the following with appropriate example: a) Phishing b) DOS Attack c) Cyber-terrorism	5	CO1	BT2

PART – C (15 Marks- Attempt all Questions of 10 marks and any one of 5 marks)

Q. NO.	QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL
4.	**"One of the most important elements for a healthy democracy is establishing a space where citizens can participate completely and**	10	CO3	BT4

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	effectively in the decision-making process of the country. Significantly, Constitution of India also guarantees every citizen the Right to freedom of speech and expression, this right is not only guaranteed by constitution but also through various international conventions like International Covenant on Civil and Political Rights (ICCPR), Universal Declaration of Human Rights (UDHR) and European Conventions on Human Rights and Fundamental Freedom…" In the light of the above statement, answer the following: a) How freedom of speech and expression is misused online? b) Discuss the highlights of Shreya Singhal v. UOI			
5.	Briefly explain Article 253 of Indian Constitution and its role for enactment of Cyber Laws.	5	CO3	BT2
6.	Briefly explain the objectives of IT Act, 2000.	5	CO4	BT2

PART – C (15 Marks- Attempt all Questions)

Q. NO.	QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL
7.	You are invited to brief school students about boon and bane of internet. You also must explain them what safety measures they shall take to protect themselves from cyber-criminals. Write down your recitals briefly.	10	CO2	BT5
8.	**"Ms. Jahnvi noticed a recurring transaction of Rs. 1,200 in her bank statement. She is not able to recognize this transaction and is of the view that her net-banking details might have been compromised."** Advice Ms. Jahnvi.	5	CO2	BT4

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SCHOOL OF SCIENCES

DEPARTMENT OF SCIENCES

"End Semester Examination, Dec-2023"

SEMESTER	**V**	**DATE OF EXAM**	**22.12.2023 (I)**
COURSE NAME	**ENVIRONMENT AND SUSTAINABLE DEVELOPMENT**	**COURSE CODE**	**CHS234**
PROGRAM	**B.TECH. CSE**	**CREDITS**	**2**
TIME DURATION	**120 MINUTES**	**MAX. MARKS**	**50**
NAME OF FACULTY	**PROF. (DR.) MEENA KAPAHI**	**NAME OF COURSE COORDINATOR**	**PROF. (DR.) MEENA KAPAHI**

Note: All questions are compulsory.

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL
PART-A	1(A)	Analyze the reasons behind the shift from MDGs to SDGs, considering the limitations and criticisms associated with the MDGs and how the SDGs aim to address those shortcomings.	4+6=10	CO2	BT2
	1(B)	In what ways can a company effectively integrate the Triple Bottom Line framework considering how environmental, social, and economic factors interact to achieve long-term success? OR Identify and discuss three major threats to sustainable development in urban areas in India.	5	CO1	BT3
PART-B	2(A)	Sustainability Strategy integrating social, economic and environmental objectives, poses many technical and political difficulties. Justify considering at least four factors to be considered while planning for sustainability.	5	CO3	BT4
	2(B)	In what ways can specific elements of indigenous knowledge be applied to enhance sustainability in local environment/agriculture/resource management?	3	CO4	BT3
	2(C)	Identify at least three SDGs associated with Ecotourism initiatives. Justify your selection by highlighting its potential impact on achieving these specific SDGs.	7	CO4	BT4
	2(D)	What are the guiding principles and benefits of sustainability reporting?	5+5=10	CO3	BT1
	2(E)	Can you identify and explain the interconnected objectives related to agriculture and food within the new Sustainable Development Goals (SDGs)?	5	CO4	BT3
	2(F)	Elaborate the specific ways in which climate change impacts biodiversity and natural ecosystems.	5	CO4	BT4

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SCHOOL OF ENGINEERING
DEPARTMENT OF CST
"End Semester Examination, Dec-2023"

SEMESTER	**CSE5**	**DATE OF EXAM/SESSION**	22.12.2023 (I)
COURSE NAME	**GREEN COMPUTING**	**COURSE CODE**	**CSS325B-T**
PROGRAM	**BTECH CSE**	**CREDITS**	**2**
TIME DURATION	**2 HOURS**	**MAX. MARKS**	**60**
NAME OF FACULTY	**DR. SACHIN LAKRA**	**NAME OF COURSE COORDINATOR**	**DR. SACHIN LAKRA** Manpreet Kaur

Note: All questions are compulsory.

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	1a	Define recycling.	3	CO5	BT2	7.2.2
	1b	Name any 3 toxins found in e-waste.	3	CO1	BT1	7.1.1
	1c	State the Global Green Mantra.	3	CO2	BT2	7.1.2
	1d	Name any 3 companies which use green data centers.	3	CO3	BT1	7.2.1
	1e	Give 3 differences between green computing and sustainability.	3	CO1	BT2	7.1.1
PART-B	2a	Why is power consumption a problem?	2	CO3	BT2	7.2.2
	2b	Identify and explain 2 ways by which power consumption as a problem can be corrected in a data center.	3	CO3	BT2	7.2.2
	2c	Give 2 instances of how virtualization can be used to reduce e-waste.	5	CO3	BT2	7.2.2
	2d	Consider a company which has a revenue of Rs.10 crore each year and spends about 4 percent of its revenue on IT each year. If the company shifts to using lower-power processors (which give a saving of 10% on the spending on IT) in their computers, how much will the company save in rupees in one year?	5	CO3	BT3	7.2.2

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Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-C	3a	How can recycling help in handling e-waste?	2	CO5	BT2	7.1.2
	3b	What will you do to reduce the e-waste being produced by your day-to-day activities in your household?	3	CO4	BT2	2.2.4 7.2.2
	3c	If a single mobile phone produces 20 Watts of waste energy in 24 hours, how much waste heat will it produce in a year?	5	CO5	BT3	7.1.2
	3d	How much heat will be produced in the case of mobile phones in Q3c, if there are 16 billion mobile phones being used globally?	5	CO5	BT3	7.1.2
PART-D	4a	Name any 2 global initiatives being taken to apply green computing and state their achievements.	5	CO2	BT2	7.1.2
	4b	How can green computing be used in the area of energy-efficient hardware?	5	CO6	BT3	7.1.2
	4c	How has the Covid-19 Pandemic been a boon for the environment?	5	CO4	BT3	2.2.4 7.2.2
********** END **********						

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Manpreet

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SCHOOL OF ENGINEERING
DEPARTMENT OF ELECTRONICS AND COMMUNICATION
"End Semester Examination, Dec-2023"

SEMESTER	**5TH**	**DATE OF EXAM/SESSION**	**22.12.2023 (I)**
COURSE NAME	**E- WASTE MANAGEMENT**	**COURSE CODE**	**ECS306B-T**
PROGRAM	**B.TECH. (CSE/AIML/CDA/ CSTI/ME/SMA)**	**CREDIT**	**1**
TIME DURATION	**1.5 Hrs.**	**MAX. MARKS**	**60**
NAME OF FACULTY	**Dr. Piyush Charan**	**NAME OF COURSE COORDINATOR**	**Dr. Piyush Charan**

Note: Attempt all questions.

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	Q1.	Define "E-Waste" and briefly explain its significance in the context of environmental management. List the health hazards due to e-waste	5	CO1	BT1	1.2.1, 2.1.2
	Q2(A).	Explain the meaning of 'Extended Producer Responsibility' (EPR) as it pertains to the management of electronic waste (e-waste).	5	CO1	BT2	2.1.2
	2(B).	Analyze the role of the three R's (Reduce, Reuse, Recycle) in waste management and their specific contributions to mitigating environmental impact	5	CO1	BT4	1.4.1, 2.1.2
PART-B	Q3.	Utilize your insights to explore the expansion of the electrical and electronics industry in India and its application in generating e-waste	5	CO2	BT3	2.1.2, 2.3.1
	Q4(A).	Apply your knowledge of e-waste composition to assess its practical implications on environmental factors and human health.	5	CO2	BT3	1.2.1, 2.1.2
	4(B).	Analyze the Indian and global scenarios of e-waste generation.	5	CO2	BT4	1.2.1, 2.1.2, 2.3.1

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PART-C	Q5.	Mention two common heavy metals found in electronic waste and explain their potential environmental hazards.	5	CO3	BT2	2.1.2 2.3.1
	Q6(A).	Analyze the concept of '***carbon footprint***' providing a concise description, and delve into the reasons why understanding and managing it are crucial for fostering sustainable practices.	5	CO3	BT4	2.3.1
	6(B).	Examine the E-Waste (Management) Rules, 2016, in India, and outline the key provisions, highlighting their significance in regulating electronic waste.	5	CO3	BT4	3.1.2
PART-D	Q7.	Apply your knowledge to explore emerging recycling and recovery technologies for e-waste. Utilize your understanding to explain the process of refurbishing and discuss the government regulations that apply to refurbishers.	5	CO4	BT3	2.1.2 2.3.1
	Q8(A).	Inspect the importance of adopting environmentally sound treatment technology for e-waste management. Provide examples of innovative initiatives from around the world.	5	CO4	BT4	2.3.1
	8(B).	Assess the guidelines for establishing an integrated e-waste recycling and treatment facility.	5	CO4	BT4	3.1.2
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SCHOOL OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY
"End Semester Examination, Dec-2023"

SEMESTER	**3/5/7**	**DATE OF EXAM**	**16/12/2023 (II)**
COURSE NAME	**ARTIFICIAL INTELLIGENCE**	**COURSE CODE**	**CSH205B-T**
PROGRAM	**B.TECH** COA/CST1 - V, COA/CST1 - VII, R&AI - III	**CREDITS**	**4**
TIME DURATION	**3 HOURS**	**MAX. MARKS**	**100**
NAME OF FACULTY	**DR. NARENDER DR. NEELU**	**NAME OF COURSE COORDINATOR**	**DR. NARENDER**

Note: All questions are Compulsory.

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
Part-A	1(A)	What is the significance of a machine passing the Turing Test?	3	CO1	L1	1.1.
	1(B)	How does one solve the N-Queen problem using the concept of backtracking.	3	CO2	L2	1.3.
	1(C)	Describe state space representation using the Water-Jug problem.	3	CO2	L3	1.1.
	1(D)	State the Guided search techniques? What are different algorithms come into this category?	3	CO3	L1	2.1.
	1(E)	Local maxima are one of the problem associated with Hill Climbing procedure. Suggest the solution for the problem.	3	CO3	L2	2.2.
Part-B	2(A)	Briefly describe the different components of architecture of the Intelligent agent.	3	CO2	L1	1.3.
	2(B)	Describe the Max-Min strategy of Game playing algorithms.	3	CO3	L2	2.2.
	2(C)	What do you understand by a good control strategy? What are the requirements of a good control strategy?	3	CO3	L2	2.2.
	2(D)	What do you mean by inductive learning? Why do we still use it even though it is not a valid form of learning?	3	CO4	L2	3.3.
	2(E)	Explain why human beings are able to recognize an object better and better each time they observe the object.	3	CO4	L2	1.3.

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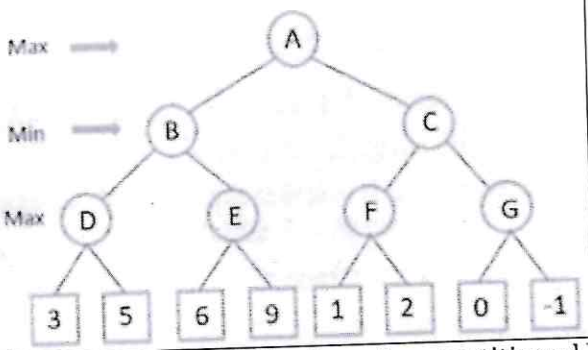
Part-C	Q3	a) Consider the following problem and perform Alpha-Beta Pruning. b) Draw the solution path.  	8+2	CO3	L3	2.2.3
	Q4	Represent the following in partitioned semantic networks: a) All players like the referee. b) Every dog in town has bitten the ice-cream vendor. Give an appropriate FOPL representation for both of the information.	5+5	CO4	L3	2.2.4
	Q5	Consider the following set of knowledge: 1. Marcus was a man. 2. Marcus was a Pompeian. 3. All Pompeians were Romans. 4. Caesar was a ruler. 4. All Pompeians were either loyal to Caesar or hated him. 6. Everyone is loyal to someone. 5. People only try to assassinate rulers they are not loyal to. 6. Marcus tried to assassinate Caesar. a) Convert the above set of knowledge into FOPL. b) Convert the FOPL in CNF. c) Prove "Marcus hated Caesar" using resolution proof.	5+5+5	CO5	L4	1.3.1
Part-D	Q6	Discuss the role of genetic algorithms in AI. Provide an example scenario where a genetic algorithm could be applied.	10	CO5	L3	1.1.1
	Q7	Discuss the architecture, characteristics, and types of expert systems. Evaluate the advantages and drawbacks of using expert systems.	10	CO5	L4	2.1.
	Q8	Explain the principles of neural networks and discuss one real-world application where neural networks are commonly used.	10	CO6	L3	2.2.
	Q9	Discuss the major applications of artificial intelligence in various fields.	5	CO6	L3	1.3.

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MANAV RACHNA UNIVERSITY
SCHOOL OF EDUCATION & HUMANITIES
DEPARTMENT OF EDUCATION & HUMANITIES
"End Semester Examination, Dec-2023"
Set-B

SEMESTER	V / VII / III	DATE OF EXAM	15/12/2023
SUBJECT NAME	Applied Psychology	SUBJECT CODE	EDS289
BRANCH	Management, Applied Sciences	SESSION	II
TIME	1:50 Hours	MAX. MARKS	50
PROGRAM	BBA/B.Tech/BSc	CREDITS	2
NAME OF FACULTY	Mr. Sharv Datt Anand/Dr Mira Mishra	NAME OF COURSE COORDINATOR	Dr. Mira Mishra

Note: Part A: All questions are compulsory. Each question will be 2 Marks.
Part B: All questions are compulsory. Each question will be 2 Marks.
Part C: Questions will be of 5 marks. Internal choice will be there
Part D: Questions will be of 5 marks. Internal choice will be there.

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	
PART-A	1(A)	Differentiate between aptitude and attitude with the help of suitable example.	2	CO3	BT2	
	1(B)	Discuss the role of social factors in the formation of personality.	2	CO4	BT2	
	1(C)	Differentiate between introvert and extrovert traits of personality.	2	CO4	BT2	
	1(D)	Illustrate the difference between stereotype and prejudice with the support of suitable example.	2	CO1	BT2	
	1(E)	"Your attitude, not your aptitude, will determine your altitude." Comment.	2	CO2	BT3	
	2(A)	Describe the role of psychology across multi-disciplinary aspects.	2	CO3	BT2	

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PART-B	2(B)	Describe the term social conflict?	2	CO 3	BT2
	2(C)	Explain the application of psychology in various professional organization.	2	CO 3	BT2
	2(D)	Examine the significance of the effective "team management" in day-to-day life.	2	CO2	BT4
	2 (E)	Describe the concept of Attitude.	2	CO2	BT2
PART-C	3(A)	Analyze the concept of organizational psychology and its significance in professional world. OR Explain Carl Jung's Theory of personality and its implications.	5	CO4	BT2
	3(B)	"Personality is conscious" comment in the light of characteristic features of personality. OR Explain the strategies that can be for stress management in organizations.	5	CO 5	BT3
	3(C)	Discuss the significance of Cooperation and Competition in group. Or Describe any trait theory of Personality of your choice.	5	CO 3	BT2
PART-D	4(A)	Analyse the process of Group formation with the focus on the factors that affect effective group dynamics.	5	CO5	BT 4
	4(B)	"Family is an organization with its own unique problems of human behavior". Justify this statement.	5	CO 4	BT 5
	4 (C)	How do incorporate the concept of social conflicts in your organization? Explain the same with the help of an example. **Or** Analyze the situational factors that lead to the development of prejudice and discrimination	5	CO6	BT4

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		evident in the personality of an individual.		CO 1	

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SCHOOL OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY
"End Semester Examination, Dec 2023"

SEMESTER	5th (AIML,CDA,CSTI) & 7th AIML	DATE OF EXAM/SESSION	18/12/2023 (II)
COURSE NAME	Theory of Automata & Compiler Design	COURSE CODE	CSH311B-T
PROGRAM	B.TECH CSE: AIML/ CDA/CSTI	CREDITS	4
TIME DURATION	3 hour	MAX. MARKS	100
NAME OF FACULTY	Mr. Sanjay Kumar, Ms. Deepanshi Gupta	NAME OF COURSE COORDINATOR	Mr. Sanjay Kumar

Q. No		Questions	Marks	CO	BT	PI
PART-A	1(a)	Design Chomsky hierarchy with respect to recognizer, grammar, language.	[3]	CO1	L2	1.1.2
	1(b)	Construct a DFA for a Regular Expression: $a(a+b)^*(aa+bb)b^*$	[3]	CO1	L3	1.1.3
	1(c)	Given the language L= {ab, aa, baa}, which of the following strings are in L^*? 1) abaabaaabaa 2) aaaabaaaa 3) baaaaabaaaab 4) baaaaabaa A. 1, 2 and 3 B. 2, 3 and 4 C. 1, 2 and 4 D. 1, 3 and 4	[3]	CO1	L2	1.1.2
	1(d)	Design a DFA of vending machine over input $\sum$ = {Rs.10, Rs.20} that can withdraw items like Biscuit, Juice and Chocolate. The cost of Biscuit, Juice and Chocolate are Rs.10, Rs.20 and Rs.30 respectively.	[3]	CO1	L3	3 .1.1
	1(e)	Remove left recursion from the grammar from the grammar $E \rightarrow E + n \mid n$	[3]	CO2	L1	1.1.3
PART-B	2(a)	What is the responsibilities of FA and RE compiler design ?	[3]	CO2	L1	2.1.2
	2(b)	Explain the tuple set of PDA and Turing machine.	[3]	CO2	L2	1.2.4
	2(c)	Differentiate between GNF and CNF	[3]	CO2	L2	1.1.3

	2(d)	How many number of tokens present in the following code?
		switch (input value)
		{
		case 1: b = c*d; break;
		default: b = b++; break;
		}
			[3]	CO3	L2	1 .2.3

	2(e)	Consider the augmented grammar $S' \rightarrow S$ $S \rightarrow S + R \mid R$ $R \rightarrow R*P \mid P$ $P \rightarrow (S) \mid \text{id}$ If I_3 is the set of two LR (0) items {[S' → S•], [S → S• + R]}, then find the goto (I_3, +)	[3]	CO3	L2	2.1.2

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	3(a)	Explain the concepts of reduce-reduce conflict in LR parsing with example.	[5]	CO3	L2	2.1.3
PART-C	3(b)	Consider a grammar G having production rules: $S \rightarrow a \mid (L)$ $L \rightarrow L, S \mid S$ Where terminals are (,), a and , 1. Find LR (0) items set for the grammar. 2. Design a DFA for items set	[7+3]	CO3	L3	2.1.1
	3(c)	Design precedence relation table with the help of lead and trail function of non-terminals of the following grammar: $S \rightarrow aAcBe$ $A \rightarrow dAbD \mid bBa$ $B \rightarrow g \mid h$ $D \rightarrow g$	[3+7]	CO 4	L3	4.2.3
	3(d)	Consider the grammar G: $S \rightarrow A \mid B$ $A \rightarrow n \mid m$ $B \rightarrow (E)$ $E \rightarrow E\ S \mid S$ 1. Create left recursion free grammar G '. 2. Construct the first and follow set of the resulting grammar G'. 3. Design a LL (1) Parsing Table.	[3+3+4]	CO4	L3	2.1.3
PART-D	4(a)	Design quadruple, triple and indirect triples table for the following assignment statement: $a = b^* - c + b * - c$	[5]	CO 5	L2	2.1.4
	4(b)	Find the canonical Item set and design a CLR (1) parsing table for the following productions rules in the grammar: 1. $S \rightarrow L = R$ 2. $S \rightarrow R$ 3. $L \rightarrow * R$ 4. $L \rightarrow id$ 5. $R \rightarrow L$	[5+5]	CO 4	L3	4.2.3
	4(c)	Translate the following intermediate representation(IR) form: $-(a + b) * (c + d) + (a + b + c)$ 1. 3 address code 2. syntax tree 3. DAG	[3+3+4]	CO 5	L3	4.1.
	4(d)	What is local optimization? Explain with example any three local optimization techniques.	[1+3*3]	CO 5	L2	2.1

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SCHOOL OF ENGINEERING
DEPARTMENT OF ELECTRONICS AND COMMUNICATION
"End Semester Examination, Dec-2023"

SEMESTER	**7TH**	**DATE OF EXAM/SESSION**	**11.12.2023 (II)**
COURSE NAME	**WIRELESS SENSOR NETWORKS**	**COURSE CODE**	**ECH432B-T**
PROGRAM	**B.TECH. (CSE/AIML/CDA/CSTI)**	**CREDITS**	**4**
TIME DURATION	**3 Hrs.**	**MAX. MARKS**	**100**
NAME OF FACULTY	**Dr. Piyush Charan**	**NAME OF COURSE COORDINATOR**	**Dr. Piyush Charan** Charu Pathak

Note: Attempt all questions.

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	Q1(A).	Define the term 'sensor' in the context of wireless sensor networks, demonstrating your understanding of its role and function.	2	CO1	BT2	1.2.1, 2.1.2
	1(B).	Explain the significance of WSNs (Wireless Sensor Networks)?	3	CO1	BT2	2.1.2
	Q2(A).	Examine the various challenges encountered when deploying a Wireless Sensor based Network.	5	CO1	BT4	1.4.1, 2.1.2
	2(B).	Reflect upon your knowledge to discuss the optimization goals and figures of merit for Wireless Sensor Networks (WSNs), highlighting key considerations and practical applications.	5	CO1	BT3	2.2.1, 2.2.2
PART-B	Q3(A).	Apply your knowledge to explain the concept of data aggregation in wireless sensor networks, illustrating its practical applications and benefits.	2	CO2	BT3	2.1.2, 2.3.1
	3(B).	Explain the single node architecture commonly used in Wireless Sensor Networks, and illustrate it through a diagram, demonstrating your understanding of its key components and functions.	3	CO2	BT2	1.2.1, 2.1.2

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	Q4(A).	Analyze the AODV (Ad Hoc On-Demand Distance Vector) routing protocol, providing a comprehensive explanation. Critically discuss the various processes involved in this routing scheme, highlighting their interactions and impact on network performance.	5	CO2	BT4	1.2.1, 2.1.2, 2.3.1
	4(B).	Elucidate hidden node problem in WSNs? Suggest a solution to overcome it.	5	CO2	BT4	2.1.2, 2.3.1
PART-C	Q5(A).	Explain the significance of MAC Protocols with reference to Wireless Sensor Networks. Discuss the S-MAC protocol in detail.	7	CO3	BT3	2.1.2, 2.3.1
	5(B).	Analyze the challenges faced in deploying wireless sensor networks in harsh environments.	7	CO3	BT4	2.3.1,
	Q6(A).	Explain the concept of power-aware MAC protocols, demonstrating your understanding of how these protocols manage power consumption in wireless communication	7	CO3	BT4	3.1.2,
	6(B).	Distinguish between B-MAC and LEACH protocols.	7	CO3	BT3	2.1.2, 2.3.1
	Q7.	Demonstrate your knowledge to discuss the PAMAS routing protocol in detail, highlighting its key features, functionalities, and applications.	7	CO3	BT3	3.1.1, 2.3.1
PART-D	Q8(A).	Apply your knowledge to develop a Wireless Sensor Network application designed for remote patient monitoring. Consider the key features, sensors, and communication protocols involved in ensuring effective healthcare monitoring	7	CO4	BT3	2.1.2, 2.3.1
	8(B).	Analyze the security threats posed by black hole attacks and flooding attacks in Wireless Sensor Networks (WSNs).	7	CO4	BT4	2.3.1,
	Q9(A).	Evaluate the ethical and privacy implications of using wireless sensor networks in healthcare.	7	CO4	BT4	3.1.2,
	9(B).	Apply your knowledge to list various tools used for simulating Wireless Sensor Networks (WSNs). Provide a brief explanation of the features and applications of each tool.	7	CO4	BT3	2.1.2, 2.3.1, 3.1.2
	Q10.	Which is the best open-source tool for evaluating the performance of a Wireless Sensor Network and Why?	7	CO4	BT3	2.1.2, 2.3.1, 3.1.2

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DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY
"End Semester Examination, Dec-2023"

SEMESTER	VII	DATE OF EXAM/SESSION	11/12/2023
COURSE NAME	INFORMATION RETRIEVAL	COURSE CODE	CSH452B-T (II)
PROGRAM	B.TECH- CSE/AIML/ COA/ CST1	CREDITS	4
TIME DURATION	3 HRS	MAX. MARKS	100
NAME OF FACULTY	DR. DEEPTI THAKRAL	NAME OF COURSE COORDINATOR	DR. DEEPTI THAKRAL

NOTE: All questions are compulsory.

	Q.NO.	QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	Q1(a)	Compare and contrast Information Retrieval and Database Retrieval	3	CO1	BT2	2.2.2
	Q1(b)	Give the taxonomy of Information Retrieval Models.	3	CO2	BT2	2.2.4
	Q1(c)	Convert the following into first order predicate logic: - a) Someone walks and someone talks b) Country Nono is the enemy of America. c) No one who runs walks .	3	CO1	BT3	2.2.2
	Q1(d)	Differentiate between Propositional Logic and Predicate Logic.	3	CO1	BT2	2.4.2
	Q1(e)	What is the role of posting list in inverter index?	3	CO3	BT4	2.4.2
PART-B	Q2(a)	Let us have the following set of index terms K = {"Sanjay", "wats app", "mobile", "message","text"} Let us have the following collection of documents d1: {"Sanjay text message to Gupta"} d2: {"Sanjay do not use wats app"}	5	CO2	BT3	2.4.2

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		d3: {"Gupta wats app to sanjay"} Which documents are relevant for the following queries? Explain with the help of Boolean Retrieval Model			
	Q2(b)	Differentiate between Semantic Net and Frames. Let's suppose we are taking an entity, Peter. Peter, a 25 Year old man, is an engineer by profession, and is single. he lives in city London, and the country is England. Design a frame for the same.	5	CO1	BT4	4.2.1
	Q2(c)	Define Information Retrieval. Explain the role of Document term matrices and how it is related to Boolean query model.	5	CO2	BT4	2.2.2
PART-C	Q3(a)	Define Jaccard's coefficient. How it is used for ranking of web documents? Find the value of Jaccard's coefficient of following set. Query : ides of March. Document1: Marcus and Caesar met in March. Document2: The fabulous March.	5	CO3	BT4	4.2.1
	Q3(b)	What do you understand by Ontology? What role does ontology play in Information Retrieval? Explain the web ontology language (OWL) in context of Semantic web.	2+3+5	CO4	BT4	2.2.2
	Q3(c)	Explain the method of Single-pass in-memory indexing along with its algorithm.	5+5	CO3	BT3	2.2.4
	Q3(d)	Explain the Heap's Law for Estimating the Number of Terms, along with the mathematical model that behind it.	5	CO3	BT3	2.2.4
	Q3(e)	Consider the following axioms: a. Anyone who buys carrots by the bushel owns either a rabbit or a grocery store. b. Every dog chases some rabbit. c. Mary buys carrots by the bushel. d. Anyone who owns a rabbit hates anything that chases any rabbit. e. John owns a dog. f. Someone who hates something owned by another person will not date that person. Prove using resolution –. Mary does not own a grocery store, she will not date John	5	CO1	BT4	4.2.2

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PART-D	Q4(a)	Explain the query likelihood mode and its uses in Information retrieval? Also estimating the query generation probability under unigram assumption.	2+3+5	CO5	BT4	4.2.1
	Q4(b)	What is Support Vector Machine? Explain briefly the working procedure of SVM . Also write Pros and Cons associated with SVM.	2+5+3	CO4	BT2	2.2.3
	Q4(c)	Differentiate between Flat Clustering and Hierarchical Clustering with example.	5	CO5	BT2	2.4.1
	Q4(d)	Explain the hypothesis used in vector space model for classification. How document are represented Using Naïve Bayes?	5+5	CO4	BT3	2.2.3

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DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY

"T3 Examination, Dec-2023"

SEMESTER	**VIIth**	**DATE OF EXAM**	**14.12.2023**
SUBJECT NAME	**SOFTWARE PROJECT MANAGEMENT**	**SUBJECT CODE**	**CSH307B-T**
BRANCH	**CSE**	**SESSION**	**12.30PM-03.30PM**
TIME	**3Hrs**	**MAX. MARKS**	**75**
PROGRAM	**CSE**	**CREDITS**	**4**
NAME OF FACULTY	**Mr. Agha Imran**	**NAME OF COURSE COORDINATOR**	**Mr. Agha Imran**

***Note**: Part A: All questions are compulsory. Questions will be of short answer type (Marks Given). Part B: Questions are descriptive type or numerical. For Each question Marks are given. Attempt all questions.*

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	1(A)	Explain the Project Management Tools and Techniques.	5	CO1	BT2	2.2.2
	1(B)	Define Project scope, objectives and analyze the Project characteristics.	5	CO1	BT2	2.2.2
PART-B	Q2	Determine the early start and late start in respect of all node points and identify critical path for the following network.	15	CO2	BT3	2.4.2

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		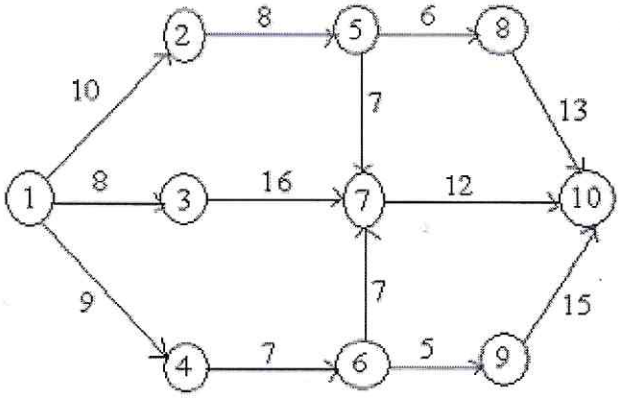				
PART-C	Q3 (A)	How does effective resource allocation contribute to the management of a software project, and what are the key strategies involved in monitoring and controlling the project's progress and resources to ensure its successful completion?	10	CO2	BT4	4.2.2
	Q3 (B)	Critically analyze the diverse methodologies available for calculating software costs, outlining their respective strengths and limitations? Additionally, provide a comprehensive overview and evaluation of various cost estimation tools and techniques commonly used in software development projects.	15	CO1	BT5	3.2.4
PART -D	Q4 (A)	How do software quality measures and standards play a role in ensuring and maintaining high-quality software? Can you illustrate how these measures and standards are applied within the software development lifecycle to achieve consistent quality outcomes?	10	CO3	BT4	4.1.2
	Q4 (B)	Conduct a comprehensive evaluation and comparative analysis of the various tools and techniques employed in quality control processes within different industries? Additionally, demonstrate how these tools and techniques are applied, considering their effectiveness and impact on ensuring and maintaining high-quality standards.	15	CO3	BT5	4.2.2

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DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY
"End Semester Examination, Dec-2023"

SEMESTER	7th Sem	**DATE OF EXAM/SESSION**	16/12/2023 (II)
COURSE NAME	Software Requirement Engineering	**COURSE CODE**	CSH412B-T
PROGRAM	B.Tech - CSE	**CREDITS**	04
TIME DURATION	3 Hrs	**MAX. MARKS**	75
NAME OF FACULTY	Dr Prinima	**NAME OF COURSE COORDINATOR**	Dr Prinima

Note: All the questions are Compulsory.

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	Q1 (a)	Differentiate with examples between Functional Requirements and Non Functional requirements.	5	CO1	BT2	3.1.2
	(b)	Create a Rich picture diagram for the Bank management System.	7.5	CO1	BT3	2.3.1
	Q2 (a)	What are the advantages and risks of having requirements engineering conducted (or assisted) by an outside firm or consultants?	5	CO2	BT2	3.1.2
	(b)	Draw a Use case diagram for a Social Networking Site.	7.5	CO2	BT3	2.3.1
PART-B	Q3 (a)	Why can it be difficult for agile methodologies to cover nonfunctional requirements?	5	CO3	BT2	1.4.1
	(b)	For the following systems discuss the advantages and disadvantages of using an agile approach (for the software components): a) Hospital device management system b) Online shopping site management	10	CO3	BT3	1.4.1
	Q4 (a)	Where in the software development process lifecycle do formal methods provide the most benefit?	4	CO3	BT2	1.4.1
	(b)	Explain 2 Objections, 4 Myths, and 4 Limitations of Formal methods?	6	CO3	BT1	1.4.1

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PART-C

Q5 (a)	When selecting an open-source tool, what characteristics should you look for?	5	CO4	BT2	3.1.2
(b)	For the airport baggage handling system, generate the user story and use case for dealing with a lost piece of baggage	5	CO4	BT3	2.3.1
Q6 (a)	Discuss two standards for Requirement Management?	5	CO4	BT1	2.3.1
(b)	Explain Function point value. Compute the function point value, productivity and documentation for a project with the following information domain characteristics. Number of user inputs = 30 Number of user outputs = 42 Number of user enquiries = 08 Number of files = 07 Number of external interfaces = 6. Effort = 30 p-m Technical documents = 165 pages Assume that all complexity adjustment values are average. Weighting Factors Table:	10	CO4	BT3	1.4.2

Functional Units	Weighting factors		
	Low	Average	High
External Inputs (EI)	3	4	6
External Output (EO)	4	5	7
External Inquiries (EQ)	3	4	6
External logical files (ILF)	7	10	15
External Interface files (EIF)	5	7	10

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SCHOOL OF EDUCATION AND HUMANITIES
DEPARTMENT OF EDUCATION
"End Semester Examination, Dec-2023"

SEMESTER	7	DATE OF EXAM	20.12.2023 (II)
COURSE NAME	BIOLOGY	COURSE CODE	EDH422
PROGRAM	CDA/CSTI/AIML	CREDITS	2
TIME DURATION	1.5 HRS	MAX. MARKS	50
NAME OF FACULTY	Ms. MEENAL RAWAT	NAME OF COURSE COORDINATOR	Ms. MEENAL RAWAT

Note: *All parts are compulsory. Internal choices are given in some questions.*

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	1(A)	Compare human eye with camera.	2	CO1	BT-4	
	1(B)	Discuss the role of biology in design of bullet train.	4	CO2	BT-2	
	1(C)	Justify the fact "biology is as important for engineers as any other discipline" with two practical examples.	6	CO2	BT-5	
PART-B	2(A)	Define Cell wall. State the composition of cell wall	2	CO1	BT-1	
	2(B)	Sketch the structure of a) Mitichondria b) Chloroplast c) Cell Wall	9	CO3	BT-3	
	2(C)	State one function for any one of the following: a) Golgi Complex OR b) Lysosomes	2	CO3	BT-1	
PART-C	3(A)	Construct a punnet square for a dihybrid cross with round and yellow pea pods and wrinkled and green pea pods.	3	CO4	BT-6	
	3(B)	Differentiate giving examples between test cross and back cross OR Differentiate between homozygous and heterozygous traits	4	CO4	BT-4	
	3(C)	Defend the monohybrid ratio of 3:1 through the work of George Mendel mentioning the reason for selecting pea	4+2	CO4	BT-5	

		plant by Mendel.				
PART-D	4(A)	Examine the effect of temperature OR pH on enzyme activity.	3	CO5	BT-4	
	4(B)	Sketch the outline of the lock and key mechanism of enzyme action.	5	CO5	BT-3	
	4(C)	Discuss the classification of enzymes OR Discuss the mechanism of enzyme action elaborating the enzyme action graph.	4	CO6	BT-4	
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DEPARTMENT OF COMPUTER SCIENCE AND TECHNOLOGY
"End Semester Examination, Dec-2023"

SEMESTER	**7th Sem**	**DATE OF EXAM/SESSION**	21-12-2023 (II)
COURSE NAME	**Internet of Things**	**COURSE CODE**	CSH423B-T
PROGRAM	**B.Tech CSTI**	**CREDITS**	**03**
TIME DURATION	**3 hours**	**MAX. MARKS**	**100**
NAME OF FACULTY	**Prof. Goldie Gabrani**	**NAME OF COURSE COORDINATOR**	**Prof. Goldie Gabrani**

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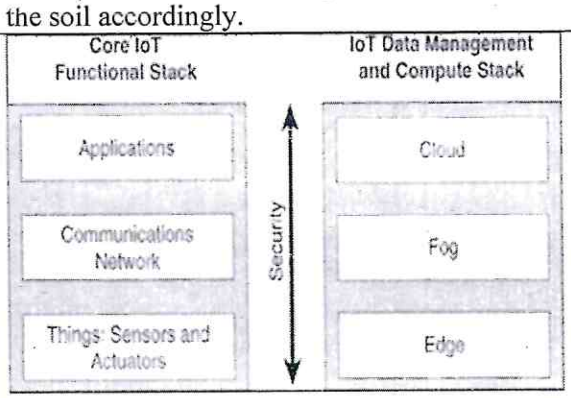
	Q.NO.	QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	Q1 (A)	Is Interoperability an issue in IOT? Why? **OR** 'IOT has constrained resources viz. power, CPU, memory and link speed'. Analyze this statement and give your comments.	5	CO1	BT3	1.4.1
	(B)	Differentiate among (i) IEEE 802.15.1, IEEE 802.15.2, IEEE 802.15.3, IEEE 802.15.4 technologies. (ii) REST and RESTful API	5	CO1	BT2	1.4.1
	(C)	Explain different Evolutionary Phases of the Internet. Give one real life scenario for each.	5	CO1	BT3	1.4.1
PART-B	Q2 (A)	What is a sensor in an IoT device? Name some sensors that sense moisture, temperature, pressure, proximity, smoke, chemicals, air quality or other environmental conditions. Design a system that senses soil moisture and regulates the water flow in the soil accordingly.	5	CO2	BT4	1.4.1
	(B)		5	CO2	BT4	1.4.1

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		First, explain the above IoT architecture. Then design a secured home automation system based on this architecture. Draw and explain the block diagram of your design clearly showcasing all the different layers involved.				
	(C)	What are the main characteristics of Edge IoT devices? Explain active mode, Power-save mode and Power-down mode and where these modes are applied.	5	CO2	BT3	1.4.1
PART-C	Q3 (A)	What is Bluetooth Low energy (BLE) Protocol for Internet of Things (IoT)? Does BLE has security features so that data transmitted between devices remains confidential and secure?	5	CO3	BT3	1.4.1
	(B)	Explain Zigbee network architecture? How a PAN network is established? List all the steps.	5	CO3	BT3	1.4.1
	(c)	Write a program that first receives data from a personal computer and transmits the same data back securely to the personal computer using UART port of Arduino which enables serial communication.	5	CO3	BT3	1.4.1
	(D)	What is ThingSpeak? How things can forward data over the Internet on ThingSpeak, how data is stored on ThingSpeak and how it is then utilized for decision-making? Explain in terms of channels and fields.	5	CO3	BT3	1.4.1
	(E)	Differentiate between Arduino Yun and Arduino Lilypad. Give an application of each with block diagram. **OR** What is BeagleBone used for? Is Beagle Bone open source? What is its operating system? Give an application based on it with block diagram.	5	CO3	BT3	1.4.1
	(F)	What is Wifi? What benefits we get when Wifi is operated in subGhz Range?	5	CO3	BT2	1.4.1
	(G)	Explain the meaning of following statements. Then write one application that will utilize all these statements. • serial.begin(9600) • pinMode(ledPin, OUTPUT) • if (serial.available()) • digitalWrite(ledPin,HIGH) • millis()	5	CO3	BT3	1.4.1
PART-D	Q4 (A)	What are the advantages of 6LowPAN in IOT? What Security algorithms are employed by 6LowPAN?	7	CO4	BT2	1.4.1
	(B)	Briefly explain any five security challenges in IOT. Also write their solutions if any.	7	CO4	BT3	1.4.1

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	(C)	You are assigned a task to design a secured smart parking management system. Write three smart characteristics you would like your system to have. List those characteristics and in order to implement them explain the parameters you will take. Then explain the sensors, communication protocol and topology that you will use and why?	7	CO4	BT4	1.4.1
	(D)	What is the importance of LoRaWAN in IoT? What is the difference in Class A and Class B LoRaWAN devices? Do you think it is a futuristic technology?	7	CO4	BT3	1.4.1
	(E)	Name some national and international players in IoT industry and what role are they playing?	7	CO4	BT2	1.4.1

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SCHOOL OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY
"End Semester Examination, Dec-2023"

SEMESTER	**AIML 7**	**DATE OF EXAM**	**22.12.2023**
COURSE NAME	**COMPUTER GRAPHICS & MULTIMEDIA**	**COURSE CODE**	**CSH310B-T (II)**
PROGRAM	**B.TECH.**	**CREDITS**	**4**
TIME DURATION	**180 MINUTES**	**MAX. MARKS**	**100**
NAME OF FACULTY	**Dr. Manoj Kumar**	**NAME OF COURSE COORDINATOR**	**Dr. Manoj Kumar**

Note: *All Questions are compulsory.*

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	Q1(A)	Using Bresenham's line drawing algorithm, draw a line whose end point is (4,4) and start point is (-3,0). Bresenham's line algorithm is efficient algorithm than DDA. Why?	5	CO4	L3	1.2.2
	Q1(B)	Using Bresenham circle drawing algorithm draw a circle with radius is 10 and center at (0,0).	5	CO4	L3	1.2.2
	Q1(C)	How much time is spent in scanning across each row of the pixels during screen on a raster system with a resolution of 640 by 480 and a refresh rate of 60 frames per second?	5	CO3	L3	1.1.2
PART-B	Q2(A)	Find the transformation matrix that transform the square ABCD whose center is at (2,2) and is reduced to half of its size, with center still remaining at (2,2). The coordinates of the square ABCD are A(0,0) B(0,4) C (4,4) and D(4,0). Find the co-ordinates of new square.	7	CO4	L3	1.2.2

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	2(B)	Use Cohen Sutherland algorithm to clip line P1(70,20) and P2(100,10) against a window whose lower left corner is at (50,10) and upper right corner is at (80,40). Mention the limitations of algorithm.	8	CO3	L3	1.2
PART-C	Q3(A)	What do you understand by a Bezier curve? A cubic curve is defined by the points (1,1) (2,3) (4,4) and (6,1). Calculate the co-ordinates of parametric mid-point of this curve, and verify that its gradient dy/dx is 1/7 at this point. Sketch the curve.	3 + 7	CO3	L3	1.2
	Q3(B)	Find the equation of the Bezier curve which passes through points (0,0) and (-2,1) and is controlled through points (7,5) and (2,0).	7	CO3	L3	1.1.
	Q3(C)	What do you understand by Projection. Differentiate between parallel and perspective projection.	5	CO2	L2	1.1.
	Q3(D)	Derive an expression for illumination model. Discuss Phong shading model for illumination.	8	CO2	L2	1.2.1
	Q3(E)	Develop a general form of a Bezier blending function of degree 3.	5	CO3	L3	1.1.3
PART-D	Q4(A)	What are lossy and lossless image compression? Give any one algorithm for image compression.	5	CO3	L2	1.1.3
	Q4(B)	What are authoring tools? What methodologies do these tools adapt to assemble the media contents?	8	CO2	L2	1.1.2
	Q4(C)	What is computer based animation? Explain different steps employed for a computer based animation system?	7	CO	L2	1.1.2
	Q4(D)	Explain the MPEG encoding technique for video.	7	CO2	L2	1.1.2
	Q4(E)	Write a short Note on the following. 1. Morphing 2. MIDI	8	CO2	L2	1.1.2

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DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY
"End Semester Examination, Dec-2023"

SEMESTER	**7**	**DATE OF EXAM**	26/12/2023 (II)
COURSE NAME	**Malware Analysis and Reverse Engineering**	**COURSE CODE**	**CSH420B-T**
PROGRAM	**B. Tech**	**CREDITS**	**3**
TIME DURATION	**3 Hours**	**MAX. MARKS**	**75**
NAME OF FACULTY	**Mr. Sujeet Kumar**	**NAME OF COURSE COORDINATOR**	**Ms. Tamanna Sachdeva**

Note: *All Questions are compulsory.*

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	1(A)	What is memory management in the windows operating system? How does it help in malware analysis?	2	CO1	L2	1.3.1
	1(B)	Define Registers in windows operating system and its importance. Give a suitable example to support your answer.	2	CO1	L2	1.4.1
	1(C)	What is the difference between Virus and Trojan? Give suitable example to support your answers.	2	CO2	L2	1.4.1
	1(D)	Define x86 Assembly language and its key components. Give a suitable example to support your answer.	2	CO1	L2	1.4.1
	1(E)	How does heuristics-based malware analysis contribute to the identification of unknown threats, and what are its limitations?	2	CO2	L1	1.4.1

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	1(F)	What do you understand by the term "wannacry" and how eternalblue is related? Give a real-life scenario to support your answer.	3	CO2	L3	1.4.
	1(G)	What are the uncommon and malicious traits that we can find in a computer system? Give a suitable example to support your answer.	3	CO2	L2	1.4
	1(H)	Explain Data Types and Memory Layout in windows operating system. Explain with suitable examples.	3	CO1	L2	1.4.
	1(I)	What do you understand by the term Obfuscation and how it can make malware analysis difficult. Give a suitable example to support your answer.	3	CO2	L1	1.4.
	1(J)	Discuss the concept of "sandbox evasion" in malware analysis and methods employed by malware authors to bypass sandbox environments.	3	CO2	L2	1.4.
	2(A)	Define Windows Executable file format and its functions. Give suitable examples to Support your answers.	6	CO3	L2	1.4
PART-B	2(B)	What is a PE Header file? Name some tools that can help to analyse these files.	7	CO3	L2	1.3
	2(C)	What key role does the Windows Registry play in the internal workings of the Microsoft Windows operating system, and how does it impact system configuration and settings?	6	CO3	L2	1.4
	2(D)	Explain the significance of Windows Kernel mode in operating systems, and discuss key security	6	CO3	L3	1.4

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		considerations and potential vulnerabilities associated with its operation.				
	3(A)	What is the difference between HTTP and HTTPS? Explain it with a real-life scenario.	6	CO4	L2	1.4.1
	3(B)	Name some network monitoring tools and which tool you will prefer and why. Give a suitable example to support your answer.	6	CO4	L3	1.4.1
PART-C	3(C)	Examine the distinctive features, attack vectors, and mitigation strategies for ransomware, adware, and potentially unwanted applications (PUAs) in a cybersecurity context. Give suitable real-life examples to support your answer.	6	CO4	L4	1.4.1
	3(D)	Explain how an automated malware analysis tool improves threat detection and response in a financial institution, highlighting key features and contributions to cybersecurity.	7	CO4	L3	1.3.1
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