

END SEMESTER EXAMINATION, JUNE 2023
F.E./F.T. SEMESTER II (CBCGS-HME 2020)

Branch:	COMP, AI&DS, E&CS, CSE, CIVIL, IOT	Q.P. Code:	E121G1003-1
Subject:	Programming for Problem Solving	Duration:	2 hours
Subject Code:	ESC103	Max. Marks:	60

- Instructions:**
1. All sections are compulsory
 2. Figures to the right indicate full marks.
 3. Assume suitable data if necessary and state the assumptions clearly.

Section-I Short Answer Questions (Answer any 05 questions out of 06) (Fundamental, Core Types)			(10 Marks)		
Q. No.		Marks	CO	RBT Level	PI
1	What is the output of following code : <pre>#include<stdio.h> #include<string.h> { int main() char str[20] = "ABCDEFHGIJK"; int s = strlen(str); ¹⁰ str[3] = '\0'; s = strlen(str); ¹¹ printf("%d \n", s); return 0; }</pre>	2	CO5	U,A	1.4.1, 2.2.4
2	State Various File Handling Function.	2	CO6	U	1.4.1
3	Explain Pre-Increment and Pre-Decrement with example	2	CO2	R, A	1.4.1, 2.2.4
4	Explain the difference between Break and Continue with example.	2	CO3	U	1.4.1
5	State one dimensional array with example.	2	CO5	R	1.4.1
6	Explain any Four string library functions.	2	CO5	U	1.4.1
Section-II Descriptive Answer Questions(Answer any 04 out of 06) (Descriptive, Comprehension Types)			(20 Marks)		
1	Differentiate between Recursion and Iteration with example.	5	CO4	R,U	1.4.1
2	Develop C program for the following A. Check whether the user input number is prime or not. B. Print Pattern A A B A B C A B C D A B C D E	5	CO3	U,A	1.4.1, 2.2.4

3	Design an algorithm draw a flowchart for swapping of two numbers using and without using third variable.	5	CO1	U	1.4.1
4	Explain for loop, while and do while loop with example.	5	CO3	R,U	1.4.1
5	Explain logical operators and bitwise operator with example.	5	CO3	U,A	1.4.1, 2.2.4
6	Develop a code to perform transpose of matrix.	5	CO5	A	2.2.4
Section-III Long Answer Question (Answer any 03 out of 05) (Application, Analytical, Evaluation, Design Type)					(30 Marks)
1	Develop C program 1. To demonstrate the use of nested structure 2. Define a structure CRICKET which contains the following members Player_Name, Country_Name, Batting Average.	10	CO6	U,A	1.4.1, 2.2.4
2	Explain Storage Classes with example.	10	CO4	R,U	1.4.1
3	Write the menu driven program which depicts the working of LIBRARY, the menu option should be a. Add Book Information b. Display Book c. List all books of given Authors. d. List the title of the Specified Book. e. EXIT.	10	CO3	U,A	1.4.1, 2.2.4
4	Explain the type of array and develop c program to display addition of Two matrices.	10	CO5	R,A	1.4.1, 2.2.4
5	Explain the following A. Function Definition, Function Declaration, Function Call with Example. B. Categories of functions and explain any one category with example.	10	CO4	R,U	1.4.1, 2.2.4



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IN-SEMESTER EXAMINATION (ISE-II) MAY, 2023

FE/ FT (Semester-II) CBCGS-HME 2020

Programming for Problem Solving

Branch: COMP, AI&DS, E&CS, CS&E, CIVIL, IOT

Div.: A,B,C

Duration: 60 Minutes

Instructions –

Date: 23/05/2023

Timing: 10:00 AM to 11:00 AM

Maximum Marks: 20

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	Solve any 5 Questions.	Marks	CO	Learning Level
	a. What is the value of "a" in the following expression? <code>int a=10+4.867;</code>	02	5	A
	b. Define structure with initialization.	02	6	R
	c. Demonstrate following string handling functions with code snippet (i) strcat() (ii) strcmp().	02	5	A
	d. Explain call by value in c language with proper example.	02	4	U
	e. Write a program to calculate length of a string.	02	5	A
	f. What is an array? How it is different from a variable. State types of array.	02	5	R
	g. Explain Function declaration, Function call and Function Definition.	02	4	U
Q.2.	a. Explain various storage classes with examples.	05	4	R,A
	OR			
	b. Using structure, write a C program to read and display student information (Student_Rollno, Student_name, Student_emailId, Student_address).	05	6	R,A
Q.3	a. Differentiate between recursion Vs iteration.	05	4	R
	OR			
	b. Write a program to read and display 3x3 matrix in array.	05	5	R,A



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IN-SEMESTER EXAMINATION (ISE-II) May 2023

FE (Semester-II) CBCGS-HME 2020

ENGLISH FOR PROFESSIONAL COMMUNICATION

Branch: (COMP, CIVIL, CS&E, E&CS, IOT, AI&DS (Group-1))

Div.: A B & C

Duration: 60 Minutes

Instructions -

Date: 24 /05 /2023
Timing: 10:00 AM to 11:00 AM
Maximum Marks: 20

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.

		Solve any 5 Questions.	Marks	CO	Learning Level
Q.1	a.	Name the types of reading? Explain any one in detail.	02	CO3	U
	b.	Describe the characteristics of a good report.	02	CO4	A
	c.	Explain caution, precaution, and warning. Provide examples in relation to technical writing.	02	CO5	U
	d.	Elaborate on AIDA principle.	02	CO3	A
	e.	Write a short note on punctuation in various formats of letters.	02	CO3	A
	f.	What type of writing is often used in advertisements and commercials? Explain the type in detail.	02	CO4	A
	g.	Differentiate between instruction and description in technical writing.	02	CO5	R
Q.2.	a.	The Ever shine Textile Organization, Thakur Village, Kandivali East has decided to convene a general body meeting at 5.00 p.m. on Saturday, 17th June 2023. Some of the matters intended to discuss are financial status of the organization, new hiring, hiring brand ambassador, and other related matters. Draft the notice, agenda, and write minutes of the meeting.	05	CO4	A
	OR				
	b.	Explain in detail the structure of a technical proposal.	05	CO5	U



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IN-SEMESTER EXAMINATION (ISE-II) May 2023

FE (Semester-II) CBCGS-HME 2020 ENGLISH FOR PROFESSIONAL COMMUNICATION

Branch: (COMP, CIVIL, CS&E, E&CS, IOT, AI&DS (Group-1)

Div.: A B & C

Duration: 60 Minutes

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.

Date: 24 /05 /2023

Timing: 10:00 AM to 11:00 AM

Maximum Marks: 20

Q.3	a.	As an owner of a customized boutique in Nagpur, write an enquiry letter to a wholesale material merchant in Mangaldas Market, Kalbadevi, Mumbai 400002. Invent the necessary details. (Use semi-block format).	05	CO3	A
OR					
	b.	What are the objectives of editing? Describe the different types of editing.	05	CO4	A



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IN-SEMESTER EXAMINATION (ISE-II) MAY, 2023

FE/FT (Semester-II) CBCGS-HME 2020

Chemistry

Branch: Comp, Civil, AI&DS, CS&E, E&CS, IOT

Div.: A, B & C

Duration: 60 Minutes

Instructions –

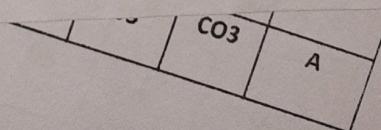
Date: 22 / 05/2022

Timing: 10:00 PM to 11:00 PM

Maximum Marks: 20

1. All questions are compulsory.
2. Diagrams / sketches should be given wherever necessary.
3. Use of and non-programmable calculators is permitted.
4. Figures to the right indicate full marks.

Q.1	Solve any 5 Questions.	Marks	CO	Learning Level
a.	Why is it essential to avoid derivatisation in reaction	02	3	U
b.	Explain Ag, Au and Pt do not undergo corrosion	02	4	A
c.	What are the energy level changes will take place if molecule is absorb radiation in UV-Visible region, Draw diagram if necessary	02	5	U
d.	Distinguish between Anodic coating and cathodic coating	02	4	A
e.	What makes double beam spectrophotometer best choice over single beam spectrophotometer	02	5	R
f.	Define Chirality and give example of the same	02	6	R
g.	Why Zinc coating gives better protection for iron than Tin	02	4	U
Q.2.	a. (i) When 0.05M solution is placed in 4cm length cell showing an absorbance 0.25 what will be the absorbance of solution if it is placed in 1cm path length cell (ii) A solution of $K_2Cr_2O_7$ of concentration 3.8×10^{-5} shows an absorbance of 2.1 at its wavelength of maximum absorbance. Calculate the concentration of unknown $K_2Cr_2O_7$ solution which shows an absorbance of 0.92 in the same cuvette	05	5	A
	OR			
	b. Give the synthesis of Indigo by conventional as well as greener route	05	4	A
Q.3	a. Explain the principle of cathodic protection? Explain Sacrificial anode method with diagram.	05	3	R
	OR			



	b. What is Atom Economy. Calculate the percentage atom economy for the following reaction	05	1	A
	 $\text{C}_2\text{H}_4 \text{ Br} + \text{KOH} \rightarrow \text{C}_2\text{H}_4 + \text{KBr} + \text{H}_2\text{O}$			
	$\text{C}_2\text{H}_4 + \text{Cl}_2 + \text{H}_2\text{O} \rightarrow \text{CH}_2\text{ClCH}_2\text{OH} + \text{KBr}$			

C - 12

H - 1

Bn - 17 S3

K - 40

O - 16

Cl - 35.5



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• 100% Placement in various fields of study

IN-SEMESTER EXAMINATION (ISE-I) April, 2023

English for Professional Communication

Branch: COMP, CIVIL, CS&E, AI&DS, IOT, E&CS (Group 1)

Date: 06/04/2023

Division: A,B,C

Duration: 60 Minutes

Instructions –

Timing: 10 AM to 11:00 AM

Maximum Marks: 20

1. All questions are compulsory.
2. Assume suitable data wherever necessary and state the assumptions made.
3. Write proper question number with each answer.
4. Use of non-programmable calculators is permitted.
5. Figures to the right indicates full marks.

Q.1	Solve any 5 out of 7 questions (2 marks each).	Mark s	CO	Learnin g Level
a.	Find out the ways to overcome barriers that exist between the boss and subordinate.	02	CO1	U
b.	Write a short note on Olfactics with suitable examples.	02	CO1	R
c.	Differentiate between abbreviations and acronyms	02	CO2	U
d.	Blending helps in forming a new word. Explain with examples.	02	CO2	U
e.	Identify the sender, message, receiver, medium, channel, and feedback in the following situation: "Abhiroop has created a YouTube Channel and within a day he received ten thousand subscribers." → R Channel = Oral	02	CO1	A
f.	Distinguish between oral and written communication.	02	CO1	U
g.	Identify the barrier. "Madhuri developed an app which helped freshers to learn new skills but trainers stopped using the app."	02	CO1	A
Q.2	Solve any 1 out of 2 questions (5 marks each).			
a.	"Clipping, Blending, and Reduplication are the ways to develop vocabulary." Explain the concepts with the help of word formation. OR	05	CO2	U
b.	Discuss cross cultural barriers and the areas it is reflected.	05	CO1	U
Q.3	Solve any 1 out of 2 questions (5 marks each).			
a.	How can a manager motivate the employees with the help of grapevine communication ? OR	05	CO1	A
b.	"Confidence is the major tool for Public Speaking." Explain other essential skills required for effective public speaking.	05	CO3	A



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IN-SEMESTER EXAMINATION (ISE-1) APRIL, 2023

FE/ FT (Semester-I) CBCGS-HME 2020

Programming for Problem Solving

Branch: COMP, AI&DS, E&CS, CS&E, CIVIL, IOT
Div.: A,B,C

Duration: 60 Minutes

Date: 05/04/2023

Timing: 10:00 PM to 11:00 PM

Maximum Marks: 20

SCn6C a 1-d '3,8a)

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	Solve any 5 Questions.	Marks	CO	Learning Level
a.	Explain types of operating system.	02	1	U
b.	Define flowchart with its symbols.	02	1	R
c.	What is getchar() and putchar() function.	02	2	A
d.	Explain levels of computer languages with examples.	02	1	U
e.	Explain assignment & bitwise operators with example.	02	2	R
f.	Explain Steps for Problem Solving.	02	1	R
g.	Explain C preprocessor and Give some Mathematical Library Function.	02	2	U
Q.2.	a. Explain Nested if-else structure with syntax and example.	05	3	R, A
	OR			
	b. State Advantages and Disadvantages of Flowchart and Write C program to calculate gross salary of an employee using formula (gross_sal=basic_sal+hra+da).	05	1	AN
Q.3	a. Write a C program to generate result and display grades if subject marks are given by user.	05	2	A
	OR			
	b. Explain Type casting and types of Type Casting with examples.	05	2	A



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IN-SEMESTER EXAMINATION (ISE-I) April, 2023
FE/FT (Semester-II) CBCGS-HME 2020

Branch: Comp, Civil, CSE ,IOT E&CS, AI&DS

Chemistry

Div.: A, B & C

Date: 3 / 04 /2023

Duration: 60 Minutes

Timing: 10:00 PM to 11:00 PM

Instructions –

Maximum Marks: 20

1. All questions are compulsory.
2. Diagrams / sketches should be given wherever necessary.
3. Use of and non-programmable calculators is permitted.
4. Figures to the right indicate full marks.
5. At. Wt.: C = 12, H = 1, O = 16, Ca = 40, Mg = 24, Cl = 35.5, S = 32, Na = 23, N = 14.

Q.1	Solve any 5 Questions.	Marks	CO	Learning Level
a.	What is Rf value? Give significance of it.	02	2	U
b.	State the principle involved in determination of total hardness	02	1	A
c.	Justify the statement "Prevention is better than cure."	02	3	U
d.	Distinguish between carbonate & non-carbonate hardness of water.	02	1	U
e.	Give reaction involved during softening of hard water using Zeolite process.	02	2	R
f.	State any four principle of Green Chemistry	02	2	R
g.	Define the terms Stationary phase and Mobile phase.	02	1	U
Q.2.	a. Calculate the quantity of pure lime (80% pure) and soda (90% pure) required for softening of 10,000 litres of water containing the following impurities in ppm $\text{Ca}(\text{HCO}_3)_2 = 16.2$, $\text{CaSO}_4 = 6.8$, $\text{Mg}(\text{HCO}_3)_2 = 20.8$, $\text{CaCl}_2 = 11.1$, $\text{MgCl}_2 = 8.78$, $\text{CaSO}_4 = 35$, $\text{MgSO}_4 = 6.7$, $\text{SiO}_2 = 17.9$.	05	1	A
	OR			
b.	Give the principle of HPLC and Describe basic components and working of a High Performance Liquid chromatography (HPLC) with proper neat labelled diagram.	05	2	R
Q.3	a. Give principle of Gas Chromatography (GC) & Draw a Schematic diagram of (GC) unit and describe briefly functions of each part along with working of GC.	05	2	R
	OR			
b.	15 gm of CaCO_3 was dissolved in HCl and the solution made up to 1000 ml with distilled water. 50 ml of the solution required 25 ml of EDTA solution for titration. 50 ml of hard water sample required 18 ml of EDTA and the same sample after boiling and filtering required 12 ml of EDTA solution. Calculate each type of hardness of water	05	1	AN



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IN-SEMESTER EXAMINATION (ISE-I) April 2023

Mathematic II

Branch: COMP, CIVIL, CS&E, AI&DS, IOT, E&CS (Group 1)

Date : 03/04/2023

Division: A, B, C

Duration: 60 Minutes

Instructions –

Timing: 1:30 PM to 2:30 PM
Maximum Marks: 20

1. All questions are compulsory.
2. Assume suitable data wherever necessary and state the assumptions made.
3. Write proper question number with each answer.
4. Use of non-programmable calculators is permitted.
5. Figures to the right indicates full marks.

Solve any 5 out of 7 questions (2 marks each).			Marks	CO	Learning Level
a.	Check whether the given equation is exact or not $y(x^2y + e^x)dx - e^x dy = 0$		02	1	U
b.	Find the integrating factor of non-exact differential equation $\sin x \, dy + (xycos x - y\sin x - 2)dx = 0$		02	1	U
c.	A cup of coffee at 190° F is left in room of 70° F. At time $t=0$, the coffee is cooling at 15° F per minute. Find the proportionality constant k in the model of cooling of coffee.		02	1	R
d.	Find particular integral of Differential equation $D^2y - 4y = 2\cosh(2x)$		02	2	U
e.	Solve $(D^2 + 2)y = 0$		02	2	R
f.	If $A = \begin{bmatrix} 2 & 4 \\ 0 & 3 \end{bmatrix}$, then find the Eigen values of $6A^{-1} + A^3 + 2I$.		02	3	U
g.	Find the Eigen values of the matrix $\begin{bmatrix} 2 & 3 \\ 1 & 5 \end{bmatrix}$.		02	3	U
Q.2. Solve any 1 out of 2 questions (5 marks each).			05	1	A
a.	Solve the differential equation $(x^4 + y^4)dx - xy^3 dy = 0$		05	1	A
OR					
b.	Solve the differential equation $y \frac{dx}{dy} = x - yx^2 \sin y$		05	1	A
Q.3. Solve any 1 out of 2 questions (5 marks each).			05	2	A
a.	Solve the differential equation $\frac{d^2y}{dx^2} + a^2y = \operatorname{cosec} ax$		05	2	A
OR					
b.	Solve the differential equation $x^2 \frac{d^2y}{dx^2} - 3x \frac{dy}{dx} + 5y = x^2 \sin \log x$		05	2	A



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END SEMESTER EXAMINATION, May/ June 2023

F. E. /F.T. SEMESTER II (CBCGS-HME 2020)

Branch:	COMP, CIVIL, CS&E, AI&DS, IOT, E&CS (Group 1)	Q.P. Code:	E121G1005-2
Subject:	English for Professional Communication	Duration:	2 hours
Subject Code:	HSMC 101	Max. Marks:	60

- Instructions:
1. All sections are compulsory
 2. Figures to the right indicate full marks.
 3. Assume suitable data if necessary and state the assumptions clearly.

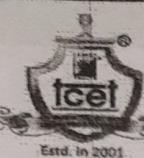
Section-I		Short Answer Questions (Answer any 05 questions out of 06) (Fundamental, Core Types) (10 Marks)			
Q. No.		Marks	CO	RBT Level	PI
1	Identify the barrier and sub barrier in the following situation. Teacher: 'Students, why have you not submitted the report within the fortnight?' Students: 'But you asked us to submit it bimonthly!'"	2	CO1	U	9.2.1
2	Explain Critical listening with apt examples.	2	CO3	U	10.2.2
3	Distinguish between descriptive and narrative types of writing style.	2	CO3	R	9.2.1
4	Write a short note on Kinesics with suitable examples.	2	CO1	R	12.1.1
5	Differentiate between Caution and Warning with examples.	2	CO5	A	9.2.3
6	State the difference between intensive and extensive reading techniques in brief.	2	CO3	R	9.2.1
Section-II		Descriptive Answer Questions (Answer any 04 out of 06) (Descriptive, Comprehension Types) (20 Marks)			
1	Explain the word formation process of Blending and abbreviation with suitable examples.	5	CO2	A	9.2.3
2	"Public speaking requires courage." Explain the steps to follow before and during public speaking.	5	CO3	A	9.2.1
3	Explain the steps of Anchoring Script for College annual function.	5	CO6	U	9.2.1
4	Write a technical description of Microscope with Definition, Components, Diagram & Working.	5	CO5	R	9.2.3

Cauhien: balance in device

W.C.H = 2m/s min
1/2

P.T.O.

5	Write a short note on Oculistics, Proxemics and Paralinguistics.	5	CO1	U	10.1.1
6	Explain the structure of a business letter giving details of mandatory elements with suitable examples.	5	CO3	R	10.1.1
Section-III Long Answer Question (Answer any 03 out of 05)					(30 Marks)
1	Illustrate the following barriers to communication in detail: mechanical, <u>physical</u> , linguistic, <u>personal</u> , <u>socio-psychological</u> & cross-cultural. <u>1-1</u>	10	CO1	U	10.1.1
2	Imagine that you are the <u>Secretary of the staff association of your organization</u> . At the fifth meeting of management committee of <u>Jamnadas Departmental Stores</u> held at <u>4 p.m. on 7 June 2023</u> . Write notice, agenda, and minutes of this meeting assuming the agenda to be as follow: 1) Minutes of the last meeting. 2) Chairman's report. 3) Appointment of delivery staff. 4) Proposal for buying four delivery vans. 5) Complaints regarding the quality of potatoes and cakes 6) Any other matter with the permission of the chairman.	10	CO4	U	10.1.1
3	As the <u>manager of a hotel in Delhi</u> , write a letter to the <u>General Manager of Uttam Potteries, Aliganj Road, Khurja</u> telling him that most of the <u>contents of the case of China</u> which you have <u>ordered were found broken</u> . The cost of <u>broken articles works out to Rs 2,200/- approximately</u> . <u>Demand replacement or suitable compensation</u> . (Use Complete Block Format)	10	CO3	A	9.2.1
4	Imagine, you are given an opportunity to compere a programme at your college based on 'English language Day'. Prepare a script in about 100-150 words for compering the programme with the help of the following points. 1) Prayer/Introduction song. 2) Welcome & Introduction 3) Felicitation, speaker's introduction 4) Presidential address 5) Vote of thanks	10	CO4	A	9.2.1
5	Explain the concepts of Reduplication, Clipping, acronym and affixation with their types and suitable example.	10	CO2	U	10.1.1



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END SEMESTER EXAMINATION, JUNE 2023

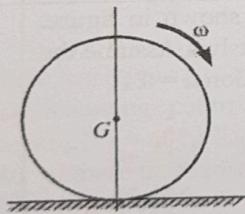
F. E./F.T. SEMESTER II (CBCGS-HME 2020)

Branch	COMP, CIVIL, E&CS, CSE, IOT, AI&DS	Q.P Code	E121G1004-1
Subject	Engineering Mechanics	Duration	2 Hours
Subject Code	ESC104	Max. Marks	60

- Instructions:**
1. All sections are compulsory
 2. Figures to the right indicate full marks.
 3. Assume suitable data if necessary and state the assumptions clearly.

Section-I Short Answer Questions (Answer any 05 questions out of 06) (Fundamental, Core Types) (10 Marks)					
Q. No.		Marks	CO	RBT Level	PI
1	Define centroid with an example	2	CO1	R	2.1.2
2	State conditions of equilibrium for concurrent force system	2	CO2	R	2.1.2
3	Define impending motion	2	CO3	R	2.1.2
4	Find magnitude of force vector $P=30i+12j-19k$ KN	2	CO4	U	1.3.1
5	State principle of conservation of momentum	2	CO6	R	2.1.2
6	Locate ICR of purely rolling wheel given in fig	2	CO5	R	1.3.1

Section-II Descriptive Answer Questions (Answer any 04 out of 06) (Descriptive, Comprehension Types) (20 Marks)					
Q. No.		Marks	CO	RBT Level	PI
1	Explain Uniformly Distributed Load and Uniformly Varying Load with suitable diagram.	5	CO2	U	2.1.2
2	The rod is in contact with two smooth stationary surfaces. At the instant shown in figure its end B has velocity 2 m/s rightward. Locate ICR, find velocity of end A and angular velocity of the rod.	5	CO5	A	1.3.1





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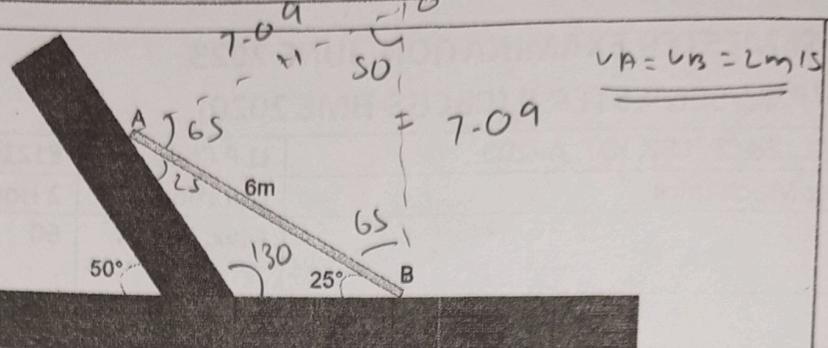
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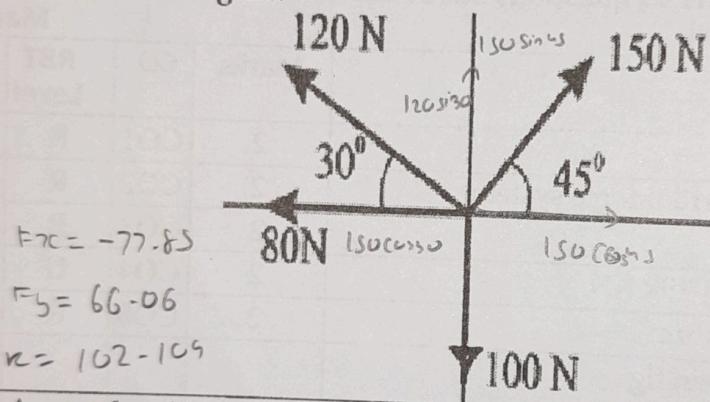
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- 3 Define principle of superposition and principle of transmissibility with suitable diagram.

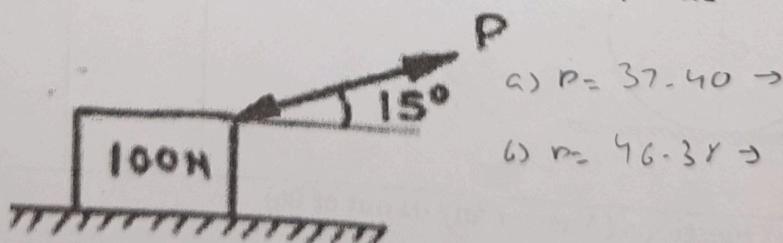
5 CO1 U

- 4 Find the resultant and its direction of four concurrent forces as shown in the figure.



5 CO1 U 1

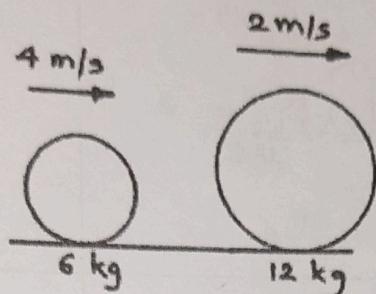
- 5 A wooden block rests on a horizontal plane as shown in figure. Determine the force 'P' required to (a) pull it (b) push it. Assume the weight of block as 100 N and the coefficient of friction $\mu = 0.4$



5 CO3 A 13.1

- 6 Two balls moving in the same straight line collide with each other as shown in figure. Before and after collision both the balls move in same direction. If coefficient of restitution for these balls is 0.2, find velocities of both the balls after collision.

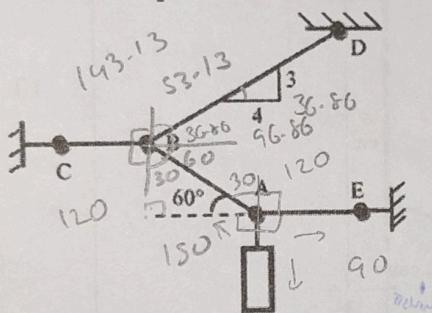
5 CO6 A 13.1



Section-III Long Answer Question (Answer any 03 out of 05)
(Application, Analytical, Evaluation, Design Type)

(30 Marks)

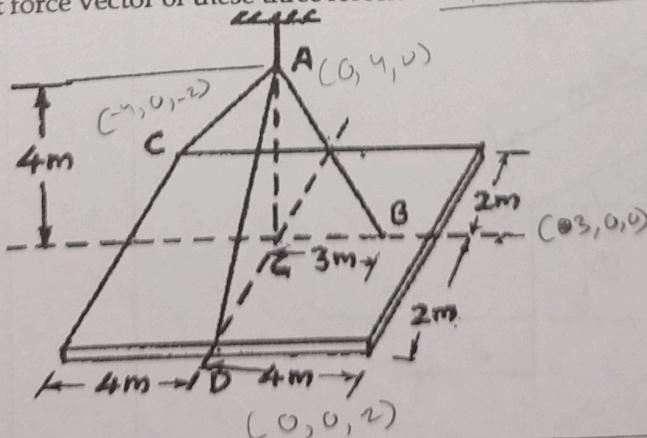
- A 25kg pipe is supported at A by a system of five chords. Determine the force in each chord for equilibrium.



RC 141-59
 RB 283-19
 RC 468-80
 RD 408-74
 RL = 245-23

- 10 CO₂ A 1,3,1

- The lines of action of three forces concurrent at 'A' pass respectively through B, C and D. Knowing coordinates of G (0,0,0), the magnitudes of the forces are, $F_{AB} = 40 \text{ N}$, $F_{AC} = 30 \text{ N}$, $F_{AD} = 40 \text{ N}$. Find the resultant force vector of these three forces.



- 10 | CO5 | A | 1.3.1

- Draw FBD and find support reactions at A and B of the given beam.

10 | CO₂ | A | 1.3.1



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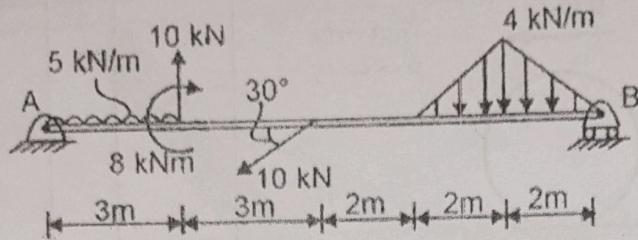
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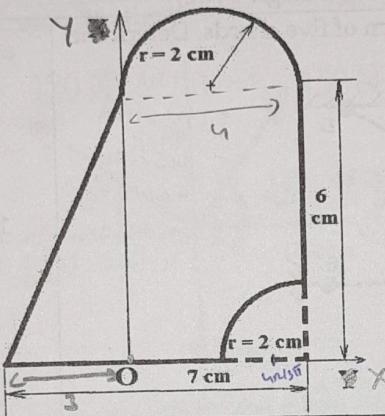
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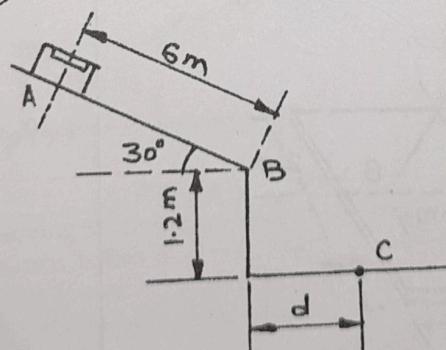
- 4 Find the centroid of the given shape

1.15L, 3-G06



10 CO1 A 1.3.1

- 5 A suitcase of weight 40 N slides from rest 6 m down a ramp. If $\mu K = 0.2$, determine the horizontal distance 'd' where it will strike the ground at C. How much time does it take to move from A to C?



10 CO5 A 1.3.1



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END SEMESTER EXAMINATION, JUNE 2023

F. E. /F.T. SEMESTER II (CBCGS-HME 2020)

Branch:	COMP, CIVIL, E&CS, CSE, IOT, AI&DS	Q.P. Code:	E121G1002-1
Subject:	Mathematics-II	Duration:	2 hours
Subject Code:	BSC104	Max. Marks:	60

Instructions: 1. All sections are compulsory

2. Figures to the right indicate full marks.

3. Assume suitable data if necessary and state the assumptions clearly.

4. Diagrams / sketches should be given wherever necessary.

5. Use of logarithmic table, drawing instruments and non-programmable calculators is permitted.

	Section-I (10 Marks)				
	Short Answer question (Answer any 5)	Marks	CO	RBT	PI
1	Check whether the given equation is exact or not $(2y^2 - 4x + 5)dx = (y - 2y^2 - 4xy)dy$	2	1	U	2.1.1
2	Find the particular-integral (P.I.) for the differential equation $(D^2 + 4)y = \cos 2x$	2	2	U	2.1.2
3	Find the product of eigen values of the matrix $A = \begin{bmatrix} 0 & 1 & 1 \\ 1 & 0 & 1 \\ 1 & 1 & 0 \end{bmatrix}$	2	3	R	1.1.2
4	Evaluate $\int_0^1 \int_0^x (x^2 + y^2) x dy dx$	2	4	U	2.2.2
5	Write down the limits of cylindrical polar coordinates for the volume bounded by the paraboloid $x^2 + y^2 = az$ and the plane $z = a$.	2	5	R	1.4.1
6	Find the residue of $f(z)$ at the pole $z = 1$ $\int_C \frac{z+2}{(z-1)(z-3)} dz$ where C is the circle $ z = 2$	2	6	U	1.1.2

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	Section-II (20 Marks)	Marks	CO	RBT	PI
	Descriptive Answer question (Answer any 4)				
1	The current i in a circuit containing an inductance L , resistance R and voltage $E \sin wt$ is given by $L \frac{di}{dt} + Ri = E \sin wt \text{ for } t = 0, i = 0, \text{ Find } i.$	5	1	U	2.1.1
2	Solve by the method of variation parameters. $\frac{d^2y}{dx^2} + 4y = \tan 2x$	5	2	A	2.1.2
3	Compute $A^9 - 6A^8 + 10A^7 - 3A^6 + A + I$ where $A = \begin{bmatrix} 1 & 2 & 3 \\ -1 & 3 & 1 \\ 1 & 0 & 2 \end{bmatrix}$ by Cayley Hamilton theorem. A^{+2}	5	3	A	1.1.2
4	Evaluate $\iint_R xy \, dx \, dy, \text{ over the region bounded by } x^2 = y, y^2 = -x.$	5	4	A	2.2.2
5	Show that $\int_0^1 \int_0^{1-x} \int_0^{1-x-y} \frac{1}{(x+y+z+1)^3} \, dx \, dy \, dz = -\frac{1}{2} \left(\frac{5}{8} - \log 2 \right)$	5	5	A	1.1.2
6	Evaluate $\int_C \frac{z+3}{z^2+2z+5} \, dz$, where C is the circle $ Z + 1 - i = 2$ $\pi [i^{+1}]$	5	6	U	1.4.1
	Section-III (30 Marks)				
	Long Answer question (Answer any 3)	Marks	CO	RBT	PI
	Evaluate				
1	$(xy \sin xy + \cos xy)ydx + (xy \sin xy - \cos xy)x dy = 0$ $\frac{5}{2} \ln \left[\frac{\sec(xy)}{2} \right] + \frac{1}{2} \ln x - \frac{5}{2} = C$	10	1	A	2.1.2
2	Solve $x^2 \frac{d^2y}{dx^2} - x \frac{dy}{dx} + 4y = \cos(\log x) + x \sin(\log x)$	10	2	A	1.1.2



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3	<p>Show that the matrix $A = \begin{bmatrix} -9 & 4 & 4 \\ -8 & 3 & 4 \\ -16 & 8 & 7 \end{bmatrix}$ is diagonalizable.</p> <p>$\begin{bmatrix} -1 & 0 & 0 \\ 0 & -1 & 0 \\ 0 & 0 & 3 \end{bmatrix}$</p> <p>Also find the transforming matrix and the diagonal matrix.</p>	10	3	AN	1.4.1
4	<p>Change the order of integration and evaluate</p> $\int_0^2 \int_{\sqrt{2y}}^2 \frac{x^2}{\sqrt{x^4 - 4y^2}} dx dy$	10	4	A	1.4.1
5	<p>Evaluate</p> $\iiint xyz(x^2 + y^2 + z^2) dx dy dz,$ <p>over the first octant of the sphere $x^2 + y^2 + z^2 = a^2$</p>	10	5	A	2.1.2

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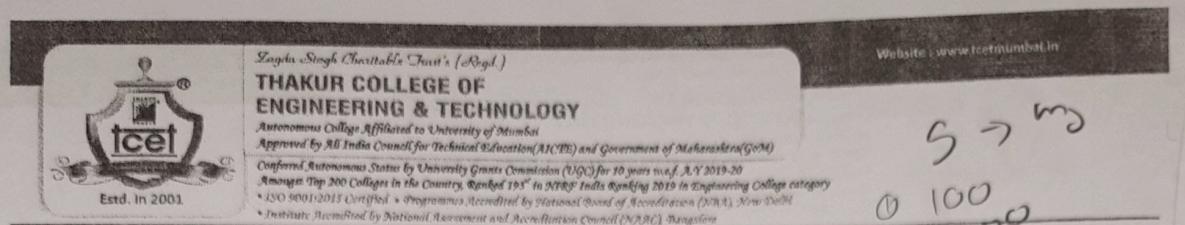
Website: www.tceimumbai.in

END SEMESTER EXAMINATION, JUNE 2023**F. E. /F.T. SEMESTER II (CBCGS-HME 2020)**

Branch:	CIVIL, CSE, COMP, AIDS, ECS & IOT	Q.P. Code:	E121G1001-3
Subject:	CHEMISTRY	Duration:	2 hours
Subject Code:	BSC102	Max. Marks:	60

- Instructions:**
1. All sections are compulsory
 2. Figures to the right indicate full marks.
 3. Assume suitable data if necessary and state the assumptions clearly.

At. Wt.: C = 12, H = 1, O = 16, Ca = 40, Mg = 24, Cl = 35.5, S = 32, Na = 23, N = 14, Al = 27, Si = 28.					
Section-I	Short Answer Question (Answer any 05 questions out of 06) (Fundamental, Core Types)				(10 Marks)
Q. No.		Marks	CO	RBT Level	PI
1	"Silver shows better resistance to oxidation corrosion as compared to Mg" justify it with suitable explanation.	2	4	A	1.2.1
2	Give an example to explain why it is beneficial to prevent waste formation in chemical processes rather than treat waste?	2	1	U	1.1.1
3	Calculate the temporary and Total hardness of a water sample, having following analysis in mg/liter: $Mg(HCO_3)_2 = 14.6$, $Ca(HCO_3)_2 = 8.1$, $Mg(NO_3)_2 = 29.6$, $MgCl_2 = 19$, $NaCl = 10$, $MgSO_4 = 24$.	2	1	AN	1.1.1
4	What do you mean by chirality? Explain it with various examples.	2	6	R	1.3.1
5	Iron does not rust even if the zinc coating is broken in a galvanized iron pipe. Give reasons.	2	4	U	1.3.1
6	A solution of $K_2Cr_2O_7$ of concentration 4.5×10^{-5} M shows an absorbance of 1.2 at its wavelength of maximum absorption. Calculate the concentration of an unknown $K_2Cr_2O_7$ solution which shows an absorbance of 1.4 in the same cuvette.	2	5	AN	2.2.2
Section-II	Descriptive Answer Questions (Answer any 04 out of 06) (Descriptive, Comprehension Types)				(20 Marks)
1	One of the chemist is using Thin layer chromatography technique, for separation of mixture of xylene, aniline	5	2	A	1.3.1



5 → m
① 100

② 1000

	and benzoic acid by using silica plate as stationary phase and n hexane as a mobile phase. In this regard, i) Give the principle of TLC. ii) Give the order of migration of these solutes from the baseline along with proper justification. iii) enlist the various detecting agents used in TLC.				
2	If a molecule is irradiated with UV-VIS, what are possible transitions will take place at molecular energy levels? Explain each of them with suitable energy level diagram.	5	5	R	2.2.2
3	0.75 gm of CaCO_3 was dissolved in dilute HCl and solution made to 500 ml distilled water. 50 ml of solution requires 32 ml of EDTA solution for titration. 50 ml of hard water sample require 16 ml of EDTA and after boiling and filtering 100 ml of this solution require 14 ml of EDTA solution. Calculate Temporary, permanent, and total hardness of water.	5	1	AN	1.1.1
4	Designing of non-hazardous chemical synthesis is of utmost importance by considering hazardous impacts of chemicals on environment. With the help of suitable examples and routes explain it in detail.	5	3	U	1.1.1
5	A zinc rod is partially immersed in aqueous solution. Predict the type of corrosion and explain it in detail with suitable diagram and chemical reactions.	5	4	U	1.2.1
6	Explain with a neat diagram the zeolite process of water softening including the following points. (i) Principle, (ii) Process, (iii) Softening and regeneration reactions, (iv) advantages and limitations.	5	1	R	1.1.1

Section-III Long Answer Question (Answer any 03 out of 05) (30 Marks)
 (Application, Analytical, Evaluation, Design Type)

1	a) How do following factors affect the rate of corrosion? i) Passive Character of metal ii) Purity of metal iii) Nature of ions present b) Explain, how corrosion can have prevented by using proper designing approach?	10	4	R	1.2.1
2	i) Calculate the amount of lime (95% pure) and soda (90% pure) required to soften 1 million liters of water containing following impurities in mg/lit.	10	1	AN	



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	Mg (HCO_3) ₂ = 73, H ₂ SO ₄ = 14.7, Ca(HCO_3) ₂ = 81, MgCl ₂ = 95, NaCl = 3.6, SiO ₂ = 26.2, CaSO ₄ = 68, Mg(NO ₃) ₂ = 14.8. ii) 800 liters of hard water was passed through a zeolite softener. The exhausted zeolite required 40 liters of NaCl having strength of 110 g/l of NaCl. Calculate the hardness of water.				
3/3	A volatile organic sample received for analysis is mixture of three different components with varied degree of volatility in it. Which method of chromatography separation (TLC/ GC/ HPLC) will be more suitable for its resolution? Explain selected method with help of neat labeled diagram. Also comment on rough estimate of retention time (RT Value) in its chromatogram assuming suitable boiling point value for all three components.	10	2	A	1.3.1
4	i) Less hazardous chemical synthesis is of utmost important while designing any chemical process, in this regard with the help of suitable chemical reactions explain this principle of green chemistry. ii) Calculate % atom economy for the following reaction with respect to acetophenone.	10	3	A	1.1.1
5	<p style="text-align: center;"> Benzene + CH₃COCl $\xrightarrow{\text{AlCl}_3}$ Acetophenone + HCl </p> <p>What are cation and anion exchange resins? Explain Ion exchange process for softening of hard water with giving its advantages and disadvantages?</p>	10	1	R	1.1.1

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IN-SEMESTER EXAMINATION (ISE-I) December 2022

FE/FT (Semester-I) CBCGS-HME 2020

Mathematics I

Branch: COMP, CIVIL, CS&E, E&CS, IOT, AI&DS

Div.: All

Duration: 60 Minutes

Instructions –

Date: 26 / 12 / 2022

Timing: 10:00 AM to 11:00 AM

Maximum Marks: 20

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.2.	a.	Prove that $\log(1 + \tan x) = x - \frac{x^2}{2} + \frac{2x^3}{3} + \dots$	05
		OR	
	b.	Evaluate $\lim_{x \rightarrow 0} \left[\frac{1^x + 2^x + 3^x + 4^x}{4} \right]^{\frac{4}{x}}$	05
Q.3	a.	If $z = f(u, v)$, $u = \log(x^2 + y^2)$, $v = \frac{y}{x}$, then show that $x \frac{\partial z}{\partial y} - y \frac{\partial z}{\partial x} = (1 + v^2) \frac{\partial z}{\partial v}$.	05
		OR	
	b.	Find all the stationary points of the function $f(x, y) = x^3 + 3xy^2 - 3x^2 - 3y^2 + 4$ and test whether the function is maximum or minimum at those points. Does function have any saddle point? Justify.	05



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IN-SEMESTER EXAMINATION (ISE-I) December 2022

FE/FT (Semester-I) CBCGS-HME 2020

Mathematics I

Branch: COMP, CIVIL, CS&E, E&CS, IOT, AI&DS

Div.: All

Duration: 60 Minutes

Instructions –

Date: 26 / 12 / 2022

Timing: 10:00 AM to 11:00 AM

Maximum Marks: 20

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.

	Solve any 5 Questions.	Marks
a.	Is Lagrange's mean value theorem being applicable for $f(x) = x^2$ in $[1,2]$.	02
b.	Considering the functions $f(x) = \sqrt{x}$ and $g(x) = \frac{1}{\sqrt{x}}$ in $[1, 2]$, find c of Cauchy's mean value theorem.	02
c.	If $u = e^{xy^2}$ evaluate $\frac{\partial^2 u}{\partial x \partial y}$.	02
d.	Find $\nabla \phi$, when $\phi = xy^2 + yz^3$ at the point $(2, -1, 1)$	02
e.	Find the value of $(1 + i\sqrt{3})^6$ using De' Moivre's theorem.	02
f.	Discuss the convergence of the series $\sum_{n=1}^{\infty} \frac{1}{n^n}$	02
g.	If $u = \frac{x+y}{\sqrt{x} + \sqrt{y}}$ then find value of $xu_x + yu_y$	02



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IN-SEMESTER EXAMINATION (ISE-I) DECEMBER, 2022 FE (Semester-I) CBCGS-HME 2020 Workshop & Manufacturing Practices – I

Branch: COMP, CIVIL, CS&E, E&CS, IOT, AI&DS
Div.: ALL
Duration: 45 Minutes

Date: 26 / 12 / 2022
Timing: 01.30 PM to 02:15 PM
Maximum Marks: 10

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	Solve any 2 Questions.	Marks
	a. With neat label draw Injection molding	02
	b. What is machining? Explain any one machining process.	02
	c. Write a short note on Planning Tools	02
Q.2	Solve any 1 Question.	
	a. Explain the casting process with all the components and steps	03
	b. Illustrate Resistant welding with a neat sketch.	03
Q.3	Solve any 1 Question.	
	a. List all Advanced Manufacturing Methods & explain any one	03
	b. What are cutting tools? Explain various types of saw	03



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IN-SEMESTER EXAMINATION (ISE-I) DECEMBER 2022

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

Basic Electrical Engineering

Branch: AI&DS, COMP, CIVIL, IOT & CSE, E&CS

Division: A, B & C

Duration: 60 Minutes

Instructions -

Date: 27/12/2022

Timing: 10:00 AM to 11:00 AM

Maximum Marks: 20

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

Q.1	Solve any 5 Questions.	Marks
a.	<p>Find the voltage of the in a given circuit</p>	02
b.	<p>Find the value of equivalent Current with direction between A & B all four cases</p> <p>Fig. 1</p> <p>Fig. 2</p> <p>Fig. 3</p> <p>Fig. 4</p>	02
c.	<p>Find the Active Power, Reactive power as per values given in the figure.</p>	02



	d.	Find the total impedance of the circuit	02
		<p style="text-align: center;">$R=10\Omega$ $2\mu F$</p> <p style="text-align: center;">230V, 1-Φ, 50Hz</p>	
	e.	List out the Non Renewable Energy source (at least 4)	02
	f.	What are the advantage and disadvantage of Solar Energy (two for each)	02
	g.	Draw the block diagram of electric power generation system	02
Q.2.	a.	A voltage of 125 V at 50 Hz is applied across a non-inductive resistor connected in series with an inductor with a current of 2.2 A the power loss in the resistor is 96.8 W. Calculate (i) Resistance (ii) Inductance (iii) Power factor (iv) Active Power (v) Draw power triangle	05
		OR	
	b.	Determine (i) impedance, (ii) Current flowing through the circuit, (iii) voltage drop across each element and (iv) power consumed (v) resonant frequency	05
		<p style="text-align: center;">$R=10\Omega$ $100\mu F$</p> <p style="text-align: center;">220V, 1-Φ, 50Hz</p>	
Q.3	a.	Find current flowing through 6-ohm resistor by superposition method.	05
	OR		
	b.	Find Current flowing through 6 ohm resistor using Norton's Theorem.	05



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IN-SEMESTER ASSESSMENT (ISE-I) DECEMBER 2022
FE / FT (Semester-I) CBCGS-HME 2020

PHYSICS

Branch: CIVIL, COMP, CS&E, E&CS, IoT, AI&DS

Div: A, B & C

Duration: 60 Minutes

Instructions –

Date : 27/12/2022

Timing: 1:30 PM to 2:30 PM

Maximum Marks: 20

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.

$$\rho = \frac{1}{\sigma} \text{ en}$$

$$\sigma = n e n \quad \mu = \frac{1}{\rho} \text{ en}$$

Q.1	Solve any 5 Questions.	Marks
a.	The resistivity of Cu is 2.36×10^{-8} ohm-m. Calculate the mobility of electron in Cu. Given, the no. of electrons per unit volume is $12.98 \times 10^{28}/\text{m}^3$.	02
b.	In a semiconductor with hall coefficient 145 cc/C having width of 2cm and thickness 0.2 cm with a magnetic field induction of 2T along the smaller dimension, a current of 150 mA is passing. Calculate the current density and Hall voltage.	02
c.	State and explain Heisenberg's uncertainty principle.	02
d.	Distinguish between direct and indirect band gap with examples.	02
e.	An electron is bound in a one-dimensional potential well of width 5 A^0 , but of infinite height. Find the energy values in the ground state and first excited state.	02
f.	Write a short note on PN Photodiode.	02
g.	State and explain Phase velocity and group velocity.	02
Q.2.	a. Derive an expression for energy of a particle in one dimensional infinite potential well. OR	05
	b. With energy band diagram explain the variation of Fermi level with temperature in extrinsic semiconductors.	05
Q.3	a. State and explain hall-effect in semiconductors. Derive the expression for hall voltage and hall coefficient. OR	05
	b. Derive one dimensional Time Dependent Schrodinger Equation (TDSE).	05

IN-SEMESTER EXAMINATION (ISE-I) DECEMBER, 2022
FE/FT (Semester-I) CBCGS-HME 2020
Engineering Graphics & Design

Branch: COMP, AI&DS, CIVIL, CSE, E&CS, IoT

Date : 28/12/2022

Division: A, B, C

Duration: 90 Minutes

Timing: 10.00AM to 11:30AM

Maximum Marks: 20

Instructions –

1. All questions are compulsory.
2. Assume suitable data wherever necessary and state the assumptions made.
3. Labelling and dimensioning should be given wherever necessary.
4. Use of logarithmic table, drawing instruments and non-programmable calculators is permitted.
5. Proper Line work indicates full marks.

Q.1	Solve any 5 Questions.	Marks
a.	Draw F.V of following Fig 1.1	02

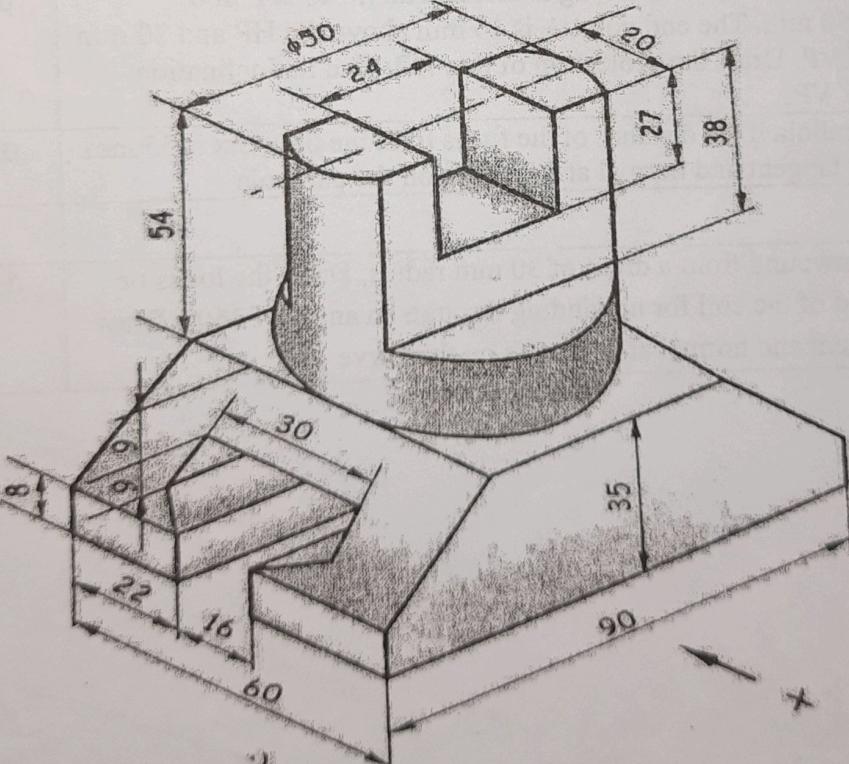


Fig 1.1



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	b.	Draw Top View of above fig 1.1	02
	c.	Draw Side View of above fig 1.1	02
	d.	Give dimensions and labelling of above fig 1.1	02
	e.	State and explain any four types of Line.	02
	f.	i) Draw the projection of point if position of a point 'U' on H.P. and 25 mm behind V.P. ii) Draw the projection of point if position of a point 'S' 20 mm above H.P. and 25 mm in front of V.P.	02
	g.	Make a circle of diameter of 30mm and divide into 8 equal parts	02
Q.2.	a.	A line PQ of length 40mm is inclined to both the VP and the HP. The Line is inclined at 30° to HP and 45° to VP. The Point P is 20 mm above HP and 30 mm in front of VP. Draw its projections. Find PL and EL.	05
		OR	
	b.	The FV of Line AB, 70 mm long is inclined at 45° to XY line measures 50 mm. The end point A is 10 mm above the HP and 20 mm in front of VP. Draw the projection of line AB; find its Inclination with HP & VP.	05
Q.3	a.	Draw a parabola if the distance of the focus from the directrix is 55 mm. Also draw tangent and normal at any point on the parabola	05
		OR	
	b.	A coil is unwound from a drum of 30 mm radius. Draw the locus of the free end of the coil for unwinding through an angle of 360° . Draw also a tangent and normal at any point on the curve	05



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IN-SEMESTER EXAMINATION (ISE-II) January 2023

FE/FT (Semester-I) CBCGS-HME 2020

Mathematics I

Branch: COMP, CIVIL, CS&E, E&CS, IOT, AI&DS

Date: 23 / 01 /2023

Div.: All

Timing: 10:00 AM to 11:00 AM

Duration: 60 Minutes

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	Solve any 5 Questions.	Marks
a.	Evaluate the value of $\log_3(-4)$	02
b.	Check whether $f(z) = x^3 + iy^3$ satisfies C-R equation or not.	02
c.	Evaluate $\int_0^\infty e^{-x} x^5 dx$	02
d.	Is the following system of equation consistent? $4x + 2y = 7, 2x + y = 6$	02
e.	Evaluate the value of B (3, 1/2)	02
f.	Find the exponential value of $\cos h x + \sin h x$	02
g.	Solve $x^5 - i=0$ using De'Moivre's theorem.	02



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IN-SEMESTER EXAMINATION (ISE-II) January 2023

FE/FT (Semester-I) CBCGS-HME 2020

Mathematics I

Branch: COMP, CIVIL, CS&E, E&CS, IOT, AI&DS

Div.: All

Duration: 60 Minutes

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.

Date: 23 / 01 / 2023

Timing: 10:00 AM to 11:00 AM

Maximum Marks: 20

Q.2.	<p>a.</p> <p><i>Prove that</i> $\frac{1}{1 - \frac{1}{1 - \frac{1}{1 + \sinh^2 x}}} = -\sinh^2 x.$</p>	05
	OR	
b.	<p>Evaluate $\int_0^2 x^4 (8 - x^3)^{-\frac{1}{3}} dx$</p>	05
Q.3	<p>a.</p> <p>Evaluate the rank of the matrix A by reducing them to Normal form</p> <p>Where $A = \begin{bmatrix} 2 & 1 & -3 & -6 \\ 3 & -3 & 1 & 2 \\ 1 & 1 & 1 & 2 \end{bmatrix}$</p>	05
	OR	
b.	<p>Discuss for all values of λ, the nature of solution of the system of equations</p> $\begin{aligned} x + y + 4z &= 6 \\ x - 2y - 2z &= 6 \\ \lambda x + y + z &= 6 \end{aligned}$ <p>have (i) no solution (ii) unique solution (iii) many solutions.</p>	05



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(G)

IN-SEMESTER ASSESSMENT (ISE-II) JANUARY-2023

FE / FT (Semester-I) CBCGS-HME 2020

PHYSICS

Branch: CIVIL, COMP, CS&E, E&CS, IoT, AI&DS

Div: A, B & C

Duration: 60 Minutes

Instructions –

Date : 23/01/2023

Timing: 1:30 PM to 2:30 PM

Maximum Marks: 20

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.

$$U_C = U_0 \left[1 + \frac{7.2}{7C^2} \right]$$

11.2

Q.1	Solve any 5 Questions.	Marks
a.	What is population inversion? Explain type of pumping.	02
b.	The transition temperature for Pb is 11.2 K. However, at 8 K it loses the superconducting property if subjected to magnetic field of 4.2×10^4 A/m. Find the maximum value of H which will allow the metal to retain its superconductivity at 0°K.	02
c.	A soap film of refractive index 1.23 and thickness 1.7×10^{-4} cm is illuminated by white light incident at an angle of 60°. In the reflected light a dark band is observed by the wavelength 5×10^{-5} cm. Calculate the order of the interference band.	02
d.	Two glass plates touch each other to form a wedge shape air film of thickness 0.06×10^{-3} m at one edge and separated by a wire of 0.15 m at another end. If a monochromatic light of wavelength 6000 Å illuminates the wedge. Find out fringe width.	02
e.	Write a short note on Anti-reflection coating.	02
f.	Write a short note on Holography.	02
g.	Define: i) Population inversion ii) Metastable state	02
Q.2.	a. With the help of Energy level Diagram describe construction and working in Nd-YAG Laser. State its applications. OR	05
	b. Derive 1 st & 3 rd Maxwell's equations in Integral & differential Forms.	05
Q.3	a. Explain Meissner effect in superconductivity. Also, prove that superconductors are diamagnetic in nature. OR	05
	b. Derive the expression for n th dark and bright newton's ring.	05



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IN-SEMESTER ASSESSMENT (ISE-II) JANUARY-2023

FE / FT (Semester-I) CBCGS-HME 2020

Basic Electrical Engineering

Branch: AI&DS, COMP, CIVIL, IOT & CSE

Division: A, B & C

Duration: 60 Minutes

Instructions –

Date: 24/01/2023

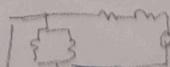
Timing: 10:00 AM to 11:00 AM

Maximum Marks: 20

CIVL

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	Solve any 5 Questions.	Marks
a.	What are the characteristics of Practical transformer.	02
b.	Draw torque slip characteristics of Induction Motor.	02
c.	Name all types of Stepper motor and Induction Motor.	02
d.	Draw the resistive Load/Output waveform for full wave Inverter.	02
e.	A 1-ø, 50 Hz transformer has 500 turns on primary and 1000 turns on secondary. The voltage per turn in the primary winding is 0.2 Volts. Calculate the area of the core when maximum flux density is 0.045 Wb/m ²	02
f.	Name speed control methods of induction motor.	02
g.	Draw Only the circuit diagram for full wave controlled rectifier.	02
Q.2.	a. Draw and explain V-I characteristics of SCR.	05
	OR	
	b. Explain the concept of rotating magnetic field.	05
Q.3	a. Draw the phasor diagram of single phase transformer for Inductive Load.	05
	OR	
	b. A 5 kVA, 250/500 V, 1-Φ transformer gave the following test results: No load test (L.V side) 250 V, 0.85 A, 60 W → <i>OL</i> Short circuit test (H.V side) 9 V, 6 A, 121.6 W → <i>SL</i> Calculate: a) the equivalent circuit constants and insert these on the equivalent circuit diagram refer to secondary side.	05



1/1



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IN-SEMESTER EXAMINATION (ISE-II) CBCGS-HME 2020

Engineering Graphics & Design

Branch: COMP,CIVIL,CS&E,E&CS,IoT,AI&DS (Group 1)

Date : 25/01/2023

Division: A,B,C

Duration: 90 Minutes

Instructions –

Timing: 10:00 AM to 11:30 AM
Maximum Marks: 20

1. All questions are compulsory.
2. Assume suitable data wherever necessary and state the assumptions made.
3. Labelling and dimensioning should be given wherever necessary.
4. Use of logarithmic table, drawing instruments and non-programmable calculators is permitted.
5. Proper Line work indicates full marks.

Q.1		Solve any 5 out of 7 questions (2 marks each).	Marks
	a.	Draw a regular hexagon of 35 mm side.	02
	b.	Draw Front View and Top View of a Square Pyramid having side of base 30 mm, axis height 65 mm resting on its base on HP.	02
	c.	Draw Front View and Top View of a pentagonal Pyramid having side of base 35 mm, axis height 70 mm resting on its base on HP.	02
	d.	Draw Iso Circle of 55 mm diameter.	02
	e.	Draw Sectional Front View along A-A for following fig. 1.	02

Figure 1



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	f.	Draw a Top View for fig. 1.	02
	g.	Give six suitable dimensions in the above fig.1	02
Q.2	a.	A square pyramid side of base 40 mm and axis length 65 mm is resting on one of its corners of base in the HP such that the axis of pyramid is inclined at 45° to the HP and parallel to VP. Draw the projection of square pyramid. OR	05
	b.	Draw Isometric view for the given two views	05
		<p>The figure shows two orthographic views. The left view (R.H.S.V.) shows a stepped block with a total height of 37 mm, a top width of 20 mm, and a bottom width of 40 mm. The right view (F.V.) shows a cone with a diameter of 10 mm and an axis length of 63 mm. An inclined plane is shown cutting through the cone at a distance of 44 mm from the base.</p>	
Q.3	a.	A cone of base diameter 60 mm and axis length 70 mm is kept on HP on its base. It is cut by an inclined plane inclined at 45° to the HP. The cutting plane passes through a distance of 35 mm from the base. Draw the FV, Sectional Top View of the cone. OR	05
Q3.	b.	A cone of base diameter 60 mm and axis length 70 mm is kept on HP on its base. It is cut by an inclined plane inclined at 45° to the HP. The cutting plane passes through a distance of 35 mm from the base. Draw DLS (sectional TV is not required).	05



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IN-SEMESTER EXAMINATION (ISE-II) JANUARY, 2023

FE (Semester-I) CBCGS-HME 2020

Workshop & Manufacturing Practices – I

Div.: Group I (CIVIL, CS&E, COMP, AI&DS, E&CS, IoT)
Duration: 45 Minutes

Date: 24/01/2023

Timing: 01.30 PM to 02:15 PM

Maximum Marks: 10

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	Solve any 2 Questions.	Marks
a.	Enlist the application of CNC machining	02
b.	Explain benefits of Additive Manufacturing	02
c.	With a neat sketch, explain weld terminology for fillet weld	02
Q.2	Solve any 1 Question.	
a.	Enlist glass strength testing methods. Explain any one with neat sketch.	03
b.	Explain Selective Laser sintering (SLS) with a neat labelled diagram.	03
Q.3	Solve any 1 Question.	
a.	Differentiate between Gas welding and Arc welding.	03
b.	Write program for drilling a hole at the centre of the rectangular plate of dimensions(mm) 40 x 30 x 10 (l x b x h) with relative positioning.	03



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**END SEMESTER EXAMINATION, FEBRUARY 2023
SEMESTER I (CBCGS-HME 2020)**

Branch:	Group-I (COMP, CIVIL, CSE, E&CS, AI&DS, IoT)	Q.P. Code:	R1G10011
Subject:	Physics	Duration:	2 hours
Subject Code:	BSC101	Max.Marks:	60

- Instructions:**
1. All sections are compulsory
 2. Figures to the right indicate full marks.
 3. Assume suitable data if necessary and state the assumptions clearly.

Section-I		Short Answer Question (Answer any 05 questions out of 06) (Fundamental , Core Types) (10 Marks)			
Q. No.		Marks	CO	RBT Level	PI
1	Define Intrinsic and Extrinsic Semiconductors.	2	CO1	U	1.4.1
2	Write Maxwell's first equation in both differential and integral form.	2	CO6	U	1.2.1
3	State the importance of E-k diagram.	2	CO2	U	1.4.1
4	State Heisenberg's Uncertainty Principle.	2	CO3	R	1.2.1
5	Why the rings in the Newton's Ring experiment are circular?	2	CO4	U	1.4.1
6	State four important properties of a LASER.	2	CO5	R	1.2.1
Section-II		Descriptive Answer Questions(Answer any 04 out of 06) (Descriptive ,Comprehension Types) (20 Marks)			
1	With the energy band diagram, explain the variation of Fermi level with impurity concentration in extrinsic semiconductors.	5	CO1	U	1.4.1
2	Explain with appropriate diagram, the working of Maglev Train.	5	CO5	A	1.3.1
3	Differentiate between Direct and Indirect Band Gap Semiconductors.	5	CO2	U	1.4.1
4	Calculate de-Broglie wavelength associated with alpha particle accelerated by a potential difference of 27 KV.	5	CO3	R	1.3.1
5	Find the thickness of the soap film which will appear yellow 5890 \AA^0 in reflection when it is exposed to white light at an angle of 45° . The refractive index of soap film = 1.34.	5	CO4	A	1.3.1
6	Derive Time Dependent Schrodinger Equation.	5	CO3	U	1.5.1



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Section-III Long Answer Question (Answer any 03 out of 05) (Application, Analytical, Evaluation, Design Type)				(30 Marks)	
1	a) Derive Maxwell third and fourth equation. a) What is the probability of an electron being thermally excited to the conduction band in intrinsic Si at 27°C. The band gap energy is 1.24 eV.	10	CO6 CO1	U A	1.5.1 1.3.1
2	b) Differentiate between Spontaneous and Stimulated Emission. c) An electron is confined in a box of length 10^{-9} m. Calculate the minimum uncertainty in its velocity.	10	CO5 CO3	U A	1.4.1 1.3.1
3	a) Derive the conditions for maxima and minima due to interference of light reflected from the thin transparent film of uniform thickness. b) An n-type of Ge sample has a $N_D = 2 \times 10^{21}/m^3$ and thickness 4 mm. It is arranged in a hall effect experimental set up. If $B = 0.5$ T, $J = 510$ A/m ² , find hall voltage.	10	CO4 CO1	R A	1.5.1 1.3.1
4	a) Prove that electron does not exist inside the nucleus. b) Two glass surfaces in contact along one edge are separated at opposite edge by a thin wire. If 18 interference fringes are observed between these edges in sodium light of $\lambda = 5890$ Å at normal incidence, what is the thickness of the wire?	10	CO3 CO4	U A	1.4.1 1.3.1
5	a) Explain Hall Effect, and derive its mathematical expression for Hall voltage. b) The transition temperature for lead is 7.23 K. The maximum critical field for the material is 8×10^5 A/m. Lead has to be used as a superconductor subjected to a magnetic field of 7×10^4 A/m. What precaution will have to be taken?	10	CO1 CO5	U A	1.5.1 1.3.1



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END SEMESTER EXAMINATION, FEBRUARY 2023

F. E. /F.T. SEMESTER I (CBCGS-HME 2020)

Branch:	COMP, CIVIL, E&CS, CSE, AI&DS, IoT	Q.P. Code:	R1G10022
Subject:	Mathematics-I	Duration:	2 hours
Subject Code:	BSC103	Max. Marks:	60

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

Section-I (10 Marks)		Marks	CO	RBT	PI
1	Short Answer question (Answer any 5)				
1	Find a normal to the surface $x^2y + 2xz = 4$ at the point $(2, -2, 2)$	2	2	U	2.1.1
2	Find the value of $(\cosh x - \sinh x)^2$	2	3	R	2.1.2
3	Discuss the convergence of the series $\sum_{n=1}^{\infty} \frac{1}{n^n}$	2	1	A	1.1.2
4	Find the rank of the matrix $A = \begin{bmatrix} 1 & 2 & -2 \\ -1 & 3 & 0 \\ 0 & -2 & 1 \end{bmatrix}$ by using Echelon form.	2	4	U	2.2.2
5	Find the value of $\begin{bmatrix} -3 \\ 2 \end{bmatrix}$	2	5	U	1.4.1
6	Check whether $x^2 + iy^3$ satisfies C-R equation or not.	2	6	A	1.1.2
Section-II (20 Marks)					
Descriptive Answer question (Answer any 4)		Marks	CO	RBT	PI
1	Show that $\lim_{x \rightarrow 0} \log_x \sin x = 1$. (-3)	5	1	U	2.1.1
2	If $w = \phi(u, v)$, $u = x^2 - y^2 - 2xy$, $v = y$, then show that $(x+y)\frac{\partial w}{\partial x} + (x-y)\frac{\partial w}{\partial y} = (x-y)\frac{\partial w}{\partial v}$.	5	2	R	2.1.2

113 $\frac{\log \sin x}{\sin x} \Rightarrow \cos x \cdot \frac{1}{\sin x} = \frac{1}{\sin x} \cdot \frac{\sin x}{\sin x} = 1$



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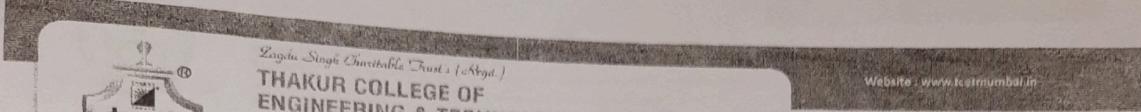


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3	Prove that $\tan[\log(x^2 + y^2)] = \frac{2a}{1 - (a^2 + b^2)}$.	5	3	U	1.1.2
4	Investigate for what values of λ and μ the system of equations $2x + 3y + 5z = 9$, $7x + 3y - 2z = 8$; $2x + 3y + \lambda z = \mu$ have (i) no solution (ii)unique solution (iii) many solutions.	5	4	A	2.2.2
5	Prove that $B\left(n + \frac{1}{2}, n + \frac{1}{2}\right) = \frac{1}{2^{2n}} \frac{n + \frac{1}{2}}{\sqrt{\pi}} \frac{1}{n + 1}$	5	5	A	1.1.2
6	Find the analytic function whose real part is $e^{-x}(x \sin y - y \cos y)$. (Ans)	5	6	A	1.4.1
Section-III (30 Marks)		Marks	CO	RBT	PI
1	Find all the stationary points of the functions and test whether the function is maximum or minimum at those points for $f(x, y) = x^3 + 3xy^2 - 15x^2 - 15y^2 + 72x$ Also check whether function has saddle point or not.	10	2	A	2.1.2
2	Show that the roots of the equation $(x+1)^6 + (x-1)^6 = 0$ are given by $-i \cot\left[\frac{(2k+1)\pi}{12}\right]$ for $k=0, 1, 2, 3, 4, 5$ Using De'Moivre's theorem	10	3	A	1.1.2
3	Find nonsingular matrices P and Q such that PAQ is in the normal form where $A = \begin{bmatrix} 3 & -3 & 4 \\ 2 & -3 & 4 \\ 0 & -1 & 1 \end{bmatrix}$ and hence find $\rho(PAQ)$ and $\rho(A)$. Check whether A^{-1} can be expressed in terms of P and Q and hence find A^{-1}	10	4	AN	1.4.1

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4	<p>Show that $\int_0^a \sqrt{\frac{x^3}{a^3 - x^3}} dx = \frac{a\sqrt{\pi}}{\sqrt{\frac{1}{3}}} \left[\frac{5}{6} \right]$</p> <p>Also state the properties of beta and gamma functions used to prove the value of above integral.</p>	10	5	A	1.4.1
5	<p>Prove that $\sin^{-1} x = x + \frac{1}{2} \cdot \frac{x^3}{3} + \frac{1 \cdot 3}{2 \cdot 4} \cdot \frac{x^5}{5} + \frac{1 \cdot 3 \cdot 5}{2 \cdot 4 \cdot 6} \cdot \frac{x^7}{7} + \dots$</p> <p>Hence deduce that</p> $\cos^{-1} x = \frac{\pi}{2} - x - \frac{x^3}{6} - \frac{3x^5}{40} - \frac{5x^7}{112} - \dots$ <p style="text-align: right;">(-3)</p>	10	1	A	2.1.2

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END SEMESTER EXAMINATION, (FEBRUARY 2023)

(For Regular Students)

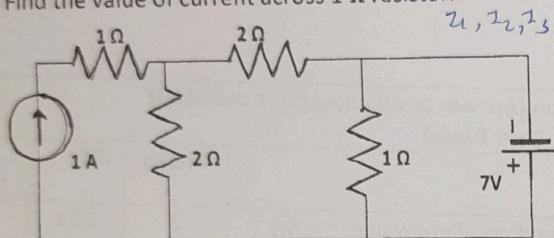
F.E/F.T. SEMESTER I (CBCGS-HME 2020)

Branch:	COMP, CIVIL, E&CS, CSE, AI&DS, IoT	Q.P. Code:	R1G10031
Subject:	Basic Electrical Engineering	Duration:	2 hours
Subject Code:	ESC101	Max. Marks:	60

- Instructions:
1. All sections are compulsory
 2. Figures to the right indicate full marks.
 3. Assume suitable data if necessary and state the assumptions clearly.

Section-I		Short Answer Question (Answer any 05 questions out of 06) (Fundamental , Core Types) (10 Marks)		
Q. No.		Marks	CO	RBT Level
1	Difference between Renewable and non-Renewable energy sources	2	CO3	R 1.1.1
2	Write the characteristics of ideal and Practical Transformer	2	CO4	R 1.1.1
3	Write the equation of current and draw phasor diagram for figure (a) and (b), where $v = V_m \sin \omega t$	2	CO2	U 1.3.1
	<p style="text-align: center;">Fig. (a)</p>			
	<p style="text-align: center;">Fig. (b)</p>			
4	How to convert Voltage source into Current Source and Current Source into Voltage Source. (Take any example)	2	CO1	A 2.1.3

5	Write the advantage & Disadvantage of Solar Energy.	2	CO3	R
6	Draw the basic block diagram of Power Generation Unit System.	2	CO3	U
(20 Marks)				
Section-II Descriptive Answer Questions(Answer any 04 out of 06) (Descriptive ,Comprehension Types)				
1	Describe and draw the characteristics of SCR.	5	CO6	U 1.3.1
2	Explain the Torque-Slip/Speed characteristics of Induction motor	5	CO5	U 1.3.1
3	Draw the phasor diagram of transformer on inductive load	5	CO4	U 1.3.1
4	Draw the constructional diagram of variable reluctance, permanent magnet.	5	CO4	U 1.3.1
5	Explain the solar Power Generation.	5	CO3	U 1.3.1
6	Find the value of current across 1Ω resistor.	5	CO1	A 2.1.3



(30 Marks)												
Section-III Long Answer Question (Answer any 03 out of 05) (Application, Analytical, Evaluation, Design Type)												
1	<p>3. A 5KVA 400/800V, 50Hz, single phase transformer gave the following test results.</p> <table style="margin-left: 20px;"> <tr> <td>O.C. test (L.V. Side):</td> <td>400V</td> <td>0.7 A</td> <td>60W</td> </tr> <tr> <td>S.C. test (H.V. Side):</td> <td>32V</td> <td>16 A</td> <td>120W</td> </tr> </table> <p>i) Draw the equivalent circuit of the transformer referred to L.V. side and insert all parameter values. ii) Efficiency and at 0.9 P.F. lagging at rated load. iii) Calculate maximum efficiency at 0.9 p.f lagging</p>	O.C. test (L.V. Side):	400V	0.7 A	60W	S.C. test (H.V. Side):	32V	16 A	120W	10	CO4	A 2.1.3
O.C. test (L.V. Side):	400V	0.7 A	60W									
S.C. test (H.V. Side):	32V	16 A	120W									
2	<p>Draw the vector diagram for the circuit shown. Find the value of V_1, V_2 and power factor.</p> <p style="text-align: center;">220 V, 1-Φ, 50 Hz</p>	10	CO2	A 2.1.3								

3	Find the current across 8Ω Resistor by using superposition theorem.	10	CO1	A	2.1.3
4	Describe the working of half bridge and full bridge Inverter with the waveform.	10	CO6	U	1.3.1
5	Explain the generation of Rotating Magnetic field in 3 Phase induction motor.	10	CO5	U	1.3.1



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END SEMESTER EXAMINATION, FEBRUARY 2023

F.E./F.T. Semester I (CBCGS-HME 2020)

Branch:	COMP/ CIVIL / E&CS / CSE/ IoT/ AI&DS	Q.P. Code:	R1G10041
Subject:	Engineering Graphics and Design	Duration:	3 hours
Subject Code:	ESC102	Max.Marks:	60

- Instructions:**
1. All sections are compulsory
 2. Figures to the right indicate full marks.
 3. Assume suitable data if necessary and state the assumptions clearly

Section-I	Short Answer Question(Answer any 05 questions out of 06) (Fundamental , Core Types)	(10 Marks)			
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Q. No.		Mark s	CO	RBT Level	PI
1	Draw iso-circle of 65 mm diameter.	2	CO6	L3	3.2.1
2	Draw TV of a square pyramid.	2	CO4	L2	3.2.1
3	State any four rules of dimensioning.	2	CO3	L1	1.4.1
4	State and draw any two types of lines.	2	CO1	L1	1.4.1
5	Draw projections of following points 1. X 30mm behind VP and on HP 2. Y 20mm behind VP and on 20 above HP	2	CO2	L2	3.2.1
6	A line of 65 mm length is inclined at 40° to V.P. and parallel to HP has one of its ends 15mm in front of VP. Draw TV of the line.	2	CO2	L2	3.2.1

Section-II	Descriptive Answer Questions (Answer any 04 out of 06) (Descriptive, Comprehension Types)	(20 Marks)			
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1	Draw involute of a triangle of side 40mm.	5	CO1	L2	3.2.3
2	A cone of 50mm base diameter and 65mm axis height has its base on HP and is being cut by a sectional plane at 45° which bisects the axis of the cone. Draw its FV with section line & TV (sectional TV is not required)	5	CO5	L3	3.2.2
3	A line AB 75mm long is inclined at 30° to HP and 45° to VP. The end A is 20mm above HP and 25mm in front of VP. Draw its projections.	5	CO2	L3	3.2.2
4	A square pyramid base edge 35mm and axis height 55mm is resting on one of its base corners on HP such that apex is 30mm above HP. Draw its projections.	5	CO4	L3	3.2.2

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2
A line AB 75 mm long has its end A 45 mm in front of VP. The end B is 45 mm in front of VP. Draw the H.P. & P.P.
3
A pentagonal pyramid base 30 mm axis 15 mm inclination with the H.P. & P.P.

5	Trace an ellipse in which the focus directrix distance is 50 mm and eccentricity is 2/3.	5	CO1	L3	3.3.2
6	Draw F.V. for the following figure along X with 3 proper dimensions	5	CO3	L4	3.3.2

**Section-III Long Answer Question (Answer any 03 out of 05)
(Application, Analytical, Evaluation, Design Type) (30 Marks)**

1	Draw Sec. F.V. along A-A and TV for the following figure along with 8 proper dimensions.	10	CO3	L4	3.3.2
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2	A line AB, 75 mm long has its end A 15 mm above HP and 30 mm in front of VP. The end B is 45 mm above HP and 70 mm in front of VP. Draw the Projection of line AB and find its inclination with the HP & VP.	10	CO2	L3	3.2.3
3	A pentagonal pyramid has a height of 60mm and the side of base 30mm rests on one of its base edges on HP such that the axis is 30° inclined to HP and the TV of the axis is 45° inclined to the VP. Draw its projections.	10	CO4	L4	3.3.2
4	Draw the isometric view of the given two views.	10	CO6	L4	3.4.1
5	<p>A cone of 50mm base diameter and 65mm axis height has its base on HP and is being cut by a sectional plane 40° inclined to HP and bisects the axis of the cone. Draw its FV, Sectional TV and True shape of the section.</p>	10	CO5	L4	3.2.2



End Semester Examination, February 2023
F. E. / F.T. SEMESTER I (CBCGS-HME 2020)

Branch:	Group 1 (CIVIL, CS&E, COMP, AI&DS, E&CS, IoT)		
Subject:	Workshop & Manufacturing Practices-I	Q.P. Code:	R1G10053
Subject Code:	ESC105	Duration:	1 hours
		Max.Marks:	30

Instructions:

1. All sections are compulsory
2. Figures to the right indicate full marks.
3. Assume suitable data if necessary and state the assumptions clearly.

Section-I	Short Answer Question(Answer any 05 questions out of 06) (10 Marks) (Fundamental, Core Types)
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Q. No.	Short Answer Question(Answer any 05 questions out of 06)	Marks	CO	RBT Level	PI
1	Enlist any four CNC codes	2	CO4	L2	2.1.2
2	Enlist any four Measuring tools	2	CO2	L2	2.1.2
3	Enlist different types of gas flames	2	CO5	L2	2.1.2
4	Differentiate between Thermosetting and Thermoplastic (Any two).	2	CO3	L2	2.1.2
5	State any two examples for hazards in hand tools	2	CO2	L1	2.1.2
6	What is difference between drilling, boring, reaming operations	2	CO1	L1	2.1.2

Section-II	Descriptive Answer Question (Answer any 02 out of 03) (10 Marks) (Descriptive,Comprehension Types)
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1	State any five safe work practices in bench work and fitting shop.	5	CO2	L2	2.1.2
2	Explain Blow Molding process with neat sketch	5	CO3	L1	1.4.1
3	Draw flow chart for steps involved in casting process	5	CO1	L2	3.2.1

Section-III	Long Answer Question (Answer any 01 out of 02) (10 Marks) (Application, Analytical, Evaluation, Design Type)
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1	What is non conventional machining? Explain any one method in detail	10	CO1	L2	1.4.1
2	Write program for drilling a hole at center of rectangular plate of dimension (80mm* 60mm* 40mm) (l*b*h) with absolute positioning	10	CO 4	L3	1.4.1