Laxmi Singh Charitable Trust's (Regd.)
THAKUR COLLEGE OF ENGINEERING & TECHNOLOGY
Autonomous College Affiliated to University of Mumbai
Approved by All India Council for Technical Education(AICTE) and Government of Maharashtra(GoM)
Conferred Autonomous Status by University Grants Commission (UGC) for 10 years w.e.f. AY 2019-20
Amongst Top 300 Colleges in the Country, Ranked 195th in NIRF India Ranking 2019 in Engineering College category
ISO 9001:2015 Certified • Programmes Accredited by National Board of Accreditation (NBA), New Delhi
Institute Accredited by National Assessment and Accreditation Council (NAAC), Bangalore
Estd. in 2001
Website : www.tcet.mumbai.in

IN-SEMESTER EXAMINATION-I

F.E/F. T (Semester-II)

SUBJECT – Programming for Problem-Solving

Branch: COMP, CIVIL, E&CS, CSE, AI&DS, IoT
Div.: ALL
Duration: 60 Minutes

Date: 05/03/2024
Timing: 10:00 AM to 11:00 AM
Maximum Marks: 20

Instructions –

1. All questions are compulsory.
2. Assume suitable data wherever necessary and state the assumptions made.
3. Diagrams / sketches should be given wherever necessary.
4. Use of logarithmic table, drawing instruments and non-programmable calculators is permitted.
5. Figures to the right indicate full marks.

Q.1		Answer any 5 of the following questions	Marks	Course Outcomes	Learning Levels
	a.	Explain Dialup and Fibre optic internet connection method.	2	1	R
	b.	Write an algorithm to calculate the area and circumference of a circle area =πr2(pi r square) and circumference = 2πr	2	1	U
	c.	Explain right shift and left shift bitwise operators with example.	2	2	U
	d.	State the definition of Keywords. Enlist any 4.	2	2	R
	e.	Discuss execution process of a program with diagram.	2	2	U
	f.	Discuss if-else statement with the help of example.	2	3	U
	g.	Explain the difference between for and while loop.	2	3	U
Q.2	a.	List and explain the components of multimedia technology.	5	1	R
		OR			
	b.	Explain Identifiers. State rules for constructing Identifiers with example.	5	2	U
Q.3	a.	Differentiate between constant and variables.	5	2	U
		OR			
	b.	Illustrate Infinite loop and Empty loop.	5	3	A

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Ranked 198th in NIRF India Ranking 2019 in Engineering College category
Amongst Top 200 Colleges in the Country
Estd. in 2001
Website : www.tcetmumbai.in

IN-SEMESTER EXAMINATION-I

F.E/F. T (Semester-II)

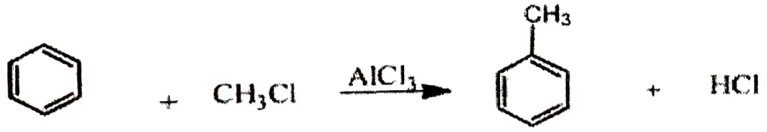
SUBJECT – Chemistry

Branch: COMP, CIVIL, E&CS, CSE, AI&DS, IoT
Div.: ALL
Duration: 60 Minutes

Date: 04/03/2024
Timing: 10:00 AM to 11:00 AM
Maximum Marks: 20

Instructions –

1. All questions are compulsory.
2. Assume suitable data wherever necessary and state the assumptions made.
3. Diagrams / sketches should be given wherever necessary.
4. Use of logarithmic table, drawing instruments and non-programmable calculators is permitted.
5. Figures to the right indicate full marks.

Q.1		Answer any 5 of the following questions	Marks	Course Outcomes	Learning Levels
	a.	Calculate the temporary and permanent hardness of a water sample containing: Mg (HCO3)2 = 7.3 mg/L, Ca((HCO3)2=16.2mg/l, CaSO4 =13.6mg/l, MgCl2 =9.5mg/l, KCl–50 mg/ml	2	1	A
	b.	Write the chemical reactions involved when hard water reacts with soap	2	1	U
	c.	Define composite material and give any two examples.	2	2	U
	d.	Why there is a need for composite material? Explain it with a suitable example.	2	2	R
	e.	What are the applications of conducting polymers?	2	2	R
	f.	What will be the impact on the environment? If a chemical industry does not follow the Green Chemistry principles?	2	3	U
	g.	Why there is a need to design any product for degradation after its use?	2	3	U
Q.2	a.	Why sewage treatment is necessary? Explain the Activated sludge process for the sewage treatment.	5	1	U
		OR			
	b.	Nanomaterials are used in different forms in the field of science & technology, which are those forms, and explain how they are different from each other and where they find their extensive applications.	5	2	U
Q.3	a.	What are sandwich panel composites? Explain it with neat, labelled diagram.	5	2	U
		OR			
	b.	Calculate the % atom economy for the following reaction: (Atomic Weights: C= 12, Cl= 35.5, H = 1, O = 16, Na = 23.5) 	5	3	A

IN-SEMESTER EXAMINATION-I

F. E./F. T. (Semester-II)

SUBJECT – Mathematics-II

Branch: ALL
Div.: ALL
Duration: 60 Minutes

Date: 04/03/2024
Timing: 02:00 PM to 03:00 PM
Maximum Marks: 20

Instructions –

1. All questions are compulsory.
2. Assume suitable data wherever necessary and state the assumptions made.
3. Diagrams / sketches should be given wherever necessary.
4. Use of logarithmic table, drawing instruments and non-programmable calculators is permitted.
5. Figures to the right indicate full marks.

Q.1		Answer any 5 of the following questions	Marks	Course Outcomes	Learning Levels
	a.	Given an amount of a radioactive substance say 0.5gm. Find the amount present a any later time t.	2	1	R
	b.	Check given differential equation is Exact or Non-Exact $(1 + log\, x\, y)dx + \left(1 + \frac{x}{y}\right) dy = 0$	2	1	R
	c.	Find Complementary Function (C.F.) $(D^3 - 5D^2 + 7D - 3)y = 0$	2	2	R
	d.	Find Complementary Function (C.F.) $(D^3 + 1)y = 0$	2	2	U
	e.	Find Complementary Function (C.F.) $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = e^{-x}$	2	2	R
	f.	Find Eigen values of $A^2 - 4I$ where A= $\begin{bmatrix} 3 & 5 & -1 \\ -2 & -9 & 1 \\ -2 & -4 & -5 \end{bmatrix}$	2	3	R
	g.	Find the sum of the Eigen values of the matrix $A = \begin{bmatrix} 3 & 2 & 1 \\ 1 & 3 & 2 \\ 4 & 1 & 5 \end{bmatrix}$.	2	3	U
Q.2	a.	Solve $y(2xy + e^x)dx - e^x dy = 0$	5	1	A
		OR			
	b.	Solve by the method of variation of parameters. $\frac{d^2y}{dx^2} - y = \frac{2}{1+e^x}$	5	2	A
Q.3	a.	Solve by the method of variation of parameters. $\frac{d^2y}{dx^2} - y = e^{-x}\sin(e^{-x}) + \cos(e^{-x})$	5	2	A
		OR			
	b.	Use Cayley - Hamilton theorem to express $A^5 - 4A^4 - 7A^3 + 11A^2 - A$ -10I as a linear polynomial in A, where $A = \begin{bmatrix} 1 & 4 \\ 2 & 3 \end{bmatrix}$	5	3	U

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Estd. in 2001

IN-SEMESTER EXAMINATION-I

F.E/F. T (Semester-II)

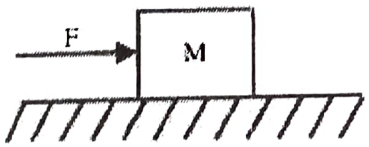
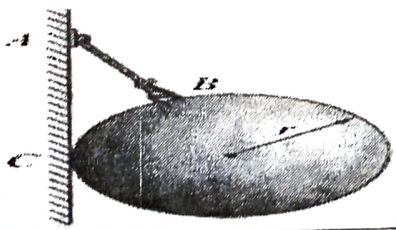
SUBJECT – Engineering Mechanics

Branch: COMP, CIVIL, E&CS, CSE, AI&DS, IoT
Div.: ALL
Duration: 60 Minutes

Date: 05/03/2024
Timing: 02:00 PM to 03:00 PM
Maximum Marks: 20

Instructions –

1. All questions are compulsory.
2. Assume suitable data wherever necessary and state the assumptions made.
3. Diagrams / sketches should be given wherever necessary.
4. Use of logarithmic table, drawing instruments and non-programmable calculators is permitted.
5. Figures to the right indicate full marks.

Q.1		Answer any 5 of the following questions	Marks	Course Outcomes	Learning Levels
	a.	Locate the centroid with diagram of a semi-circular pizza having origin at centre.	2	1	R
	b.	State the theorem used to locate the resultant in parallel force system	2	1	R
	c.	Convert trapezoidal loading into point load.	2	2	R
	d.	Draw FBD of the block with weight M shown in figure. 	2	2	R
	e.	What are the three conditions of equilibrium?	2	2	U
	f.	Define cone of friction	2	3	R
	g.	Define coefficient friction	2	3	R
Q.2	a.	State the principle of transmissibility & principle of superposition.	5	1	U
		OR			
	b.	A smooth sphere of mass 2 kg is supported by a chain as shown in Fig. The length of chain AB is equal to the radius of the sphere. Draw free body diagram of each element and find the tension in the chain and reaction of the wall. 	5	2	AN
Q.3	a.	A man raises a 10 Kg joist of length 4 m by pulling on a rope. Find the tension T in the rope.	5	2	U

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Estd. in 2003

IN-SEMESTER EXAMINATION-I

F.E/F. T (Semester-II)

SUBJECT – Introduction to Indian Knowledge System

Branch: COMP, CIVIL, E&CS, CSE, AI&DS, IoT
Div.: ALL
Duration: 60 Minutes

Date: 06/03/2024
Timing: 10:00 AM to 11:00 AM
Maximum Marks: 20

Instructions –

1. All questions are compulsory.
2. Assume suitable data wherever necessary and state the assumptions made.
3. Diagrams / sketches should be given wherever necessary.
4. Use of logarithmic table, drawing instruments and non-programmable calculators is permitted.
5. Figures to the right indicate full marks.

Q.1		Answer any 5 of the following questions	Marks	Course Outcomes	Learning Levels
	a.	Differentiate between Vedas and Puranas.	2	1	R
	b.	State the peculiarity of Rigveda.	2	1	R
	c.	Enlist rare natural endowments available in Bharat Varsha.	2	1	U
	d.	State the importance of Indian Health Sciences.	2	2	U
	e.	Enlist axillary parts of Vedangas.	2	2	R
	f.	Explain about Vyakarana and Chanda with respect to Indian language.	2	3	U
	g.	Elaborate Preservation of Vedic Corpus.	2	3	R
Q.2	a.	Write short note on Sangam Literature Classification.	5	1	U
		OR			
	b.	What do you mean when you refer to texts on ancient Indian medicine?	5	2	U
Q.3	a.	What do you understand by doshas: Pitta, Vata and Kapha?	5	2	U
		OR			
	b.	Describe the structure and contents of the Ashtadhyayi and explain the concept of generative grammar and sutras in Panini's work.	5	3	R