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4th Semester, CSE(CY)
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Preface: All the QPs (CIE 1, CIE 2, SEE) for almost all the subjects (ESC: EEE and ETC: Cyber Security) (Except Chem lab CIE and SEE) have been compiled. Took quite some digging, but I hope that this helps.

SEMESTER END EXAMINATIONS – SEPTEMBER / OCTOBER 2023

Program	:	B.E :- Common to CSE / ISE / CSE(CY) / AI & DS / BT / AI & ML / CSE (AI&ML)	Semester	:	II
Course Name	:	Numerical Techniques and Differential Equations	Max. Marks	:	100
Course Code	:	MAC21	Duration	:	3 Hrs

Instructions to the Candidates:

- Answer one full question from each unit.

UNIT - I

1. a) Give the geometrical interpretation of Newton-Raphson iteration formula. CO1 (02)
   b) Expand $\sin^{-1} x$ in powers of x up to second degree term. CO1 (04)
   c) Solve the following system of non-linear equations using Newton-Raphson method (Carry out two iterations) CO1 (07)
   $x^2 + y^2 = x,\ x^2 - y^2 = y$, given that $x_0 = 0.8$ and $y_0 = 0.4$.
   d) The temperature T at any point (x, y, z) in space is $T = 400xyz^2$. Find the highest temperature on the surface of the unit sphere $x^2 + y^2 + z^2 = 1$. CO1 (07)

2. a) Write Taylor's series for the function of one variable. CO1 (02)
   b) Examine $x^3 + y^3 - 3axy$ for extreme values. CO1 (04)
   c) Expand the function $xy^2 + \cos(xy)$ about the point $\left(1, \frac{\pi}{2}\right)$ upto second degree terms. CO1 (07)
   d) A rectangular box open at the top is to have volume of 108 cubic ft. Find the dimension of the box if its total surface area is minimum. CO1 (07)

UNIT - II

3. a) Write the steps involved in finding the orthogonal trajectories of the curve $f(x, y, c) = 0$. CO2 (02)
   b) Suppose that an object is heated to 300^0 F and allowed to cool in a room whose air temperature is 80^0 F. After 10 minutes the temperature of the object is 250^0 F. What will be its temperature after 20 minutes? CO2 (04)
   c) Using Taylor's series method, find the particular solution of $\frac{dy}{dx} - 2y = 3e^x; y(0) = 0$ at $x = 0.2$, considering terms up to fourth degree. Compare the result with the exact solution. CO2 (07)
   d) Solve the initial value problem, $y' = 0.25y^2 + x^2, y(0) = -1$ at $x = 0.2$ by taking $h = 0.2$ using Runge - Kutta method of fourth order. CO2 (07)

4. a) Write any two differences between analytical and numerical methods. CO2 (02)
   b) A bungee jumper with a mass of 68.1 Kgs leaps from a stationary hot air balloon. Use $\frac{dv}{dt} = g - \frac{cv^2}{m}$ where $g = 9.8 m/s^2, c = 0.25 kg/m$ to compute velocity for the first three seconds of free fall by Euler's method in steps of 1 second. CO2 (04)

c) Solve the initial value problem $\frac{dy}{dx}=\frac{2xy+e^x}{x^2+xe^x}$, $y(1)=0$ at $x=1.2$ by taking step length of 0.2, using Modified Euler's method. Carry out 2 iterations. CO2 (07)

d) Show that the family of curves $\frac{x^2}{a^2+\lambda}+\frac{y^2}{b^2+\lambda}=1$ is self-orthogonal, where λ is the parameter. CO2 (07)

UNIT - III

5. a) Write the steps involved in solving Cauchy's LDE. CO3 (02)

b) If $D=\frac{d}{dx}$ and $X=X(x)$, then prove that $\frac{1}{D-a}X=e^{ax}\int Xe^{-ax}dx$. CO3 (04)

c) Solve $(D^2-4D+4)y=8x^2e^{2x}\sin 2x$. CO3 (07)

d) Solve $y''+2y'+2y=e^{-x}\sec^3 x$ by the method of variation of parameters. CO3 (07)

6. a) Define linear and non-linear differential equations with example. CO3 (02)

b) If $k>0$, then show that the general solution of $y''-k^4y=0$ can be expressed as $y=C_1\cos kx+C_2\sin kx+C_3\cosh kx+C_4\sinh kx$. CO3 (04)

c) Solve $(3x+2)^2y''+3(3x+2)y'-36y=8x^2+4x+1$. CO3 (07)

d) Solve $(D^2+D)y=2+2x+x^2$, $y(0)=8, y'(0)=-1$. CO3 (07)

UNIT-IV

7. a) Obtain the expression for $\Delta^2 y_n$ in terms of y values. CO4 (02)

b) Construct the backward difference table representing the function $y=\cos x+x^2+2$ over the interval $(2,3)$ with step length $h=0.2$ and hence write the value of $\nabla^2 y_3$. CO4 (04)

c) Use Simpson's 1/3rd rule to evaluate $\int_0^1 \frac{1}{1+x^2}dx$ considering seven equidistant ordinates and hence find an approximate value of π. CO4 (07)

d) Use an appropriate interpolation formula to find the radius of curvature at $x=3.0$ from the following data: CO4 (07)

x	3	5	7	9	11
y	28.27	78.54	153.93	254.47	380.13

8. a) Given two points (x_0,y_0) and (x_1,y_1), write Lagrange's inverse interpolation formula. CO4 (02)

b) Evaluate $\int_0^1 e^x dx$ approximately in steps of 0.2 by using trapezoidal rule. CO4 (04)

c) Using Newton's divided difference formula find an interpolating polynomial for the following data and hence find $f(1)$. CO4 (07)

x	-1	0	2	3
$f(x)$	-8	3	1	12

d) A survey conducted in a factory reveals the following information. Estimate the probable number of persons in the income group 20 to 25. CO4 (07)

Income per hour (Rs.)	<10	10 - 20	20 - 30	30 - 40	40 - 50
No. of persons	20	45	115	210	115

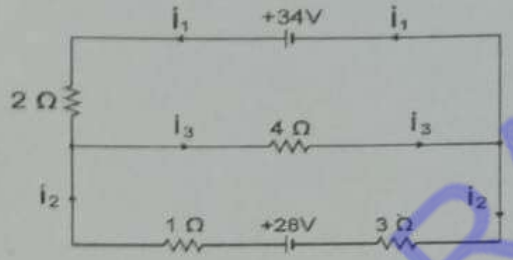
UNIT-V

9. a) Define row echelon form of a matrix. CO5 (02)

b) Use Gauss Seidel method to solve the system of equations: CO5 (04)
$2x+17y+4z=35;\ x+3y+10z=24;\ 28x+4y-z=32$
Use (0, 0, 0) as the initial approximation and carry out 2 iterations.

c) If the characteristic equation of the matrix $A=\begin{bmatrix}3 & -2 & 4\\ -2 & 6 & 2\\ 4 & 2 & 3\end{bmatrix}$ is CO5 (07)
$(\lambda-7)^2(\lambda+2)=0$, find its non-singular modal matrix.

d) Write the system of linear equations from the following electrical network. CO5 (07)
Use Gauss-elimination method to find currents in various branches.



10. a) Explain the geometrical interpretation of infinitely many solutions for the system of linear equations $2x+y=3$ and $4x+2y=6$. CO5 (02)

b) Use Rayleigh's power method to find the largest eigenvalue and the corresponding eigenvector of the matrix $A=\begin{bmatrix}2 & 2 & 1\\ 1 & 3 & 1\\ 1 & 2 & 2\end{bmatrix}$ by taking $\begin{bmatrix}1\\0\\0\end{bmatrix}$ as the initial approximation to the eigenvector. Carry out two iterations. CO5 (04)

c) Find the conditions for a, b, c so that the system is solvable: CO5 (07)
$-2x+y+z=a;\ x-2y+z=b;\ x+y-2z=c$
Find all possible solutions if $a=1,\ b=1,\ c=-2$.

d) Suppose the rabbit population r and the wolf population w are governed by CO5 (07)
$\frac{dr}{dt}=4r-w,\ \frac{dw}{dt}=2r+w$. If initially $r=240$ and $w=300$, what are the populations at time t?

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DEPARTMENT OF MATHEMATICS

Sub Code:	MAC21	Sub:	Numerical Techniques and Differential Equations	Test :	CIE-02
Sem	II				
Date:	04-09-2023	Term:	01.06.2023 to 09.09.2023	Marks:	30

Note: Answer any TWO full questions. Each main question carries 15 marks

Q.No.		Questions	Blooms Level	CO's	Marks
1.	(a)	Find the first order divided difference of $x_0 = 1$ & $x_1 = 2$ when $y = x^3 - 2x + 5$.	L1	CO4	2
	(b)	Apply Gauss Elimination method to solve the following systems of equations $2x + y + z = 10;\ 3x + 2y + 3z = 18;\ x + 4y + 9z = 16$.	L3	CO5	3
	(c)	Solve the differential equation $(D^2 - 4D + 4)y = 8x^2 e^{2x} \sin 2x$.	L4	CO3	5
	(d)	The velocity of a train which starts from rest is given by the following table, the time being reckoned in hours from the start and the speed in km/hour, t: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20 v: 16, 28.8, 40, 46.4, 51.2, 32.0, 17.6, 8, 3.2, 0 Estimate approximately the total distance run in 20 hours using Simpson's rule.	L4	CO4	5
2.	(a)	Solve the differential equation $\frac{d^4y}{dx^4} + 4y = 0$.	L1	CO3	2
	(b)	Find the missing terms from the following data x: 0, 1, 2, 3, 4, 5 y: 0, -, 8, 15, -, 35	L2	CO4	3
	(c)	Find the values of μ and η such that the equations $x + y + z = 6;\ x + 2y + 3z = 10;\ x + 2y + \mu z = \eta$ have (i) no solution (ii) unique solution (iii) an infinite number of solutions.	L3	CO5	5
	(d)	Solve the differential equation $(3x-2)y'' - 3y' = 9\sin(\log(3x-2))$	L4	CO3	5
3.	(a)	Explain the geometrical interpretation for the system of linear equations $2x + 3y = 5$ and $x + 1.5y = 2.5$	L1	CO5	2
	(b)	Using Newton's backward interpolation formula, find the value of $y'(1.7)$ from the following data x: 1.4, 1.6, 1.8, 2 $f(x)$: 9.88, 11.68, 13.72, 15.01	L3	CO4	3
	(c)	For the following data, find x as a polynomial in y using Lagrange's method and hence find x for $y = 5$. x: 2, 10, 17 y: 1, 3, 4	L3	CO4	5
	(d)	Solve the differential equations $y'' + y = \frac{1}{1+\sin x}$ by the method of variation of parameters:	L4	CO3	5

DEPARTMENT OF MATHEMATICS

Sub Code:	MAC21	Sub:	Numerical Techniques and Differential equations		Test:	I
Time:	09.30am to 10.30am	Term:	01-06-2023 TO 09-09-2023		Marks:	30
Date:	12-07-2023	Semester:	II	Section:	CS/IS/AI&DS/AI&ML, CS(CS), CS(AI&ML), BT	

Note: Answer any TWO full questions. Each main question carries 15 marks.

Q.No.		Questions	Blooms Level	CO's	Marks
1.	(a)	Using Newton-Raphson method, find a root of $3x-\cos x-1=0$ By taking initial guess as $x_0=0.6$.(Carryout 1 iteration).	L1	CO1	2
	(b)	Expand $f(x,y)=e^{2x-y}$ in a Taylor series about the point (0,1) up to second degree terms.	L2	CO1	3
	(c)	Find the orthogonal trajectories of the family of curves $x^2+y^2+2\lambda x=0$ where λ is a parameter.	L3	CO2	5
	(d)	Find the minimum value of $x^2+y^2+z^2$, given that $xyz=a^3$.	L4	CO1	5
2.	(a)	Write the DE of the closed circuit involving L, C and R in series with applied e.m.f.	L1	CO2	2
	(b)	Using Euler's method, solve $\frac{dy}{dx}=3x^2+1,\ y(1)=2$ by taking $h=0.5$.	L2	CO2	3
	(c)	Solve the system of non-linear equations $\sin xy+x-y=0$; $y\cos xy+1=0$ using Newton-Raphson method with (1,2) as initial approximation. (Carryout 1 iteration).	L4	CO1	5
	(d)	Using R-K method of 4th order, solve $\frac{dy}{dx}=3x+\frac{y}{2},\ y(0)=1$ at $y(0.1)$ by taking $h=0.1$.	L3	CO2	5
3.	(a)	Verify that the point $(-7,-7)$ is maxima or minima for the function $f(x,y)=x^3+y^3-63(x+y)+12xy$.	L1	CO2	2
	(b)	If the temperature of the air is maintained at 150°c and the temperature of the body cools from 70°c to 40°c in 10 minutes then find when the temperature of the body after 30 minutes.	L2	CO2	3
	(c)	Using Modified Euler's method, solve $\frac{dy}{dx}=x+\sin y,\ y(0)=1$ at $y(0.2)$ by taking $h=0.2$.	L3	CO1	5
	(d)	Expand $x^2\sin^2 x$ in powers of x up to x^4.	L5	CO1	5

SEMESTER END EXAMINATIONS – SEPTEMBER / OCTOBER 2023

Program	:	B.E :- Common to CSE / ISE / CSE(CY) / AI & DS / BT / AI & ML / CSE (AI&ML)	Semester	:	II
Course Name	:	Engineering Chemistry	Max. Marks	:	100
Course Code	:	CYC22	Duration	:	3 Hrs

Instructions to the Candidates:

- Answer one full question from each unit.

UNIT - I

1.	a)	What is electrode potential? Derive the Nernst equation for single electrode potential.	CO1	(08)
	b)	Explain the following battery characteristics: i) Energy density ii) Energy efficiency.	CO1	(06)
	c)	What are concentration cells? Two copper electrodes placed in copper sulphate solutions of equal concentration are connected to form a concentration cell. What is the cell voltage if one of the solutions is diluted until the concentration of Cu^{2+} ions is $1/5^{th}$ of its original value? What is the cell voltage after dilution?	CO1	(06)
2.	a)	What are reference electrodes? How to determine unknown electrode potential using calomel electrode.	CO1	(08)
	b)	Write the cell representation, electrode reactions, and calculate the electrode potential at 298K for a galvanic cell formed by immersing Zinc rod in $5X10^{-2}M$ zinc nitrate solution and silver rod in $1.2 \times 10^{-1}M$ silver nitrate solution. The standard E^0 valves of Zn and Ag electrodes are -0.76V and +0.80V respectively.	CO1	(06)
	c)	Write the construction and working of Lithium-ion battery.	CO1	(06)

UNIT - II

3.	a)	Outline: (i) Cathodic protection (ii) Waterline corrosion.	CO2	(08)
	b)	Give reason: (i) Zinc gives better protection to iron than tin under corrosive environment. (ii). Wire mesh corrodes faster at the joints. (iii) Larger cathodic area results in intense corrosion.	CO2	(06)
	c)	Explain the mechanism of electrochemical corrosion with an example.	CO2	(06)
4.	a)	What is differential aeration corrosion? Explain waterline pitting corrosion.	CO2	(08)
	b)	What are corrosion inhibitors? Categorize inhibitors used for corrosion control giving two examples.	CO2	(06)
	c)	Justify: (i) Iron corrodes faster than aluminium, even though iron placed below aluminium in electrochemical series. (ii) Zinc is more readily corroded when coupled with copper than with lead.	CO2	(06)

UNIT - III

5.	a)	Write the preparation and uses of following polymers: (i) Teflon (ii) PMMA.	CO5	(08)
	b)	Mention the applications of liquid crystals in liquid crystal displays.	CO5	(06)
	c)	Elaborate the Liquid crystalline behaviour in PAA series.	CO5	(06)

6.	a)	What are conducting polymers? Give the conduction mechanism in polyacetylene.	CO5	(08)
	b)	Define the terms: (i) Glass transition temperature (ii) Liquid crystal (iii) Polymer.	CO5	(06)
	c)	What are liquid crystals? How are they classified? Give examples.	CO5	(06)

UNIT- IV

7.	a)	What are nanomaterials and explain the hydrothermal method for the synthesis of nanomaterials.	CO4	(08)
	b)	Explain in brief about the determination of iron by using potentiometric sensors.	CO4	(06)
	c)	What is top-down approaches of synthesis of nanomaterials? Mention nano materials characterization techniques used.	CO4	(06)
8.	a)	Explain the solution combustion synthesis method of nanomaterials and discuss the applications of nano materials.	CO4	(08)
	b)	Mention the application of pH-sensor and write in brief about determination of pH of the solution by using pH-sensor.	CO4	(06)
	c)	How the estimation of copper is done by using colorimetric optical sensors?	CO4	(06)

UNIT - V

9.	a)	Explain the effect of e-waste on human health.	CO5	(08)
	b)	Explain the construction and working of PV cell.	CO5	(06)
	c)	Elaborate on recycling of E-waste.	CO5	(06)
10.	a)	How fuel cells differ from battery. Explain the construction and working of methanol-oxygen fuel cell.	CO5	(08)
	b)	Explain the construction and working of polymer electrolyte fuel cell.	CO5	(06)
	c)	Discuss in details the extraction of gold from e-waste.	CO5	(06)

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OBILES AND SMART WATECHES ARE BANNED

RAMAIAH INSTITUTE OF TECHNOLGY, BANGALRORE – 560054

DEPARTMENT OF CHEMISTRY, II SEM B.E, TEST – 1

SUB: ENGG. CHEMISTRY CYC22/CYV22 Credits: 3:0:0 Term Days: 01-06-2023 to 09-09-2023

Instructions: answer any two full questions. Each carries 15 marks

Q.NO	Question	Marks	Course out comes
1	a) Give reason: (i) Ordinary voltmeter cannot be used in determination of emf of a Galvanic cell. (ii) The electrode potential of calomel electrode is reversible with chloride ion concentration. (iii) For a given galvanic cell, the emf decreases as ionic concentration at anodic half cell increases.	5	CO1
	b) Explain differential aeration corrosion with a suitable example? Why less oxygenated part acts as anode?	5	CO2
	c) What is electrode potential? A galvanic cell is constructed by dipping zinc rode in 5×10^{-2} M zinc nitrate solution and silver rod in 1.2×10^{-1} M silver sulphate solution. Write cell reaction and calculate the e.m.f of the cell. Given: Standard reduction potentials of zinc and silver metals are -0.76 V and +0.80 V respectively.	5	CO1

2	a) Justify: (i) There is no shelf discharge in reserve batteries. (ii) A salt bridge is used in the construction of a Galvanic cell. (iii) In a concentration cell, no electricity flow when the concentration of metal ion is same in both the half cell.	5	CO1
	b) Discuss the following factors which influence the rate of corrosion: (i) Relative area of anode and cathode (ii) Hydrogen over voltage	5	CO2
	c) What are modern batteries? Write construction and working of Ni-metal hydride battery.	5	CO1
3	a) Justify: (i) The corrosion product formed on aluminium is Al_2O_3; it is passive in nature, whereas corrosion product formed on iron is Fe_2O_3; it is active in nature. ii) Why zinc in contact with silver undergoes corrosion faster than zinc in contact with copper.	5	CO2
	b) Explain the following characteristics of a battery (i) Capacity (ii) % Energy efficiency	5	CO1
	c) Explain the mechanism of rusting of iron by electrochemical theory by taking partially immersed iron rod in NaCl solution.	5	CO2

NO CELL PHONES!

M.S. RAMAIAH INSTITUTE OF TECHNOLGY, BANGALRORE – 560054

DEPARTMENT OF CHEMISTRY

Course: B.E. II Sem (CS, IS, AI&ML, CY, AI&DS, BT) Sub: Engineering Chemistry, Code: CYC22 Term: 01-06-2023 To 09-09-202

CIE Test: II Max. Marks: 30, Time: 60min Syllabus: L18-L35

INSTRUCTIONS: ANSWER ANY TWO FULL QUESTIONS. EACH CARRIES 15 MARKS.

Q.NO	Question	Marks	COs
1	(a) Explain the Hydrothermal method for synthesis of nanoparticles	5	CO4
	(b) Explain the determination of Iron by potentiometric sensor method.	5	CO4
	(c) Write the monomers used in the preparation of the following polymers and mention any two applications of each: (i) Teflon (ii) PMMA	5	CO3
2	(a) Define nanoparticles. List out the any four applications of Nanomaterials.	5	CO4
	(b) Describe the construction and working of Methanol-oxygen fuel cell. Mention any two applications.	5	CO5
	(c) What is glass transition temperature? Describe the effect of (i) Intermolecular forces (ii) Molecular weight of a polymer chain, on its glass transition temperature	5	CO3
3	(a) Define Beer's law and Lamberts law. In a colorimetric estimation, cell of 2.0 cm path length, the solution of a substance shows the absorbance value of 1.0. If the molar absorptivity of the compound is 2×10^4 L mol^{-1} cm^{-1}, calculate the concentration of the substance in solution.	5	CO4
	(b) Define homologous series. Elaborate the Liquid crystalline behaviour in PAA series.	5	CO3
	(c) Describe the conduction mechanism in polyacetylene.	5	CO3

SEMESTER END AND BACKLOG SUBJECT EXAMINATIONS - SEPTEMBER / OCTOBER 2023

Program	: B.E. - Common to all Programs	Semester	: I / II
Course Name	: Professional Writing Skills in English	Max. Marks	: 50
Course Code	: HSCC15 / HSCC25	Duration	: 2 Hrs

Instructions to the Candidates:

- **PART- A** : Answer all the questions
- **PART- B** : Answer one full question from each unit.

PART- A

Choose the correct option from those given in each of the sentence below. CO1- CO5 (10)

1. The parents' ___ to the child's demand in the shopping mall. Use suitable phrasal verb.
   a) gave into b) gave up c) gave away d) gave in
2. The program is soon going to begin. Identify the part of speech of the underlined word.
   a) adverb b) adjective c) verb d) conjunction
3. Which of these is NOT a feature of precise writing?
   a) Brevity b) completeness c) logical d) creative
4. Our car __ in the middle of the high way. Use the correct phrasal verb.
   a) brokeb) broke away c) broke down d) broke into
5. I 'll get there, __ I have to walk all the way. Use suitable connective.
   a) by all means b) meanwhile c) as a result d) even if
6. _____ his warning, he continued being late to the class. Choose the right option.
   a) No matter how b) though c) because d) despite
7. I have learnt Sanskrit at school. The tense used is
   a) past perfect b) perfect perfect
   c) present perfect continuous d) present tense
8. Professional writing demands _____ use of language.
   a) factual b) creative c) figurative d) poetic
9. Which of these is NOT a punctuation mark?
   a) comma b) Hyphen c) Apostrophe d) underline
10. I don't mind ___ the cook but I am not going to do anything with the washing of clothes. Use the right option.
    a) to help b) helping c) help d) for helping

PART- B

UNIT-I

1. Use the given phrasal verbs in your own sentence. CO2 (08)

i) Get through ii) Find out iii) Grow up
iv)Make over v) Look into vi) Break down
vii) Let down viii) Run out of

2.	Rewrite the following sentences using appropriate subject verb agreement. i) Either Ravi or Manu have taken my key. ii) The juryare not satisfied with his performance. iii) One of my brothers have gone abroad for studies. iv) The majority here feel that the decision was not correct. v) Besides the minister, the bodyguard were killed in the accident. vi) Someone have left a message for you. vii) Every student have to complete the task by Monday. viii) Multiple crises seem to have been troubling them.	CO2	(08)

UNIT- II

3.	What are the essential features for a good piece of writing? Discuss the steps to be considered while writing an effective précis?	CO3	(08)
4.	Compose a short reflective essay on the given topic (Max 400 words) Has Online reading enriched our communicative competency?	CO3	(08)

UNIT- III

5.	Is report a form of technical writing? Justify your answer by mentioning its characteristics and significance.	CO3	(08)
6.	Rewrite the following in passive voice. i) They have announced our results. ii) Let him finish the book first. iii) Do not insult the weak. iv) Close the door. v) Call him tomorrow. vi) Have you answered all the questions? vii) We must listen to his words. viii) He made a remarkable discovery.	CO3	(08)

UNIT- IV

7.	Do you think listening is significant in communication? What are the barriers that may occur in listening? Suggest solutions.	CO4	(08)
8.	Apply for the post of Software developer in any company of your choice along with a suitable resume. Assume necessary information.	CO4	(08)

UNIT- V

9.	Differentiate Intra and Interpersonal communication. Discuss the importance of interpersonal skills at workplace.	CO5	(08)
10.	What do you understand by nonverbal communication? Explain its role during presentations and interviews.	CO5	(08)

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RAMAIAH INSTITUTE OF TECHNOLOGY
(Autonomous Institute, Affiliated to VTU)
DEPARTMENT OF HUMANITIES
Programme: BE II Semester (Common for all branches)

Term: 01:06:2023-09:09:2023	**Course:** Professional Writing Skills in English	**Course Code:** HSCC25
CIE: Test-2	Semester: II	**Sec:** M to V
Date: 05:08:2023	**Time:** 1Hour	**Max Marks:** 30
• **Portions for the test:** Unit-3, 4 & 5		**Credits:** 1:0:0

• **Instructions:** Part-A (MCQ) is compulsory. Part-B: Answer **ANY TWO** full questions.

Q. NO	QUESTIONS	Marks	Bloom's Level	Cos
	Part-A (MCQ Compulsory)			
1.	**Choose the correct option for the following questions.**	[6X1=06]	Lo_1	Co_{3-5}
A.	**The purpose of citing sources in a report is .....** a) To show off our knowledge b) To add more pages to the report c) To avoid writing our own ideas d) To provide evidence for our claims and give credit to original authors			
B.	**A key characteristic of a technical proposal is .....** A) Emotional appeals and personal anecdotes B) Extensive use of jargon and technical terms C) Vague and ambiguous language D) Clear and logical presentation of technical information			
C.	**A common barrier to effective listening is .....** a) Taking notes during a conversation b) Asking clarifying questions c) Prejudging the speaker d) Nodding in agreement			
D.	**What is skimming in reading?** a) Reading slowly and carefully b) Reading word by word c) Reading only the conclusion d) Reading only the headings and subheadings to get an overview			
E.	**A key aspect of effective presentation skills is .....** A) Speaking rapidly to cover more content B) Reading directly from slides or notes C) Engaging with the audience and maintaining eye contact D) Using complex vocabulary to impress the audience			
F.	**Why is it important to knowabout the company before an interview?** a) To find out about the interviewer's personal life b) To memorize the company's entire website c) To ask unrelated questions d) To understand the company's values, products, and industry position			
	Part-B			
	Answer ANY TWO full questions from the following:	[2X12=24]	Lo	Co
2. A.	Discuss the key components thatyou use to make up a well-structured report.	6	Lo_2	Co_3
B.	**Change the following into reported speech.** 1. "I like ice cream," he said. 2. "We are going to the park," she told me. 3. "He plays the guitar," they said. 4. "She is writing a letter," he said. 5. "I have seen that movie," she said. 6. "Where are you going?" he asked.	6	Lo_3	Co_2
3. A.	Draft a letter in response to the job notification seeking a fresh B.E student for the post of 'Test Engineer' with a suitable resume. Assume the necessary information.	6	Lo_3	Co_4
B.	Write an email to be sent to the event coordinator informing him/her about your inability to attend the meeting scheduled for the next week.	6	Lo_5	Co_4
4. A.	Explain the differences between intra and interpersonal communication skills that are used in a professional setting.	6	Lo_1	Co_5
B.	Discuss the strategies that youcan employ during a presentation.	6	Lo_2	Co_5

M.S. Ramaiah Institute of Technology, Bangalore-560 054
DEPARTMENT OF HUMANITIES
Programme: B E II Semester (Chemistry Cycle)

Term: 01.06.23 to 09.09.23	**Course:** Professional Writing Skills in English	**Course Code:** HSCC25
CIE: Test-1	Semester: II	**Sections :**A to L
Max Marks: 30	**Time:** 1 Hour	**Date:** 13.07.2023
Portions for the test: Unit-1 and 2		**Credits:** 1:0:0

Instructions to Candidates: Answer **Part A & any two full questions from Part B**

Q.		
	Part A : MCQ (compulsory)	**6 Marks** Co1, Co2 L2
1.	___ he comes, tell him that I am not there. Choose the right connective. a) so that b) though c) in case d) despite	
2.	A committee __ been formed to look into the matter. Use the right option. a) were b) have c) are d) has	
3.	He ___ his poems in Urdu. Use the appropriate tense form. a) has writing b) writes c) had writing d)write	
4.	Which of these must be avoided in professional writing? a) Facts b) Grammar c) Punctuation d) Personal feelings	
5.	Which of these is NOT a punctuation mark? a) apostrophe b) semicolon c) asterisk d) hyphen	
6.	Which of these is NOT a feature of précis writing? a) Brevity b) completeness c) logical d) creativity	
	Part B : Answer any two full questions	
2. A	What are the essential features of formal writing?	[6 m] Co2, L2
B	Use the given phrasal verbs in your own sentence. i) back up ii) come across iii) make over iv) cut in v) fall apart vi) carry forward	[6 m] Co1, Co2, L3
3. A	Rewrite the following sentences using appropriate subject verb agreement. a) The jury consisting of eight members are invited. b) One of the actors have done a wonderful performance. c) The majority here feel that the decision was not correct. d) One of my friends have done this painting. e) A large number of people still lives below poverty line in our country. f) Everyone are required to submit the assignment tomorrow.	[6 m] Co1, Co2 L3
B	Draft a suitable précis for the given passage. Adults are scared of death, as children are scared of darkness, so says Bacon, the legendary Renaissance English essayist. It is, however, just not children who are scared of darkness. After all how many of us can claim that darkness does not frighten us? Imagine yourself being caught in the darkness of night with no one around you! Even if you are trapped within your own house that you have lived in for years and years together, you don't really enjoy seeing your large, lonely shadow against your own walls. Similarly, not many of us feel like walking alone in long streets with no light around. And even if the grown-ups choose to watch late night horror movies in big theatres, a realization that they have to cross a long, unknown, dark street all alone after the show is over can give them a cold shiver down their spines.	[6 m] Co2, L3
4. A	Identify the errors in the following sentences. a) You will fail unless you don't study carefully. b) He married lately in life. c) Someone have left his mobile on the desk. d) She should cut down with her expenses. e) He combs his hairs backward. f) Rajesh is weak at Mathematic.	[6 m] Co1, Co2 L4
B	Draft suitable composition for the topic: Impact of technology on human life (300 words)	[6] Co2, L6

SEMESTER END AND BACKLOG SUBJECT EXAMINATIONS - SEPTEMBER / OCTOBER 2023

Program	: B.E. - Common to all Programs	Semester	: I / II
Course Name	: Constitution of India	Max. Marks	: 50
Course Code	: HSCC16 / HSCC26	Duration	: 2 Hrs

Instructions to the Candidates:

- **PART- A** : Answer all the questions
- **PART- B** : Answer one full question from each unit.

PART- A

Answer all the questions: CO1 (10)

1. The right to live with human dignity is included in
   (a) The right to social justice (b) The right to life
   (c)The right to equal protection of laws (d)None of the above
2. Right to equality under _____is applicable to both, citizens and non-citizens.
   (a) Article 14 (b) Article 15 (c) Article 16 (d) Article 18
3. Which article prohibits employment of children in hazardous industries?
   (a) Article 23 (b) Article 24 (c) Article 25 (d) Article 26
4. Fundamental duty demands
   (a) To avoid corruption (b) To abide by moral rules
   (c) To abide by the constitution. (d) To work sincerely
5. The aim of the Directive Principles of State Policy is
   (a) To protect the rights of workers
   (b) To promote the general welfare of the society
   (c) To make special rules to protect women, children and weaker section of the society
   (d) All the above
6. Mandal Commission deals with
   (a) Rights of the minority
   (b) Laws relating to sexual harassment
   (c) Reservation for backward class people
   (d) Laws relating to child labour
7. A public authority is directed to discharge public duty by issuing a writ of
   (a) Habeas Corpus. (b) Certiorari.
   (c) Mandamus. (d) Quo-Warrante.
8. A person shall not be qualified to be chosen as a member of Rajya Sabha unless he is
   (a) Not less than 21 years of age (b) Not less than 35 years of age
   (c) Not less than 30 years of age (d) Not less than 25 years of age
9. Right to education (RTE) was included in the Constitution by the
   (a) 42nd Amendment Act, 1976. (b) 44th Amendment Act, 1978
   (c) 45th Amendment Act, 1980. (d) 86thAmendment Act, 2002.

10. Once the proclamation of financial emergency is approved by the Parliament, it continues for
(a) Six Months. (b) One Year (c) Two Years (d) Indefinitely

PART - B

UNIT - I

1.		Expand the words 'we the people of India' enshrined in the preamble of Indian constitution.	CO1	(08)
2.	a)	Explain briefly the right to equality (articles 14-18) with exceptions.	CO1	(04)
	b)	'Right to freedom, article 19 is not absolute' Justify the statement.	CO1	(04)

UNIT - II

3.	'Fundamental duties are non- Justiciable provisions.' Elaborate this statement with list of duties .	CO2	(08)
4.	'Directive principles of state policies are essential to achieve the goal of welfare state' justify this statement.	CO2	(08)

UNIT - III

5.	Differentiate between executive, legislative & judicial powers of the President of India.	CO3	(08)
6.	Supreme Court of India is a highest court to appeal in India 'Analyze the statement in connection with the powers of Supreme Court.	CO3	(08)

UNIT- IV

7.	What is universal adult franchise? Discuss the qualification and grounds of disqualification for the members of parliament.	CO4	(08)
8.	'Conducting free and fair election is fundamental responsibility of Election Commission' analyze this statement.	CO4	(08)

UNIT- V

9.	Explain briefly the grounds, proclamation and effects of national emergency.	CO5	(08)
10.	'42nd amendment is considered as revision of the Indian Constitution' Elaborate the statement.	CO5	(08)

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Ramaiah Institute of Technology(Autonomous Institute, Affiliated to VTU) Department of HUMANITIES. Programme: B. E.		
Term:01-06-2023 to 09-09-23	**Course: Constitution of India**	**Course Code:HSCC26**
CIE: Test 1	**Semester:** II	**Sec:** A to L
Max Marks: 30	**Time:** 1Hr	**Date:14-07-2023**
Portions for the test: unit-1 & unit-2		

Instructions to Candidates:ANSWER THE FOLLOWING:

Sl#	Question	Marks	Bloom's Level	COs
I	**Choose any one appropriate answer:**	06	L1	Co1,Co2
1.	**A state which is independent both internally and externally is known as** (a)Republic (b) Secular (c) Socialist (d) Sovereignty			
2.	**There are no express limitations imposed on the following article-** (a) Art 16. (b) Art 17. (c) Art 18. (d) Art 19.			
3.	**The right to approach a court of law for the protection and restoration of fundamental rights is conferred upon the people under** (a) Right to constitutional remedies (b) Right against exploitation (c) Right to equality (d) Right to liberty			
4.	**A public authority is directed to discharge the public duty by issuing a writ of** (a) Habeas Corpus. (b)Certiorari.(c)Mandamus (d) Quo-Warranto.			
5.	**Right against exploitation can be restricted on the ground of** (a) Compulsory service given by the government (b) Simple imprisonment (c)Traffic in human beings (d) Forced Labor.			
6.	**Fundamental duties were added into the Constitution through ____ amendment.** (a) 23rd (b) 42nd (c) 44th (d) 73rd			

P T O

II	Answer any two full questions.			
1.	(a) Explain the right to equality (Articles 14-18) with exceptions.	(06)	**L2**	**Co1**
	(b) Discuss various aspects of right to freedom. (Articles 19 to 22)	(06)	**L2**	**Co1**
2.	(a)Discuss the salient features of Indian Constitution and the ideals enshrined in the preamble.	(06)	**L2**	**Co1**
	(b)Analyze the provisions of right to freedom of religion (Articles 25-28).	(06)	**L4**	**Co1**
3.	(a) What is WRIT? Define various kinds of WRITS.	(06)	**L2**	**Co1**
	(b) Differentiate between fundamental rights and fundamental duties.	(06)	**L3**	**Co2**

(Autonomous Institute, Affiliated to VTU)

Department of HUMANITIES. Programme: BE

Term:01-06-2023 to 09-09-2023	**Course: Constitution of India**	**Course Code: HSCC 26**
CIE: Test II	**Semester: II**	**Sec:** A to L
Max Marks: 30	**Time:** 1Hr	**Date: 04 -09-2023**
Portions for the test: unit- 3 ,4 and 5		
Instructions to the candidates: Answer the following.		

Sl #	Questions	Marks	Bloom's Level	COs
I	**Choose any one appropriate answer.**	6	L1	CO3, CO4, CO5
1	**Among the following, which is an optional house ?** a) Legislative assembly b) Legislative Council c) Lok Sabha d) Rajya Sabha.			
2.	**The quorum needed to conduct a meeting of Lok Sabha is** a) $1/3^{rd}$ of the total membership of the house b)$1/4^{th}$ of the total membership of the house c) $1/10^{th}$ of the total membership of the house d)$1/12^{th}$ of the total membership of the house .			
3	**The number of MLAs in a state shall not be below** a) 60 b) 70 c) 80 d) 100.			
4	**The advisory jurisdiction of Supreme Court can be invoked by** a) Citizens b) President of India c) council of ministers d) Advocate General.			
5	**Which amendment introduced 'armed rebellion' as a new ground for the national emergency proclamation ?** a) 73^{rd} b) 86^{th} c) 61^{st} d) 44^{th}.			
6	**What is the tenure of Rajya Sabha ?** a) 2 years b) 5 years c) 6 years d) Permanent.			

II	**Answer any two full questions.**			
Q1	a) Explain the process of Presidential election. Write a note on the executive and legislative functions of President.	(6)	L2	CO3
	d) Explain the grounds, duration and effects of national emergency.	(6)	L2	CO4
Q2	a) Analyze the role of election commission in maintaining the democratic features of India. Write a note on universal adult franchise.	(6)	L4	CO5
	b) Describe the composition and functions of Indian Parliament.	(6)	L2	CO3
Q3	a) Identify the original, appellate and judicial review powers of Supreme Court.	(6)	L3	CO4
	b) Differentiate between legislative assembly and legislative council.	(6)	L2	CO3

CO8 ⇒ RS
Indian Pol ⇒ RBLB / UL

SEMESTER END AND BACKLOG SUBJECT EXAMINATIONS - SEPTEMBER / OCTOBER 2023

Program	: B.E. – Common to all Programs	Semester	: I / II
Course Name	: Design Thinking	Max. Marks	: 100
Course Code	: AECC17 / AECC27	Duration	: 3 Hrs

Instructions to the Candidates:

- Answer one full question from each unit.

UNIT - I

1.	a)	Why is the term phase preferred over stage while describing different design thinking processes?	CO1	(08)
	b)	Explain how design thinking is used in business? Mention any relevant case study.	CO1	(08)
	c)	How does radical collaboration help?	CO1	(04)
2.	a)	Define mindset. Name the six key design thinking mindsets.	CO1	(08)
	b)	Why is design thinking required in STEM education? How can it be nurtured?	CO1	(08)
	c)	What is design thinking? How does a good designer arrive at the solution?	CO1	(04)

UNIT - II

3.	a)	Design a strategy if as a business you fail in prototype stage, what step you would take afterwards.	CO2	(10)
	b)	What are the strategies one need to consider before stepping into empathy interview?	CO2	(04)
	c)	Discuss how to create interview opportunities.	CO2	(06)
4.	a)	Elaborate on "The act of submerging oneself into a user's experience" with suitable example.	CO2	(05)
	b)	Explain the significance of Empathy Map.	CO2	(10)
	c)	What is the significance of the question "How might we"?	CO2	(05)

UNIT - III

5.	a)	Explain ideate phase.	CO3	(05)
	b)	You are asked to redesign an umbrella. Sketch two models of umbrella using design thinking approach. List the various empathy component that you have included in the design.	CO3	(10)
	c)	Explain "building on ideas" in ideate phase.	CO3	(05)
6.	a)	Explain Chi's three rules of prototyping.	CO3	(05)
	b)	Explain various stages in prototyping.	CO3	(05)
	c)	You are asked to modify a coffee mug. Sketch two models of mug using design thinking approach and mention the empathy that you have included in the model.	CO3	(10)

UNIT- IV

7.	a)	Explain the importance of testing in design thinking.	CO4	(07)
	b)	Criticize different type of testing.	CO4	(07)
	c)	List the various types of test you can conduct on a pen that you have designed.	CO4	(06)
8.	a)	Explain and sketch different phases in life cycle of a product.	CO4	(07)
	b)	Explain FAST diagram. Draw a typical FAST diagram.	CO4	(07)
	c)	For the following given problem identify the function and general solution. Justify the solution by the concept of value engineering.	CO4	(06)
		i) Problem 1 – Reduce the number of guards by combining entrances to strategic areas.		
		ii) Problem 2 - Reduce the travel time in your city during peak hours		

UNIT – V

9.	a)	Why is 'changing the scope' of the project an important design tool? When does one change the scope and what does it indicate? Explain using subsidized meals for elderly at Good kitchen as a case study.	CO5	(10)
	b)	Explain how data driven design is the future of designing considering the individualization and customization possible.	CO5	(10)
10.	a)	Explain the design principles: (i) Ethnography Isn't Only for Customers, (ii) The Power of Play using the Customer Contact Center at Toyota as a case study.	CO5	(10)
	b)	What are the different mechanisms built in futuristic farms to ensure higher efficiency?	CO5	(10)

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CIE – 1 Ramaiah Institute of Technology *(Autonomous Institute, Affiliated to VTU)* Programme: B.E		
Sem: 2nd	Course: Design thinking	Course Code: AECC27
CIE: Test 1	Term: 10.06.2023 – 09.09.2023	Sec: A,B,C,D,E,F,G,H,I,J,K,L
Max Marks: 30	Duration: 1Hr	Time: 12.30 to 01.30 PM
Credit: 2:0:0	Test Portions: LP-01 to 09	Date: 12.07.2023

Instructions to students: Answer any two full questions out of the three given questions.

Sl#	Question	Marks	Bloom's Level	COs
1a	Frame Explorative, Reflective, and Probing questions to interview the target group of working mothers towards use of baby monitors for their infants.	6	L3	CO2
1b	Define and explain the following mindset: (i) Being mindful of the process, (ii) Having the culture of prototyping	6	L1	CO1
1c	"Empathy interviews with end users were crucial to the students' ability to solve a school problem or improve a school experience." Illustrate this statement with any example that you can think of.	3	L2	CO2
2a	Assume that you are representing an NGO that helps farmers with biogas production. How will you incorporate *human centered*, and *show don't tell* mindset during the design thinking process?	6	L3	CO1
2b	What is empathy map and where is it used? Draw and explain the template of an empathy map.	6	L1	CO2
2c	What is creative courage?	3	L1	CO1
3a	Define needs, and insights, and give the structure of an actionable problem statement.	6	L1	CO2
3b	Why and how can design thinking skill be developed in STEM education?	6	L2	CO1
3c	The most common cause of pacemaker failure occurs when a stimulus is expected to result in activation and fails to do so because of insufficient stimulus energy, lead dislodgement, or stimulus occurring during refractory period. Write one problem statement based on the above observation, and change it into a 'How Might We' question.	3	L3	CO2

CIE – 2

Ramaiah Institute of Technology *(Autonomous Institute, Affiliated to VTU)*

Programme: B.E

Sem: 2nd	Course: Design thinking	Course Code: AECC27
CIE: Test 2	Term: 10.06.2023 – 09.09.2023	Sec: A,B,C,D,E,F,G,H,I,J,K,L
Max Marks: 30	Duration: 1Hr	Time: 10.00 to 11.00 AM
Credit: 2:0:0	Test Portions: LP-10 to 20	Date: 06.09.2023

Instructions to students: Answer any two full questions out of the three given questions.

Sl#	Question	Marks	Bloom's Level	COs
1a	Problem statement: People of rural Karnataka are unable to fill the application forms of Government welfare schemes due to language and digital illiteracy. Explain how you and your team will work on this problem statement during ideation phase – building on ideas and getting unstuck, and the criteria you will consider for convergent thinking.	6	L3	CO3
1b	Explain the different aspects of maturity and decline phase in product lifecycle.	6	L1	CO4
1c	How does user-testing process that adds to the expenses, result in the company saving money?	3	L2	CO4
2a	What are the various aspects of prototyping rules, materials, and mentorship that you will consider for prototyping of a robotic wheelchair.	6	L3	CO3
2b	Give the functional analysis of various parts of this roller skates, by naming the part, its function, the role of each function to the part, and to the assembled product in a tabular form. 	6	L3	CO4
2c	Explain briefly: (i) A/B testing, (ii) Tree testing, (iii) Beta testing.	3	L1	CO4
3a	Explain about convergent and divergent thinking giving appropriate examples.	.6	L2	CO3
3b	What is the mind-set with which you will go for the testing? What are the aspects you will show in feedback capture grid? Give an example considering that you've tested a new air pod design with an end user.	6	L3	CO4
3c	Define value engineering, and give the equation for the same.	3	L1	CO4

SEMESTER END AND BACKLOG SUBJECT EXAMINATIONS - SEPTEMBER / OCTOBER 2023

Program	:	B.E. – Common to all Programs	Semester	:	I / II
Course Name	:	Introduction to Electrical Engineering	Max. Marks	:	100
Course Code	:	ESC132 / ESC232	Duration	:	3 Hrs

Instructions to the Candidates:

- Answer one full question from each unit.

UNIT - I

1.	a)	Describe the general structure of an electrical power system.	CO1	(08)
	b)	Explain hydel power generation with a block diagram.	CO1	(08)
	c)	Differentiate between conventional and non-conventional energy sources.	CO1	(04)
2.	a)	With relevant block diagram explain solar power generation.	CO1	(08)
	b)	Define Grid. What are the different types of Grid? Explain.	CO1	(06)
	c)	Differentiate different types of electrical load.	CO1	(06)

UNIT - II

3.	a)	Find the current through the 10Ω resistor in Fig.3(a) using Thevenin's theorem.	CO2	(08)

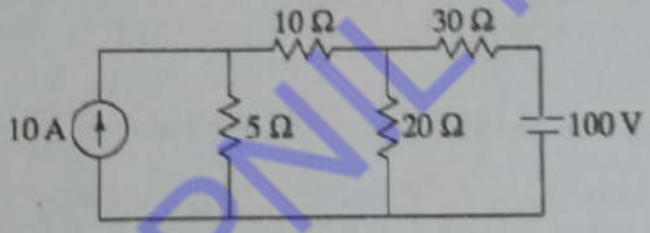

Fig. 3(a)

	b)	State and explain maximum power transfer theorem.	CO2	(06)
	c)	With any example explain super position theorem.	CO2	(06)
4.	a)	Two batteries of A & B are connected in parallel to supply a load resistance of 6Ω. Draw the circuit arrangement. Calculate the current supplied by each battery and to the load if the emfs. of A & B are 40 & 44 respectively. The internal resistance of A being 2 and that of B is 4Ω.	CO2	(10)
	b)	Find the current through AB for the circuit shown in 4(b) using superposition theorem.	CO2	(10)

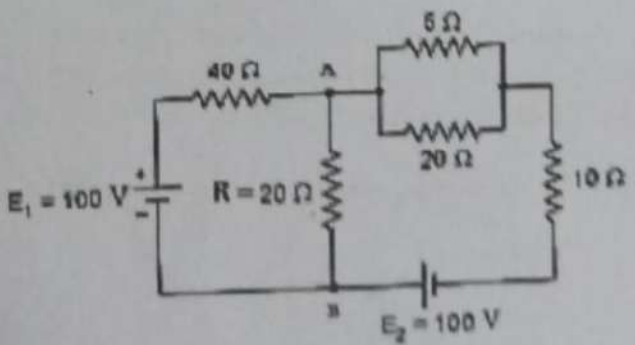

Fig.4(b)

UNIT - III

5.	a)	With a neat diagram, derive an expression for the relationship between voltage and current in a series RLC circuit for $X_L > X_C$ and obtain the expression for power. Draw the waveforms of voltage, current and power.	CO2	(08)
	b)	A resistance of 20Ω, an inductance of 0.2H and a capacitance of 100μF are connected in series across 220V, 50Hz supply. Determine (i) impedance (ii) current (iii) voltage across R, L and C (iv) power in Watts and VA (v) power factor and angle of lag.	CO2	(08)
	c)	Define peak factor and form factor of sinusoidal quantities.	CO2	(04)
6.	a)	Two impedances $20\angle 45\Omega$ and $30\angle 30\Omega$ are connected in series across a certain supply and the resultingcurrent is found to be 10A. If the supply voltage remains unchanged, calculate the supply current when the impedances are connected in parallel.	CO2	(08)
	b)	Define active, reactive and apparent power in an AC circuit indicating their units. Draw the power triangle of an RL series load.	CO1	(06)
	c)	Obtain the phase relationship between voltage and current in a pure inductor supplied with sinusoidal voltage.	CO2	(06)

UNIT- IV

7.	a)	Obtain the expression for emf equation of a transformer with usual notations.	CO3	(06)
	b)	Define transformer and efficiency. Explain the various losses in a transformer.	CO3	(08)
	c)	A 10kVA, 50Hz single phase transformer has a primary turns of 500 and secondary turns of 200. The primary winding is connected to 1500V supply. calculate (i) the secondary voltage on open circuit (ii) the primary and secondary full load currents (iii) maximum value of flux in the core.	CO3	(06)
8.	a)	Explain the concept of Rotating Magnetic Field in a three-phase induction motor.	CO3	(06)
	b)	With a neat diagram, explain the construction of (i) squirrel cage induction motor, (ii) slip-ring induction motor.	CO3	(08)
	c)	A three phase induction motor is wound for four poles and is supplied from a50Hz system. Calculate: (i) the synchronous speed, (ii) the speed of the rotor when the slip is 4% (iii) the rotor frequency when the speed of the rotor is 600rpm.	CO3	(06)

UNIT - V

9.	a)	What is fuse? List any two merits and demerits of it.	CO5	(06)
	b)	What is two-way switch? Explain the working of it with neat sketch.	CO4	(08)
	c)	Define two-part tariff. Explain it with an example.	CO4	(06)
10.	a)	List any six safety precautions while working with electricity.	CO5	(06)
	b)	What is earthing? With a neat sketch, explain the necessity of it.	CO5	(08)
	c)	Discuss the difference between earthing and grounding.	CO5	(06)

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Department of Electrical & Electronics Engineering

Programme : B. E **Sem:** II
Course Code : ESC232
Max. Marks : 30
Answer any two full questions

Term: June., 2023 – Sep., 2023
Course: Introduction to Electrical Engineering
Portions for Test: Unit III & IV

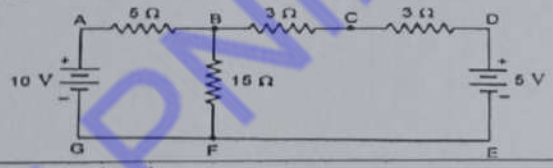
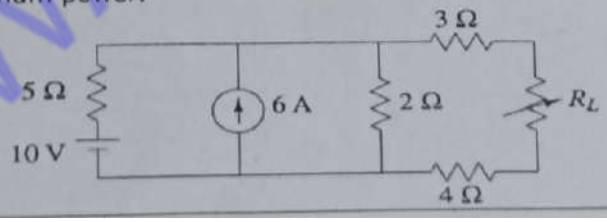
CIE: II
Credits: 2:1:0
Time: 1 Hr

S.No	Question	Marks
1 a)	Define power factor? Draw the impedance triangle and power triangle of a series RC circuit.	04
b)	Show that the average power dissipated is VIcosΦ in a series RL circuit. Also draw the waveforms of voltage, current and power.	06
c)	The equation of an alternating current is i = 42.42sin(628t)A. Calculate its i) Maximum value, ii) Frequency, iii) rms value, iv) Average value and v) Form Factor.	05
2 a)	With a neat diagram, derive an expression for the relationship between voltage and current in a pure inductive circuit.	04
b)	Obtain the EMF equation of a transformer with usual notations.	06
c)	A 10kVA transformer has a turns ratio of 500/200. The primary winding is connected to 1500V, 50Hz supply. Find i) The primary and secondary full load currents and ii) The maximum value of the flux in the core.	05
3 a)	Define transformer? List the different types of losses in it.	04
b)	With a neat phasor diagram, explain the concept of Rotating Magnetic Field in a three phase induction motor.	06
c)	A three phase induction motor is wound for four poles and is supplied from a 50Hz system. Calculate: (i) the synchronous speed, (ii) the speed of the rotor when the slip is 4% and (iii) the rotor frequency when the speed of the rotor is 600rpm.	05

Department of Electrical & Electronics Engineering

Programme : B. E **Sem:** II **Term:** June., 2023 – Sep., 2023 **CIE:** I
Course Code : ESC232 **Course:** Introduction to Electrical Engineering **Credits:** 2:1:0
Max. Marks : 30 **Portions for Test:** Unit I & II **Time:** 1 Hr

Answer any two full questions

S.No	Question	Marks
1 a)	Define electrical grid.	02
b)	With a neat diagram, briefly explain the following methods of electric power generation, i)Nuclear and ii)Solar.	08
c)	What is electrical load? List and explain any two loads based on type of nature.	05
2 a)	State superposition theorem.	02
b)	Draw single line representation of power system. Briefly explain its components.	07
c)	Find the value and direction of current in branch BF in the given network using superposition theorem. 	06
3 a)	State maximum power transfer theorem.	02
b)	State and explain thevenin's theorems with an example.	06
c)	For the circuit shown below, find the value of resistance R_L for maximum power and calculate the maximum power. 	07

(Approved by AICTE, New Delhi & Govt. of Karnataka)
Accredited by NBA & NAAC with A+ Grade

SEMESTER END AND BACKLOG SUBJECT EXAMINATIONS – SEPTEMBER /OCTOBER 2023

Program	: B.E. - Common to all Programs	Semester	: I / II
Course Name	: Introduction to Cyber Security	Max. Marks	: 100
Course Code	: ETC146 / ETC246	Duration	: 3 Hrs

Instructions to the Candidates:

- Answer one full question from each unit.

UNIT - I

1.	a)	Cyber Security involves Cybercrime, Cybercrime is evolved. Trace its evolution from early stage of stand-alone main frames to current emphasize on Information security.	CO1	(07)
	b)	Karnataka Govt recently announced the Gruha jyothi scheme where every house hold is given 200 Units of Electricity free. For this one need to register at the https://sevasindhugs.karnataka.gov.in by providing RR number provided by electricity board and Aadhar Number given by the central government (Pictorially represent them). Identify the entities associated with the Information security and Cyber Security. Also, identify the threats associated with them.	CO1	(05)
	c)	How do viruses get disseminated? Explain with diagrams.	CO1	(08)
2.	a)	How do you think cybercrime has relevance in extended enterprise context? Explain.	CO1	(07)
	b)	A health care system executive left their work-issued laptop, which had access to over 40,000 medical records, in a locked car while running an errand. The car was broken into, and the laptop stolen. Identify type of crime and how handle it explain with global perspective?	CO1	(05)
	c)	What are the categories of Cybercrimes? Explain with an example for each.	CO1	(08)

UNIT - II

3.	a)	How cybercriminal plan the attack? Explain the steps in detail.	CO2	(06)
	b)	What is Attack Vector? Define in your own words?	CO2	(06)
	c)	What is Cyber Stalking? Explain the different types of Cyber Stalkers.	CO2	(08)
4.	a)	What is the outcome of Port Scanning, Network Scanning and Vulnerability Scanning?	CO2	(06)
	b)	Explain the different types of Social Engineering Attack?	CO2	(06)
	c)	What is the difference between Active Attack and Passive Attack? Give example.	CO2	(08)

UNIT - III

5.	a)	What are Trojan horses and Backdoors? How to protect from them?	CO3	(06)
	b)	What are DoS and DDoS attacks?	CO3	(04)
	c)	Explain the types of computer viruses, based on attacks on various elements of the system.	CO3	(10)
6.	a)	What is the purpose of password cracking? Explain the three categories of password cracking attacks.	CO3	(10)
	b)	List the traditional techniques of attacks on wireless networks and explain the steps to secure wireless networks.	CO3	(10)

UNIT- IV

7.	a)	What is Website Spoofing, XSS and XSRF?	CO4	(07)
	b)	What is Phishing? Explain the different types of Phishing Techniques.	CO4	(07)
	c)	What is Spear Phishing and Whaling?	CO4	(06)
8.	a)	What is Identity Theft? Explain the different types of Identity Theft.	CO4	(08)
	b)	What is Distributed Phishing Attack?	CO4	(06)
	c)	Explain the Phishing Countermeasures techniques.	CO4	(06)

UNIT - V

9.	a)	Write a short note on forensics analysis of email.	CO5	(06)
	b)	Explain the data seen using forensic tools.	CO5	(04)
	c)	Explain different phases in Computer forensics.	CO5	(10)
10.	a)	What is digital forensics science? Describe the digital forensics process.	CO5	(08)
	b)	Discuss the need for computer forensics, and rules of evidence.	CO5	(06)
	c)	Explain how the chain of custody concept applies in computer forensics.	CO5	(06)

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(Autonomous Institute, Affiliated to VTU)

Department of Electronics & Communication Engineering

Program: BE

Mobile phones are banned

Term: 1st June 2023-9th September 2023 **Course: Introduction to Cyber Security** **Course Code: ETC246**
CIE: 1 **Sem: 2** **Sections: 1, 2, 3, 4, 5, 6**
Max Marks: 30 **Time: 12.30-1.30 pm** **Date: 15/7/2023**
Instructions to Candidates: Answer any two full questions **Portions for Test: L1-L15**

Sl No.	Question	Marks	Bloom's Level	CO	PO
Q1	a) Who are Cybercriminals? Explain the different categories of Cybercriminals.	8	L2	CO1	3,6,8
	b) What is an attack vector? Explain the various attack vectors, by which an attacker can gain access to computer networks.	7	L2	CO2	3,6,8
Q2	a) What is hacking? Discuss the purposes of hacking, with an example to demonstrate hacking.	7	L2	CO1	3,6,8
	b) What are Botnets? What are they used for? What are the countermeasures to be undertaken to protect the system against botnet?	8	L2	CO2	3,6,8
Q3	a) What is cybercrime? Explain the Cybercrime acts, salami attack and computer sabotage with suitable examples.	8	L2	CO1	3,6,8
	b) What is cyberstalking? List the types of stalkers and explain how stalking works?	7	L2	CO2	3,6,8

Ramaiah Institute of Technology
(Autonomous Institute, Affiliated to VTU)

Department of Electronics & Communication Engineering
Program: BE
Mobile phones are banned

Term: 1st June 2023-9th September 2023 | **Course: Introduction to Cyber Security** | **Course Code: ETC246**
CIE: II | **Sem: 2** | **Sections: 1, 2, 3, 4, 5, 6**
Max Marks: 30 | **Time: 2.30-3.30 pm** | **Date: 7/9/2023**
Instructions to Candidates: Answer any two full questions | **Portions for Test: L16-L33**

Sl No.	Question	Marks	Bloom's Level	CO	PO
Q1	a) List the differences between computer virus and worms.	7	L2	CO3	5,6,8
	b) Explain the techniques used to launch Phishing attacks.	8	L2	CO4	3,6,8
Q2	a) Explain briefly the Traditional Techniques of Attacks on Wireless Networks and the steps to secure wireless networks	8	L2	CO3	5,6,8
	b) What is spear phishing & Whaling? Explain with suitable examples.	7	L2	CO4	3,6,8
Q3	a) Explain the following terms related to Password Cracking: i) Shoulder Surfing ii) Man-in-the-middle attack iii) Dumpster Diving iv) Strong Passwords	8	L2	CO3	5,6,8
	b) What is identity theft? Explain with examples and list the different types of Identity thefts?	7	L2	CO4	3,6,8

M.S. RAMAIAH INSTITUTE OF TECHNOLOGY
(AUTONOMOUS INSTITUTE, AFFILIATED TO VTU)
BANGALORE-560054
SEMESTER END EXAMINATIONS – OCTOBER 2023

Course: B.E. **Semester: II**
Subject: Computer Aided Engineering Drawing **Max. marks: 50**
Subject code: MELC28/MELV28 **Duration: 3 Hrs**

Instructions to the Candidates:

- Answer one full question from each unit.
- Draw Solutions using pencil and scale to the dimensions.
- Answer Unit-1 questions in sketch work only, no computer solution is needed
- For Unit-2 & Unit-3, submit both sketch work and computer solutions

Q.No.		Marks
	UNIT – I	
1	A triangular plane lamina of sides 25 mm is resting on HP with one of its corners touching it, such that the side opposite to the corner on which it rests is 15 mm above HP and make an angle of 30° with VP. Draw the top and front views in this position. Also determine the inclination of the lamina to the reference plane.	10
2	A right circular cone, base 60 mm and height 80 mm, rests on its base on the ground plane. A section plane perpendicular to VP and inclined at 30° to HP cuts the cone, bisecting its axis. Draw the development of the lateral surface of the cone.	10
	UNIT – II	
3	A cone of base 60 mm diameter and height 80 mm lies with one of its generators on HP and the axis appears to be inclined to VP at an angle of 40° in the top view. Draw its top and front views.	20
4	A cube of 50 mm long edges is so placed on HP on one corner that a body diagonal is parallel to HP and perpendicular to VP Draw it's projections.	20
	UNIT – III	
5	A hemisphere of diameter 50mm placed over the apex of a cone of height 60mm and 50mm base diameter. Draw the isometric projection of the solids.	20
6	A frustum of pentagonal pyramid having base 30mm sides, top 20mm sides and height of 50mm is placed on the circular slab of 70mm diameter and 20mm thickness. Both the solids having common axis line. Draw the isometric projection of the combination.	20

DEPARTMENT OF MECHANICAL ENGINEERING
RAMAIAH INSTITUTE OF TECHNOLOGY
BANGALORE-560054
CIE TEST AUGUST 2023

Course: B.E. **Semester: II**
Subject: Computer Aided Engineering Drawing **Max. marks: 50**
Subject code: MELE28 **Duration: 3 Hrs**

Instructions to the Candidates:

- Answer one full question from each unit.
- Draw Solutions using pencil and scale to the dimensions.
- Answer Unit-1 questions in sketch work only, no computer solution is needed
- For Unit-2 & Unit-3, submit both sketch work and computer solutions

Q.No.		Marks
	UNIT – I	
1	A hexagonal lamina of sides 30mm is resting on one of its corners in VP and its surface inclined at an angle of 30 ° with VP. The diagonal passing through that corner which is in VP is appears to be inclined at 45 ° to HP. Draw the projections of the lamina.	10
2	A square pyramid of base side 30mm, height 50mm rests with its base on HP and two base edges equally inclined to VP. It is cut by a cutting plane perpendicular to VP, inclined 30° to HP and bisecting the axis of the pyramid. Draw the development of the lateral surfaces of the truncated pyramid.	10
	UNIT – II	
3	A pentagonal prism 25mm sides of base and 50mm axis length rests on HP on one of its corner of the base such that the two base edges containing the corner on which it rests makes equal inclinations with HP. Draw the projections of the prism when the axis of the prism is inclined to HP at 40° and appears to be inclined to VP at 45°.	20
4	A right rectangular pyramid of base 40x30mm and height 50mm rests with one of its slant edges on HP such that the two triangular faces containing the slant edge on which it rests makes equal inclinations with HP. The top view of the axis is inclined at 60^0 to VP. The apex of the pyramid is nearer to VP than its base and on its right side.	20
	UNIT – III	
5	A frustum of square pyramid base side 40mm, top face side 20mm and height 40mm is placed centrally on frustum of a cone of base diameter 80mm, top diameter 60mm and height 20mm. Draw the isometric projection of the combination.	20
6	Draw the isometric projection of the combination of solids formed by a frustum of cone and co-axial frustum of pentagonal pyramid. The lower frustum of cone is of 80mm base diameter, 60mm top diameter and height 25mm. The upper frustum of pyramid is of 30mm side of base, 20mm side of top face and height 40mm.	20

A1	A regular hexagonal lamina of sides 30mm is lying in such a way that one of its sides touches both the reference planes. If the side opposite to the side on which it rests is 45mm above HP, draw the projections of the lamina.	5 marks
~~A2~~	A cylinder of 50mm diameter, 60mm height rests on HP in such a way that the axis is inclined to HP at 45° and appears to be inclined to VP at 40°.	5 marks

CIE

1

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