Hall ticket No-

Code:22324

Stanley College of Engineering and Technology for Women(A)

Chapel Road , Abids

B.E I Semester (Main) Semester End Examinations March-2022

Fundamentals of Electrical Engineering

(ECE and EEE)

Time: 3 hours

Max.Marks:60

Note: Answer all questions (Compulsory) **5 X 2=10M**

1 A Coil has a resistance of 5.2 ohm ; the resistance has to be reduced to 5 ohm by connecting a shunt across the coil. If this shunt is made of manganin wire of diameter 0.025 cm, find the length of wire required. Specific resistance for manganin is 47x10-8 Ω m. 2 M

2 Write the mathematical expression for a 50 Hz sinusoidal voltage of peak value 80 V. Sketch the wave form versus time t. 2 M

3 Mention any five applications of transformers. 2 M

4 Write the working principle of a capacitor start & capacitor run motor. 2 M

5 What do you mean by earthing of an electrical component? 2 M

Note: Answer all questions **5x10=50M**

6 a. Three resistors are in parallel. The current in the first resistor is 0.1 A. The power dissipated in the second is 3 Watt. The voltage drop across the third is 100 V. Determine the ohmic values of resistors and the total resistance if net current is 0.2 A. 5 M

b. State and Explain Thevenin's theorem. 5 M

OR

c. State and Explain Superposition theorem 3M

d. A Wheatstone bridge ABCD is arranged as follows: AB=10 Ω, BC=30 Ω, CD=15 Ω, DA= 20 Ω. A 2 V battery of internal resistance 2 Ω is connected between A and C with A positive. A galvanometer of resistance 40 Ω is connected between B and D,. Find the magnitude and direction of galvanometer current. 7 M

7 a. Define the terms: (i) Real power (ii) Reactive power (iii) Apparent power and (iv) power factor. 5 M

b. A balanced delta –connected load of impedance (16+j18) Ω per phase is connected to 3 –phase, 440 V , 50 Hz supply. Using phasor algebra, find the line current and power absorbed by each phase. 5 M

OR

c. Derive the relationship between line current and phase currents in case of a balanced three phase star connected sources. 5 M

d. A pure capacitance of 318 μC is connected in series with a pure resistance of 15 Ω. The circuit is supplied from a 50 Hz source and the voltage across 15 Ω resistor is found to be 110 V. Calculate the supply voltage and the phase angle. 5 M

P.T.O

8 a. Explain the construction and working of a squirrel cage induction motor. 5 M

b. A single phase 2KVA, 230/100V transformer has the following test results 5 M
i) O.C. Test : 100V , 0.8A, 100W
ii) S.C. Test : 90V, 8.7A, 300W
Calculate
a) Efficiency at Full load with 0.8P.F. lagging
b) Efficiency at ½ load with 0.8P.F. lagging

OR

c. Write short notes on BH characteristics of a magnetic material. 4 M

d. A 200 kVA, 6600/400 V, single phase transformer has 80 turns on the secondary. Calculate (i) the approximate values of primary and secondary currents (ii) the approximate number of primary turns and (iii) the maximum value of flux. Derive the necessary equation. 6 M

9 a. Distinguish between statically induced emf and dynamically induced emf. 3 M

b. With a neat diagram , Explain the construction and working principle of a DC motor 7 M

OR

c. Mention any three applications of (i) DC motors and (ii) single phase induction motors. 3 M

d. With a neat diagram , Explain the construction and working principle of a DC Generator 7 M

10 a. Mention all the components of low tension (LT) switchgear. 5 M

b. With help of an example explain procedure involved in calculating the energy consumed by an electrical circuit. 5 M

OR

c. Write short notes on (i) Fuse (ii) MCCB and (iii) MCB. 5 M

d. Define the term power factor, Write the typical value of power factor in practice. Is it necessary to improve the power factor? If so, Justify your answer. 5 M

Hall Ticket No- **Code: 22311**

Stanley College of Engineering and Technology for Women(A)

Chapel Road , Abids

B.E-I Semester Main Semester End Examinations-March-2022

English

(CSE , CME , AI&DS)

Time: 3 hours Max.Marks:60

Part-A

Note: Answer all questions (Compulsory) **5 X 2=10M**

1 **Fill in the blanks with suitable prepositions.** 2 M
i) I congratulate my friend ___ her success. (on / with)
ii) He jumped ____ the river. (in / into)

2 **Give the blended words of the following.** 2 M
i) chuckle + snort = _____
ii) cybernetic + organism = _____

3 **Fill in the blanks with the correct word.** 2 M
i) He is better at grammar _____ I am. (then / than)
ii) Make sure that they get _____ money. (their / there)

4 **Rewrite the following as directed.** 2 M
(i) The cat was chasing the rat. (change into passive voice)
(ii) A novel has been written by her. (change into active voice)

5 **Choose the appropriate word.** 2 M
i) Which one of the following is an Inclusive expression?
a) Policeman b) Policewoman c) Police officer d) Patrolman
ii) _____ is the euphemism used instead of homeless.
i) running on empty ii) on the streets iii) relocation center

PART-B

5 X 10=50M

6 a. What does William Hazlitt say about despising people? What justification does he provide for his advice? 10 M

OR

c. Compose a paragraph on **"Importance of communication skills for Engineers."** 10 M

7 a. Which attributes will help a man face adversities and emerge victorious according to the poem "If?" 10M

OR

P.T.O

c. **Read the following passage carefully and answer the following questions by choosing the most appropriate option.** 5 M

Many of us believe that 'small' means 'insignificant'. We believe that small actions and choices do not have much impact on our lives. We think that it is only the big things, the big actions and the big decisions that really count. They transformed their lives through a step-by-step or day-by-day approach. They nurtured and nourished their good habits and chipped away at their bad habits, one step at a time. It was their small day-to-day decisions that added up to make tremendous difference in the long run. Indeed, in matters of personal growth and character-building, there is no such thing as an overnight success.

Growth always occurs through a sequential series of stages. There is an organic process to growth. When we look at children growing up, we can see this process at work: the child first learns to crawl, then to stand and walk, and finally to run. The same is true in the natural world. The soil must first be tilled, and then the seed must be sowed. Next, it must be nurtured with enough water and şunlight, and only then it will grow, bear fruit and finally ripen, and be ready to eat.

Gandhi understood this organic process and used this universal law of nature to his benefit. Gandhi grew in small ways, in his day-to-day affairs. He did not wake up one day and find himself to be the "Mahatma". In fact, there was nothing much in his early life that showed signs of greatness. But from his mid-twenties, he deliberately and consistently attempted to change himself, reform himself and grow in some small way every day. Day-by-day, hour-by-hour, he risked failure, experimented and learnt from the mistakes.

(i)What do many of us believe?

(a) Small choices and small actions are performed every day
(b) There is no such thing as an overnight success
(c) Small actions and choices do not have much impact on our lives

(ii)What does the writer mean by saying 'chipped away at their bad habits?'

(a) Steadily gave up bad habits
(b) Slowly produced bad habits
(c) Gradually criticised bad habits

(iii)Growth of a child is an example of an..... process.

(iv) Every day, Gandhi made efforts to change himself in some small way. (true /false)

(v) Find a word from the passage which means 'intentionally' or 'purposely'.

d. Write a descriptive eassy on "How to inculcate good habits." 5 M

8 a. **Read the passage and answer the following questions.** 5 M

I Have a Dream" is a public speech delivered by American civil rights activist Martin Luther King Jr. during the March on Washington for Jobs and Freedom on August 28, 1963, in which he calls for an end to racism in the United States and called for civil and economic rights. Delivered to over 250,000 civil rights supporters from the steps of the Lincoln Memorial in Washington, D.C., the speech was a defining moment of the civil rights movement. Beginning with a reference to the Emancipation Proclamation, which freed millions of slaves in 1863, King observes that: "one hundred years later, the Negro still is not free."

Toward the end of the speech, King departed from his prepared text for a partly improvised peroration on the theme "I have a dream," prompted by Mahalia Jackson's cry: "Tell them about the dream, Martin!" In this part of the speech, which most excited the listeners and has now become its most famous, King described his dreams of freedom and equality arising from a land of slavery and hatred "With a single phrase, Martin Luther King Jr. joined Jefferson and Lincoln in the ranks of men who've shaped modern America." Many believed that the speech helped secure passage of the Civil Rights Act in 1964.

1) What issues does Martin Luther King's speech address?
   a)Continuation of racism
   b) End to racism
   c) Civil rights
   d) Civil War
2) What pushes King to speak: "I have a dream?"
   a) He reads out the Emancipation Proclamation
   b) He is prompted by the supporters
   c) He is happy to see the crowd
   d) The president had asked him to give the speech

3) Toward the end of the speech, King <u>departed</u> from his prepared text (synonym of the word in this sentence)
   a) deviate b) extent c) die

4) The speech called for ……and ……..
   a) civil and economic rights b) equality and freedom c) freedom and equality

5) Give the meaning of the word **"racism."**

P.T.O

(3)

b. Write an argumentative eassy on "Science is a boon." 5 M

OR

c. Build a paragraph of 300 words on "Impact of online classes on education systems." 10 M

9 a. What is the theme of the poem "The Road Not Taken" by Robert Frost? 10 M

OR

c. Compose a paragraph of 150 words on "Social media: helping us connect or contributing to loneliness." 5 M

d. **Read the given passage and answer the questions that follow:** 5 M

There are two sides to the argument of technological advancement. Few who benefit mankind may think that we have lost a lot with these advancements. Few people look back on the good old days and see everything in the present as changing for the worse whereas; others look at the advantages and ignore the supposed dangers.

The invention of the motor car is one such example. People who possessed a car in the previous century bragged of freedom and power. But now a days roads are congested leading to accidents and deaths. Parking is a problem. And the exhausted pollutes the atmosphere to dangerous levels.

The use of pesticides and artificial manure is alarming. It has killed innumerable species of birds and insects that were friends of the farmer? At the same time positive side of pesticides are it has led to increased food production and helped to control insects and rodents. Pesticides play a major role in protecting buildings from termite infestations. So, though they may have negative effects, pesticides and fertilizers are also vital to human health and safety in many ways.

i) What are the two sides of the debate on technology?
ii) What are the pros and cons of owning a motor car?
iii) Give the synonym of the word ***"advance"***
iv) Who were the friends of the farmer?
v) Use ***innumerable*** in a sentence of your own

P.T.O

10 a. **Rewrite the following sentences after making necessary corrections.** 10 M

a) Whoever works hard he will win.

b) I am having two pens.

c) One should not waste his time.

d) My friend has ordered for a wedding suit.

e) How long time did you work in the public sector?

OR

c. What is a blog? Elucidate the steps to blog writing. 10 M

Hall Ticket No- **Code: 22316**

Stanley College of Engineering and Technology for Women(A)

Chapel Road , Abids

B.E I Semester (Main) Semester End Examinations March-2022

Indian Constitution

(CSE , CME , AI&DS)

Time: 3 hours Max.Marks:60

Note:Answer all questions

PART-A 5 X 2=10M

1	Define Constituent Assembly?	2 M
2	What are the Qualifications for Election as Prime Minister of India?	2 M
3	Brief about Govenor.	2 M
4	What is Finance Commission of India?	2 M
5	What is the Composition of Election Commission of India?	2 M

PART-B 5 X 10= 50M

6	a.	Write an essay on the Salient Features of Indian Constitution?	5 M
	b.	What are the Features of 1909 Act?	5 M
		OR	
	c.	What are the Functions of Constituent Assembly?	5 M
	d.	Discuss the Significance of Indian Constitution?	5 M
7	a.	Explain the Powers and Functions of President?	5 M
	b.	Explain the role and power of Union Council of Minister in Indian	5 M
		OR	
	c.	Explain about Panchayat Raj Institutions in India?	10 M
8	a.	What is the Importance or Significance of Fundamental Rights?	5 M
	b.	List out any five fundamental duties?	5 M
		OR	
	c.	Explain the difference between Fundamental Rights and Duties?	5 M
	d.	Explain about Directive Principles of State Policy?	5 M
9	a.	Explain about the Composition of NITI Aayog?	5 M
	b.	Explain about legislative relations of Central-State?	5 M
		OR	
	c.	Explain about Functions of Inter State Council?	5 M
	d.	Who appoints the Finance Commission and what are the qualifications for Members?	5 M
10	a.	Write about Electoral Reforms in India?	5 M
	b.	What is the Composition of National Commission for Women?	5 M
		OR	
	c.	Write a Short note on National Commission for Women?	5 M
	d.	Explain the Administrative Powers of Election Commission of India?	5 M

Hall Ticket No-

Code: 22325

Stanley College of Engineering and Technology for Women(A)

Chapel Road , Abids

B.E I Semester (Main) Semester End Examinations March-2022

Environmental Science

(CSE , CME , AI&DS)

Time: 3 hours

Max.Marks:60

Note: Answer all questions

PART-A 5 X 2=10M

1 What is the importance of Environment? 2 M

2 What are the ill effects of water logging? 2 M

3 Distinguish producers ,Consumers and Decomposers. 2 M

4 What is the significance of food chains and food webs in ecosystem? 2 M

5 Enumerate Green House Gases. 2 M

PART-B 5 X 10= 50M

6 a. What are the steps taken by our government for environmental protection. 5 M

b. Explain how to create Environment awareness in public. 5 M

OR

c. With the help of any two case studies, how big dams have affected forests and the tribal 5 M

d. Discuss how to slove energy needs. 5 M

7 a. Disuss functional and structural aspects of ecosystem. 10 M

OR

c. Explain about the energy flow in the ecosystem. 5 M

d. Define Ecological pyramid ,Classify and explain. 5 M

8 a. Enumerate biogeographical classification of India in detail. 10 M

OR

c. Briefly explain the value of biodiversity. 5 M

d. Explain different methods of conservation of biodiversity. 5 M

9 a. What is water pollution? Mention the causes, effects and remedial measures. 5 M

b. Disuss types of muncipal solid waste management methods. 5 M

OR

c. Explain various issues involved in Environmental legislations. 5 M

d. What is Air pollution?Expalin air pollution control methods. 5 M

10 a. What is Watershed? Explain the principles of watershed management. 5 M

b. What is meant by Green house ? Explain the phenomenon of Green house effects. 5 M

OR

c. What is Global warming and state various paramenters responsible for the same. 5 M

d. Write a note on Disaster Management cycle with a neat sketch. 5 M

Code: 22315

Stanley College of Engineering and Technology for Women (A)

Chapel Road, Abids

B.E - I Semester (Main) Semester End Examinations March-2022

Essence of Indian Traditional Knowledge

(CSE, CME, AI&DS)

Time: 3 hours | Max.Marks:60

Note: Answer all Questions

PART-A | 2 x 5 = 10

1) What is Heritage? | 2M

2) What is the meaning of the word "Upanishad"? | 2M

3) List the Shad-darshanas. | 2M

4) Who are popularly known as the Trinity of Carnatic Music? | 2M

5) How was the woman education in Ancient India? | 2M

PART-B | 10 x 5 = 50

6) a. Indian culture is multi faceted. Analyse. | 10M

Or

c. How did Harappan culture flourish? | 10M

7) a. Describe the contributions of Telugu and Tamil literature. | 10M

Or

c. Analyse how Urdu emerged as an independent language. | 5M

d. Explain the impact of literature on social reforms. | 5M

8) a. Explain the importance of Bhakti movement. | 10M

Or

c. Summarise Jain Philosophy. | 5M

d. Summarise Buddhist Philosophy | 5M

9) a. Explain various forms of Indian Dance. | 10M

Or

c. Describe the Scientific and Technological developments in Medieval India. | 5M

d. Describe the developments in the field of Medicine in Ancient India. | 5M

10) a. Elaborate the contributions of Swamy Dayananda Saraswati in Religious and Social Reforms. | 5M

b. Discuss the contributions of Charaka and Sushruta in the field of Medicine. | 5M

Or

c. Explain Nation Education Policy(2019 NEP) | 10M

Hall Ticket No-

Code: 22323

Stanley College of Engineering and Technology for Women(A)

Chapel Road , Abids

B.E I Semester (Main) Semester End Examinations March-2022

Subject :Chemistry

(IT)

Time: 3 hours

Max.Marks:60

PART-A

Note:Answer all questions (Compulsory) **5 X2=10 M**

1 500 ml of a sample of water contains 43.8 mg of $Mg(HCO_3)_2$, 58.5 mg of NaCl, 38 mg of $MgCl_2$, 2.43 mg of $Ca(HCO_3)_2$ and 6.8 mg of $CaSO_4$. Calculate its temporary, permanent and total hardness. 2 M

2 Under standard conditions, what happens when Zn foils are placed in $AgNO_3$ solution? Justify your answer. (E° of Zn^{2+}/Zn= -0.769V and Ag/Ag^+ = -0.8V). 2 M

3 Outline the preparation of Buna-S, mention any two properties and applications. 2 M

4 Enumerate the requisites of a good fuel. 2 M

5 Appraise the significance of clean technology with appropriate examples. 2 M

PART-B

Note: Answer all questions **5 X 10= 50M**

6 a. Justify the use of two indicators in the estimation of alkalinity of water. In a titration,100 ml of a water sample required 16 ml of 1/50 N HCl with phenolphthalein indicator and another 24 ml of the same HCl with methyl orange indicator. Determine the type and amount of alkalinity present in the water sample. 5 M

b. What are scales and sludges? How are they formed in boilers? Discuss the consequences of their formation in boilers. Recommend a method to prevent them. 5 M

OR

c. Discuss about the principle and working of reverse osmosis. Enlist the advantages, limitations and applications. 5 M

d. Write the principle of cathodic protection and discuss impressed current cathodic protection along with its advantages and applications. 5 M

7 a. Derive the equation that gives the dependence of electrode potential on concentration of electrolyte.
When a metal electrode is coupled with SCE, EMF of the cell is found to be 0.49V when the $[M^{+2}]$=1M at 298K. EMF of the following cell, Zn(s)/ Zn^{2+} (1M) // M^{+2} (1M) /M(s) is 0.61V. Calculate EMF of Zn-M cell when $[Zn^{+2}]$=0.01M at 298K. 5 M

b. Illustrate the electrochemistry of Lithium ion cell. Write its merits and applications. 5 M

OR

c. Describe the construction and working of calomel electrode with a neatly labeled diagram. Write its advantages and limitations. 5 M

P.T.O

	d.	Explain the construction and working of Zn-Carbon cell. Can we recharge the cell? Justify your answer.	5 M
8	a.	Give an overview of the preparation of Bakelite from its monomers and explain whether the polymer can be recycled or not.	5 M
	b.	Illustrate the molecular orbital energy level diagram of NO.	5 M
		OR	
	c.	With appropriate examples, discuss about the various types of polymerization.	5 M
	d.	Explain the mechanism of conduction in polyacetylene.	5 M
9	a.	A fuel has the following composition. 82% carbon, 6 % hydrogen, 1.2 % sulphur, 1.4% nitrogen and 3% ash. Calculate the gross, net calorific value and the volume of air at STP, required for the complete combustion of 2 Kg of the fuel.	5 M
	b.	Explain the proximate analysis of coal and give its significance.	5 M
		OR	
	c.	Explain the fractional distillation of petroleum, mention the important fractions obtained in this process, along with their uses.	5 M
	d.	Explain knocking, octane number and cetane number.	5 M
10	a.	Vegetable oils cannot be used as fuel directly in IC engines. How do you overcome this problem and convert them in to biodiesel? Discuss the chemistry involved in it.	5 M
	b.	Define and classify composite materials. Discuss about the constituents of composite materials.	5 M
		OR	
	c.	Discuss about carbon nanotubes, quantum dots and nanowires.	5 M
	d.	Enumerate the applications of composite materials	5 M

Hall Ticket No-

Code: 22304

Stanley College of Engineering and Technology for Women(A)

Chapel Road , Abids

B.E I Semester (Main) Semester End Examinations March-2022

Programming for Problem Solving
(Common to all Branches)

Time: 3 hours

Max.Marks:60

PART-A

Note:Answer all questions (Compulsory) **5 X 2=10M**

1 What is a flowchart? How it is different from an algorithm? 2 M

2 Write the syntax of switch statement? 2 M

3 Why is it necessary to give the size of an array in an array declaration? 2 M

4 Write the advantages and disadvantages of using pointers. 2 M

5 Compare and contrast text file with binary file. 2 M

PART-B

Note: Answer all questions **5 X 10= 50M**

6 a. What are the steps involved in creating, compiling, and executing a C program? 5 M

b. Define flow chart. List the symbols used in flow charts. 5 M

OR

c. Define data type? Explain about different data types with examples. 5 M

d. Explain about bitwise operators. 5 M

7 a. Differentiate between if statement and if-else statement with suitable examples and proper syntax. 5 M

b. Write a program to find the factorial of a given integer number using 'while' loop. 5 M

OR

c. Write a C program to check whether the given number is prime or not. 5 M

d. Show how break and continue statements are used in a C program, with example 5 M

8 a. Demonstrate different string handling functions available in C language. 5 M

b. Write a C program to find the largest element in an array 5 M

OR

c. How passing parameters to function works? Explain 5 M

d. List and explain the different types of storage class. 5 M

P.T.O

9 a. Explain defining and initializing a structure with an example 5 M

b. What is pointer? How to initialize and declare pointer variables? Explain with examples. 5 M

OR

c. How are the members of a 'Union' are initialized and accessed? 5 M

d. List and explain the functions used to allocate and free memory dynamically. 5 M

10 a. Illustrate the different file opening modes that can be used with fopen( ). 5 M

b. What are the functions used for accessing files randomly? Explain with examples. 5 M

OR

c. Devise an algorithm for linear search and explain with an illustration. 5 M

d. Explain selection sort operation with an example 5 M

Stanley College of Engineering and Technology for Women(A)

Chapel Road , Abids

B.E I Semester (Main) Semester End Examinations March-2022

Mathematics-I

(Common to all Branches)

Time: 3 hours Max.Marks:60

PART-A

Note: Answer all questions (Compulsory) **5 X 2 = 10 M**

1 Determine the nature of the series $\sum_{n=1}^{\infty}\frac{3n+1}{2n+7}$ 2 M

2 Find the equation of envelope of the family of curves $py+p^2x-10=0$ where p is a parameter 2 M

3 If $x^y=y^x$ then find $\frac{dy}{dx}$, 2 M

4 Find the maximal directional derivative of x^3y^2z at P(1,-2,3) 2 M

5 Explain Bisection method. 2 M

PART-B

Note: Answer all questions **5 X 10= 50M**

6 (a)Test for convergence of the series $\sum_{n=1}^{\infty}\frac{n^3}{3^n}$ 5 M

(b)Discuss the convergence of the series $\sum_{n=1}^{\infty}\frac{(-1)^n}{n}$ 5 M

OR

(c).Test for convergence of the series $\sum_{n=1}^{\infty}\frac{n!}{(n^n)^2}$ 5 M

(d).Discuss the absolute convergence of the series $\sum_{n=0}^{\infty}\frac{(-1)^n x^n}{(n+1)}$ 5 M

7 (a).State and prove Rolle's mean value theorem. 5 M

(b)Discuss the applicability of Rolle's theorem for the function $f(x)=(x-4)^3(x-5)^2$ on [4,5] 5 M

OR

(c).Find the radius of curvature of the curve $y=x^3(x-4)$ at P(4,0) 5 M

(d).Find the Evolute of the curve $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ 5 M

8 (a).If $u = F(x-y, y-z, z-x)$,then evaluate $\frac{\partial u}{\partial x}+\frac{\partial u}{\partial y}+\frac{\partial u}{\partial z}$ 5 M

(b).If $u = x+y+z, uv = y+z, uvw = z$ then $\frac{\partial(x,y,z)}{\partial(u,v,w)} = u^2v$ 5 M

OR

(c).Find the maximum and minimum values of $x^3 + y^3$ -3axy 5 M

(d).Find The extreme value of xyz when $x+y+z=18$ 5 M

9 (a).Show that $\nabla^2 r^n = n(n+1)r^{n-2}$. 5 M

(b).Show that $\nabla \times (\nabla f) = 0$,where f is a scalar point function. 5 M

OR

(c)&(d).Verify Greens theorem for $\int_C (x+y)\,dx + x^2\,dy$ where C is the triangle with vertices(0,0),(2,0) and(2,4) taken in that order 10 M

10 (a).Using Newton Raphson method find a root of the equation $x^3 - 2x - 5 = 0$ 5 M

(b).Using Gauss-Seidel method solve the system of equations $28x+4y-z=32, x+3y+10z=24, 2x+17y+4z=35$ 5 M

OR

(c)&(d).Find $f(x)$ from the following data using Newtons Divided difference interpolation 10M

x	-1	0	3	6	7
f(x)	3	-6	39	822	1611

Hall Ticket No- Code: 223374

Stanley College of Engineering and Technology for Women(A)

Chapel Road ,Abids

B.E I Semester (Main) Semester End Examinations March-2022

BASIC ELECTRICAL & ELECTRONIC CIRCUITS

(IT)

Time: 3 hours Max Marks-60

PART-A

Note: Answer all questions (Compulsory) **5 X 2=10M**

1	What are the limitations of Superposition Theorem?	2 M
2	Can we apply KCL and KVL to AC circuits? Justify the same.	2 M
3	Define Diffusion current and drift current of a PN junction ?	2 M
4	What are the advantages of hybrid parameters of BJT?	2 M
5	State "Barkhausen criteria"?	2 M

PART-B

Note: Answer all questions **5 X 10= 50M**

6 a) Find the branch currents I_1,I_2, I_3 in the **Fig1.** Shown below using Superposition theorem . 5 M

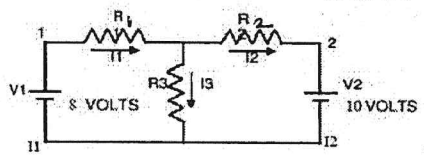


Fig1.

b) Find the current flowing through 20 Ω resistor by first finding a Norton's equivalent circuit to the left of terminals A and B.-**Fig2** 5 M

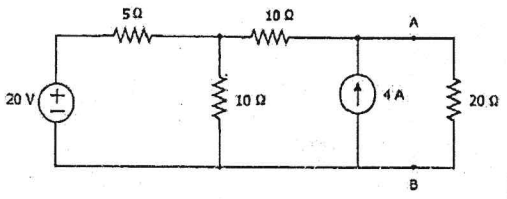


Fig2

OR

c) Calculate the current that flows in the 1 Ω resistor in the following circuit-**Fig3**. 5 M

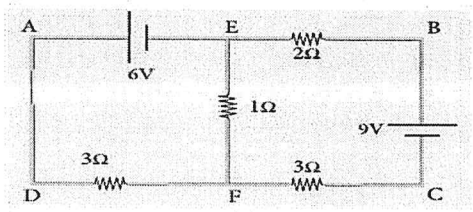


Fig3

P.T.O

d) If $R_1 = 2\Omega$, $R_2 = 4\Omega$, $R_3 = 6\Omega$, determine the electric current that flows in the circuit below.

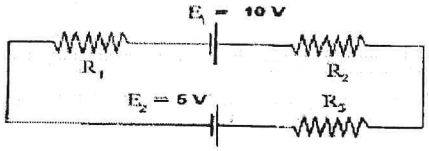


Fig4

5 M

7 a) A 240 V, 50 Hz AC supply is applied a coil of 0.08 H inductance and 4 Ω resistance connected in series with a capacitor of 8 μF. Calculate the following –

Impedance, Circuit current,Phase angle between voltage and current, Power factor,Power consumed,Q-factor of the circuit at resonant frequency.

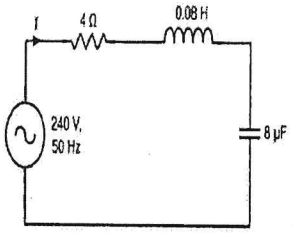


Fig5.

5 M

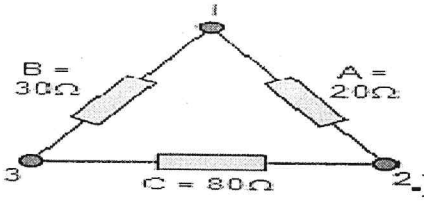
b) Describe various applications of RLC Circuits? -

5 M

OR

c) Differentiate between Star and Delta Connections with examples - 5 M

d) Covert Delta to Star transformation using fundamentals? 5 M



-Fig6

8 a) Draw the block diagram of CRO and explain its operation. 5 M

b) What are the applications of CRO? - 5 M

OR

c) Differentiate between Avalanche vs Zener breakdown mechanism? - 5 M

d)Describe the Forward& Reverse bias characteristics of PN junction diode with neat sketches? Explain significance of Knee voltage? - 5 M

9 **a**) Draw the h-parameter model of a BJT-CE amplifier and derive the equations for voltage gain, current gain, input impedance and output impedance. - 5 M

P.T.O

	b) Compare and contrast CB, CE and CC BJT configuration.	-	5 M
		OR	
	c) Draw the schematic of PNP transistor and describe the Current components in detail?	-	5 M
	d) Describe with neat sketch, working of n-channel JFET.	-	5 M
10	**a)** The gain of an amplifier without feedback is 50 whereas with negative voltage feedback, it falls to 25. If due to ageing, the amplifier gain falls to 40, find the percentage reduction in stage gain (i) without feedback and (ii) with negative feedback.	-	5 M
	b) With a negative voltage feedback, an amplifier gives an output of 10 V with an input of 0.5 V. When feedback is removed, it requires 0.25 V input for the same output. Calculate (i) gain without feedback (ii) feedback fraction m_v.	-	5 M
		OR	
	c) Describe various applications of OP-AMP with neat sketches?	-	5 M
	d) Draw the schematic and working principle of RC phase shift oscillator.	-	5 M

Hall Ticket No- Code: 22313

Stanley College of Engineering and Technology for Women(A)

Chapel Road , Abids

B.E I Semester (Main) Semester End Examinations March-2022

Subject : Applied Physics

(CSE , CME , AI&DS)

Time: 3 hours Max.Marks:60

PART-A

5 X 2=10M

Note:Answer all questions (Compulsory)

1	Define numerical aperture and acceptance angle.	2M
2	Summarize any four applications of ferroelectric materials.	2M
3	Explain Meissner effect.	2M
4	Distinguish between intrinsic and extrinsic semiconductors.	2M
5	Explain surface to volume ratio at nano scale.	2M

PART-B

Answer All Questions **5X 10 = 50M**

6	a	Explain the construction and working of He-Ne laser	6M
	b	Interpret the propagation of light through an optical fiber.	4 M
		OR	
	c	Analyze the relation between absorption and stimulated emission using Einstein coefficients.	6 M
	d	Explain the types of optical fibers based on refractive index profiles.	4 M
7	a	Define electronic polarization and derive an expression for electronic polarizability.	6 M
	b	Explain Weiss molecular field theory of ferromagnetism.	4 M
		OR	
	c	Explain capacitance bridge method to determine dielectric constant.	6 M
	d	Distinguish soft and hard magnetic materials	4 M
8	a	Derive an expression for energy values of a particle in 1-D box with energy level diagrams.	6 M
	b	Distinguish between type-I and type-II super conductors	4 M
		OR	

	c	Explain BCS theory of superconductivity of materials qualitatively.	6 M
	d	Discuss the properties of wave function and its physical significance.	4 M
9	a	Explain the salient features of Kronig penny model for the motion of an electron in periodic potential.	5 M
	b	Explain the working of photocell with neat diagram	5 M
		OR	
	c	Explain the formation of p-n junction diode and its I-V characteristics.	5 M
	d	Distinguish conductors, semiconductors and insulators	5 M
10	a	Explain the construction and working of a solar cell.	6 M
	b	What are Carbon nanomaterials? Mention any four applications of them.	4 M
		OR	
	c	Explain the preparation of thin films using electron beam evaporation method.	5M
	d	Explain sol-gel method of preparation of Nanomaterials.	5M

Hallticket No: Code: S122814

Stanley College of Engineering and Technology for Women(A)

B.E I Semester (Backlog) Examinations -August-2022
ENGINEERING CHEMISTRY
(ECE and EEE)

Time: 3 hours Max Marks:60

Part-A

Note: Answer ALL Questions 5 x 2M = 10M

1	List the compounds responsible for alkalinity of water and which combination can't exist together at any time-Reason.	2
2	Write the quinhydrone electrode notation and reaction when it acts as cathode.	2
3	Differentiate between copolymer and heterochain polymer.	2
4	Presence of oxygen is not desirable for a good coal-justify	2
5	Write the discharging reactions of Zn-C battery.	2

PART-B 5 X 10=50

6.	a)	Discuss the method with neat labeled diagram to convert Saline water into potable water.	5
	b)	1g of $CaCO_3$ was dissolved in HCl and the solution made up to 1000ml with distilled water. 100ml of the above solution required 28 ml of EDTA for colour change. 100ml of sample water required 18 ml of EDTA and after boiling and filtering required 10ml of EDTA solution. Calculate the hardness in ppm.	5
		OR	
	c)	Discuss the electro chemical corrosion, when an uneven surface iron metal contacts with an neutral environment.	5
	d)	Suggest and discuss a method to protect a longer metallic structure effectively from corrosion.	5
7.	a)	The entropy of the universe is always greater than zero-Explain.	5
	b)	A Carnot engine working between 27 $^{\circ}$C and 100°C takes up 900 joules from high temperature reservoir. Calculate the work done, the heat rejected and efficiency.	5
		OR	
	c)	A galvanic cell is constructed by placing iron and silver electrodes in their solutions of 0.05M and0.01M respectively. Write the cell notation and calculate its emf Standard electrode potentials of Fe/Fe2+ and Ag/Ag+ are 0.44V and -0.80V respectively.	5
	d)	Explain the construction, notation and electrode reaction of saturated calomel electrode with neat labeled diagram.	5
8.	a)	Differentiate atomic and molecular orbitals. How to explain the paramagnetic behavior of oxygen molecule with molecular orbital energy level diagram.	5
	b)	Write the preparation, properties and applications of phenol formaldehyde polymer.	5
		OR	

c) Polyethylene doesn't exhibit conductance whereas poly acetylene exhibits conductance-Reason. Discuss the mechanism of conduction of poly acetylene. 5

d) Define silicone and discuss the preparation and applications of silicone rubber. 5

9.a) A coal has the following composition by weight C= 88%; H=6%; O=3%; S=0.5%; N=2.0% and rest is ash. Calculate the GCV & NCV of coal. 5

b) Write the composition of LPG and CNG and mentions advantages and disadvantages of CNG over LPG. 5

OR

c) Define trans etherification. Why bio diesel is subjected to trans etherification and discuss the process along with its advantages over petro diesel. 5

d) Write a note on Octane number and Cetane number. 5

10.a) Why pure lithium is not used as electrode in Li-ion battery? Discuss the construction and chemistry of Li-ion battery with labelled diagram. 5

b) Enlist the principles of green chemistry and discuss them. 5

OR

c) Define composite material and discuss polymer based and ceramic based composites. 5

d) Write the working principle of photo voltaic cell and mention its advantages over batteries. 5

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