

Time: 3 Hours**Max Marks: 70****PART-A****ANSWER ALL QUESTIONS****[1 x 10 = 10 M]**

1. a) What is micro economics
b) What is Delphi method
c) Define Isoquant
d) What is variable cost
e) Define market
f) What is business cycle
g) Define capital
h) What is IRR
i) Define journal
j) What is liquidity

PART-B**Answer one question from each unit****[5x12=60M]****UNIT-I**

2. a) Compare micro and macro economics (6M)
b) What is law of demand and exceptions (6M)
(OR)
3. a) How do you measure elasticity of demand (6M)
b) Explain three methods of demand forecasting (6M)

UNIT-II

4. a) Discuss law of variable proportions (6M)
b) Explain Cobb-Douglas production function (6M)
(OR)
5. a) Compare revenues and costs (6M)
b) Explain BEP (6M)

UNIT-III

6. a) Discuss types of markets (6M)
b) What are features of monopoly (6M)
(OR)
7. a) What are features of partnership (6M)
b) Explain phases of business cycle (6M)

UNIT-IV

8. Explain NPV with example (12M)
(OR)
9. Explain ARR with example (12M)

UNIT-V

10. Explain double entry system with example. (12M)
(OR)
11. Discuss various liquidity ratios (12M)

AR13

CODE: 13EE2010

SET-2

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

II B.Tech II Semester Supplementary Examinations, October-2021

ELECTRICAL CIRCUIT ANALYSIS-II

(Electrical and Electronics Engineering)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) What is the difference between a balanced load and an unbalanced load?
- b) What is the power factor of the system when sum of the power is equal to zero
- c) Two watt meter readings are 400w and -35w. Calculate the 3-phase reactive power
- d) Current through an inductor cannot change instantaneously. Justify.
- e) What is the final condition of the elements inductor and capacitor?
- f) A RC series circuit is excited by a dc voltage source 80V by closing the switch at $t=0$. Determine the voltage across the capacitor in a time of one constant.
- g) Why transient occurs in electric circuits?
- h) The cut-off frequency of the constant k-low pass filter is-----
- i) Define High pass filter?
- j) The value of β in the attenuation band of constant k-low pass filter is-----

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

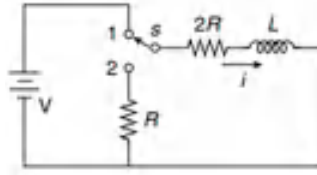
2. a) Derive the relationship between the phase and line voltages and currents in a three-phase star-connected circuit. Draw phasor diagrams also. 6M
 - b) A delta-connected three-phase motor load is supplied from a 400V, three-phase, 50Hz supply system. The line current drawn is 21A. The input power 11 kW. What will be the line current and power factor when the motor windings are delta connected? 6M
- (OR)
3. a) A three-phase four-wire supply system has a line voltage of 400V. Three non-inductive loads of 16kW, 8 kW and 12kW are connected between R, Y and B phases and the neutral, respectively. Calculate the current flowing through the neutral wire. 6M
 - b) Show that total power is sum of the two watt-meters power in unbalanced star connected load. 6M

UNIT-II

4. Derive expressions for current and voltage under transient condition in a R-L series circuit on sudden application of a DC excitation. 12M

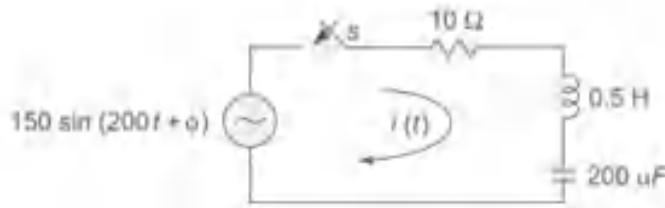
(OR)

5. For the network shown in Figure. the initial position of switch (s) is '1'. After steady state, if the position of switch is changed to '2', the find current $i(t)$ for $t \geq 0$ using Laplace transform technique. 12M



UNIT-III

6. The circuit shown in Fig. consisting of series RLC elements with $R = 10 \Omega$, $L = 0.5 \text{ H}$ and $C = 200 \mu\text{F}$ has a sinusoidal voltage $V(t) = 150 \sin(200t + \Phi)$. If the switch is closed when $\Phi = 30^\circ$, determine the current equation. 12M



(OR)

7. Derive expression for current of a capacitor and resistor in series on application of an AC voltage using Laplace transform method. 12M

UNIT-IV

8. a) Explain the Hurwitz conditions for stability 6M
b) Determine whether the given function is a positive real function (PRF) and hence realisable. 6M

$$F(s) = \frac{s^2 + 6s + 5}{s^2 + 9s + 14}$$

(OR)

9. An impedance function is given as, 12M

$$Z(s) = \frac{s(s+2)(s+5)}{(s+1)(s+4)}$$

Find Cauer form-I and Cauer form-II of circuits, which this impedance function represents

UNIT-V

10. Design the T-section and pi-section of a constant K-type BPF that has a pass band from 1500 to 5500 Hz and characteristic resistance of 200Ω . Further, find resonant frequency of series and shunt arms 12M

(OR)

11. Develop composite filters using constant K-type and m-derived filters. 12M

AR13

CODE: 13CS2009

SET-2

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

II B.Tech II Semester Supplementary Examinations, October-2021

**FORMAL LANGUAGES AND AUTOMATA THEORY
(Common to CSE & IT)**

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1.
 - a) Define alphabet.
 - b) Define Deterministic Finite Automata mathematically
 - c) Define mealy machine.
 - d) Define regular language.
 - e) Define right linear grammar.
 - f) Define Greibach normal form.
 - g) Draw the model of Push Down Automata
 - h) What is acceptance of PDA by empty stack?
 - i) Write all the tuples of Turing machine.
 - j) Define NP-Complete problem.

PART-B

Answer one question from each unit

[5x12=60M]

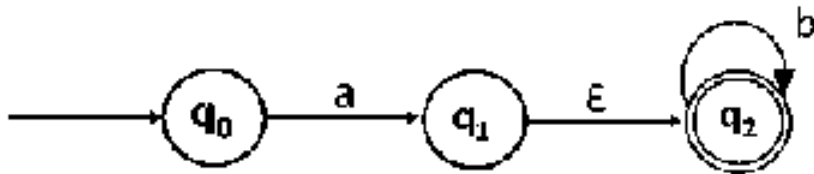
UNIT-I

2. Design DFA over $\Sigma = \{a, b\}$ which accepts set of all strings containing
 - i. Even number of a's and even number of b's
 - ii. Even number of a's and odd number of b's
 - iii. Odd number of a's and even number of b's
 - iv. Odd number of a's and Odd number of b's

12M

(OR)

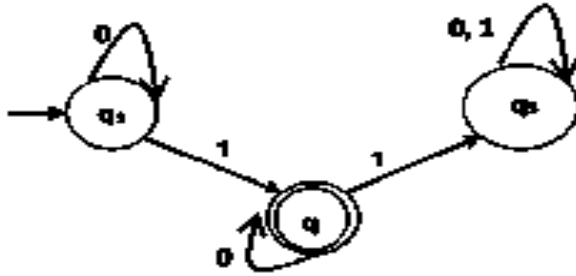
3. Eliminate the ϵ -moves from the following ϵ -NFA and convert its equivalent DFA



12M

UNIT-II

4. a) Design Epsilon-NFA for $(a/b)^*a$ 6M
b) Prove that $L = \{a^i b^i \mid i \geq 0\}$ is not regular. 6M
- (OR)
5. State and prove Arden's theorem. Apply the Arden's theorem to convert the following Finite automata to Regular expression



12M

UNIT-III

6. Consider the CFG with following productions
 $S \rightarrow aB / bA$,
 $A \rightarrow a / aS / bAA$
 $B \rightarrow b / bS / aBB$
Construct Right Most Derivation and Left Most Derivation for the string **aabbabab**.
Also draw the parse tree. 12M
- (OR)
7. Convert the following CFG into Chomsky Normal form.
 $S \rightarrow XB \mid AA$
 $A \rightarrow a \mid SA$
 $B \rightarrow b$
 $X \rightarrow a$ 12M

UNIT-IV

8. a) Write the mathematical definition of Pushdown automata and explain the acceptance of string by PDA. 6M
b) Construct PDA for the following Context free grammar 6M
 $S \rightarrow aSb$
 $S \rightarrow a \mid b \mid \epsilon$

(OR)

9. Design PDA which accepts $L = \{a^n b^n \mid n \geq 1\}$ and check the acceptance of the string **aabb**. 12M

UNIT-V

10. . Design Turing machine for $L = \{ww^R \mid w = \{a, b\}^*\}$ 12M
- (OR)
11. a) Explain about Chomsky hierarchy of languages. 6M
b) Explain about P, NP, NP-Complete and NP-Hard problems. 6M