

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
B.E./B.TECH DEGREE EXAMINATIONS- APRIL -2022
COMMON TO AIDS,BME,BTE, CSE, CYBER,PHARMA& MECH
BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING
 (Candidates admitted under 2021 Regulations-SCBCS)

Time : 1 1/2 Hours

Maximum Marks:50 Marks

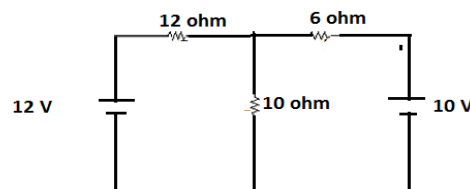
ELECTRICAL ENGINEERING

Answer **ALL** questions
Part-A (5 x 2 =10 Marks)

- 1 Define circuit.
- 2 Mention the two applications of parallel circuits.
- 3 State Lenz's Law.
- 4 Define power system.
- 5 What is arc blast?

Answer **ALL** questions
Part-B (2 x12 =24 Marks)

- 6 a. Derive the reactance for Inductor connected in single phase AC supply.
OR
- b. In the circuit of figure is given below. Find the current through each resistor and voltage drop across each resistor.



- 7 a. Compare core type and shell type transformer.
OR
- b. Explain various topologies used in distribution of electric power with its advantages.

Answer **ALL** questions
PART-C (1 x 16 = 16)

- 8 a. Explain with a neat sketch of the construction and working principle of MI Instrument.
OR
- b. Draw and explain the simple layout of generation, transmission and distribution of electrical power.

ELECTRONICS ENGINEERING

(Candidates admitted under 2021 Regulations-SCBCS)

Time : 1 1/2 Hours

Maximum Marks:50 Marks

Answer **ALL** questions**Part-A (5 x 2 =10 Marks)**

- 1 Define Depletion region.
- 2 Restate an encoder.
- 3 Restate PROM.
- 4 Describe LED and its applications.
- 5 List the applications of the Radar.

Answer **ALL** questions**Part-B (2 x12 =24 Marks)**

- 6 a. Draw and explain the characteristics of a transistor in Common Base configuration.

OR

- b. Summarize the operation of Encoder circuit.

- 7 a. Tabulate the difference between AM, FM and PM.

OR

- b. Discuss about HDR.

Answer **ALL** questions**PART-C (1 x 16 = 16)**

- 8 a. Explain in detail about semiconductor memories and its types.

OR

- b. Explain the frequency reuse technologies used in mobile communication system.

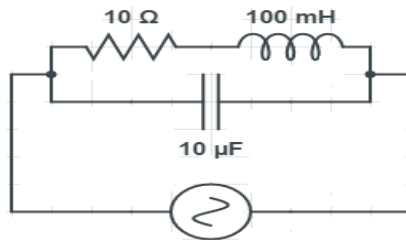
VINAYAKA MISSIONS RESEARCH FOUNDATION
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B.E./ B.TECH DEGREE EXAMINATIONS- APRIL -2022
ELECTRICAL AND ELECTRONICS ENGINEERING
FIRST SEMESTER
ELECTRIC CIRCUIT ANALYSIS

Time : Three Hours

Maximum Marks:100 Marks

Answer **ALL** questions
Part-A (10 x 2 =20 Marks)

- 1 Mention the difference between node and junction.
- 2 Define power factor.
- 3 State Thevenin's theorem
- 4 State Maximum power transfer theorem
- 5 State Milliman's theorem
- 6 Find the resonant frequency of the circuit shown below



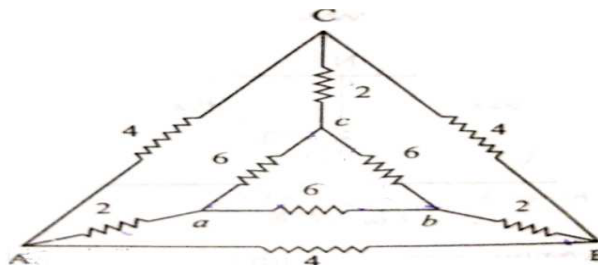
- 7 What is meant by mutual inductance.
- 8 State Quality factor
- 9 Define transient response.
- 10 Define time constant of RC circuit

Answer **Any FIVE** questions
Part-B (5 x10 =50 Marks)

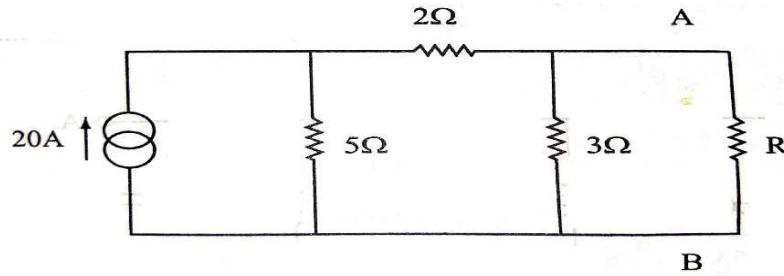
- 11 a. Explain the procedure to obtain the thevenin's equivalent circuit and list out its limitations.

OR

- b. Determine the equivalent resistance across AB of the circuit shown in fig below

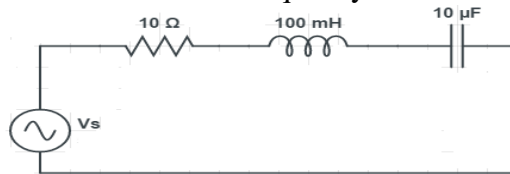


- 12 a. The circuit shown in fig, R absorbs maximum power. Compute the value of R and maximum Power.



OR

- b. For the circuit shown in fig, determine the impedance at resonant frequency, 10 Hz above resonant frequency and 10 Hz below resonant frequency.



- 13 a. Give the short notes on coupled circuit and inductively coupled circuit.

OR

- b. Explain three phase power measurement by 3ammeter and 3 volt meter method

- 14 a. Two wattmeter method is used to measure power in a 3 phase load, the wattmeter readings are 400 W and -35 W .Calculate (i) total active power (ii) power factor and (iii) reactive power

OR

- b. In a balanced 3 phase system, the power is measured by 2 wattmeter method and the Ratio of two wattmeter method is 2:1,Determine the power and power factor

- 15 a. Draw the DC transient response of R-L circuit and derive the expression for voltage across Resistor and Inductor

OR

- b. A resistance R and a 2 micro farad capacitor are connected in series across a 200 V direct supply. Across the capacitor is a neon lamp that strikes at 120 V. calculate R to make the lamp strike 5 Sec after the switch has been closed. If $R=5\text{ M ohm}$, how long will it take the lamp to strike.

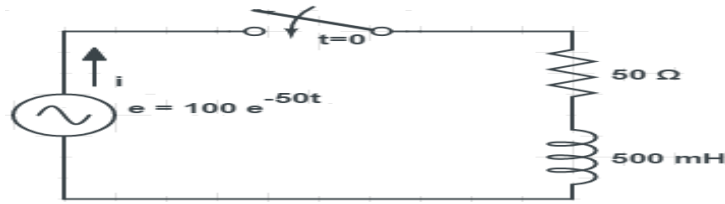
- 16 a. Find the expression for transient current in RC series circuit with $R=5\Omega$, $C=100\mu\text{F}$ and applied voltage of 180V. Assume the switch is closed at $t=0$, and zero initials conditions.

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OR

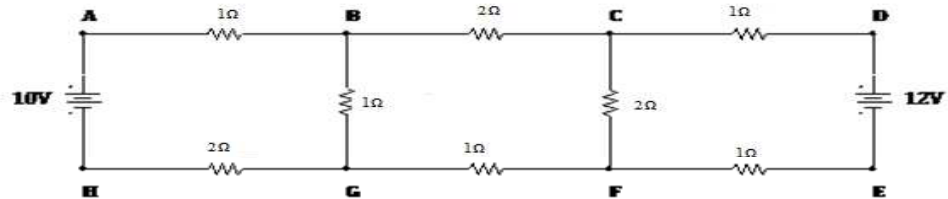
- b. In the series RC circuit shown in fig, the applied voltage is $e = 100e^{-50t}$. Find (a) Resulting current and (b) Initial rate of change of current.



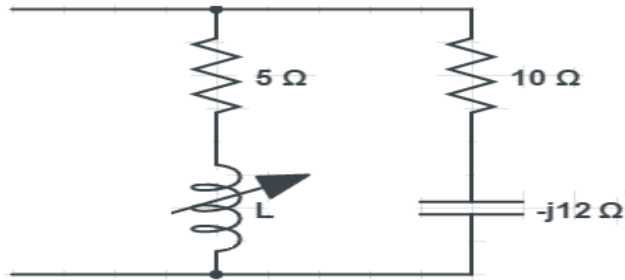
- 17 a. Write short notes on a) Natural response b) Forced response

OR

- b. Estimate the current through the node C to node F by mesh analysis.

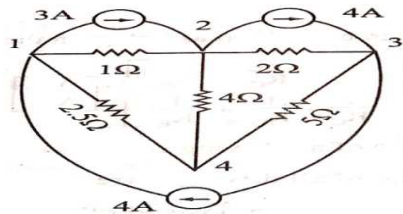


- 18 a. Find the value of L at which the circuit resonates at a frequency of 1000 rad/sec in the circuit shown in fig.



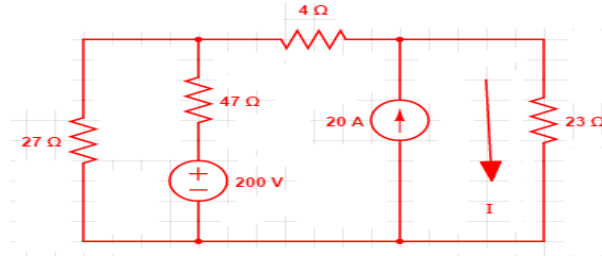
OR

- b. Frame the nodal equations of the network shown in fig. and hence find the difference of potential between nodes 2 and 4.

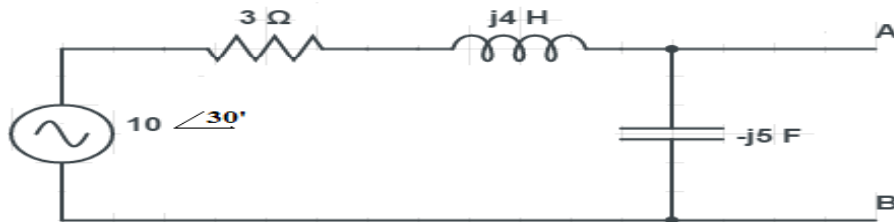


Answer ALL questions**PART-C (2 x 15 = 30)**

- 19 a. Compute the current through 23 ohm resistor in the fig shown below by using superposition theorem

**OR**

- b. A loud speaker is connected across the terminals A and B of the network shown in fig below. What should be the value of impedance of the speaker to obtain maximum power transferred to it and what is the maximum power



- 20 a. A current source is applied to a parallel combination of R, L & C, where $R=10\Omega$, $L=1H$, & $C=1\mu F$
- Compute the resonant frequency.
 - Find the quality factor.
 - Calculate the value of the bandwidth.
 - Compute the lower and upper half frequency points of the band width.

OR

- b. Analyze the performance of double tuned circuit with necessary mathematical expression .

VINAYAKA MISSION'S RESEARCH FOUNDATION
(Deemed to be University)
B.E.DEGREE EXAMINATIONS- APRIL - 2022
COMMON TO ALL BRANCHES
PHYSICAL SCIENCES
(Candidates admitted under 2021 Regulations-SCBCS)

Time : 1 1/2 Hours

Maximum Marks:50 Marks

PART A - ENGINEERING PHYSICS

Answer **ALL** questions

Part-A (5 x 2 =10 Marks)

- 1 Recognize the characteristics of laser.
- 2 Schedule any two applications of holography.
- 3 Tell about the characteristics of graded index multimode fiber.
- 4 Express about piezo-electric effect.
- 5 Schedule the Industrial applications of ultrasonic waves

Answer **Any FIVE** questions

Part-B (2 x12 =24 Marks)

- 6 a. Predict the applications of laser in communication, military and chemical fields.
OR
- b. Express the various types of fibers based on refractive index profile.
- 7 a. Practice obtaining the expression for velocity of SONAR.
OR
- b. Interpret the biological and chemical applications of ultrasonics.

Answer **ALL** questions

PART-C (1 x 16 = 16)

- 8 a. Tell about holography. Illustrate the construction and working of holography with neat diagram.
OR
- b. Demonstrate piezo- electric effect? Explain with a neat circuit, the generation of ultrasonic using a piezo- electric oscillator.

PART B - ENGINEERING CHEMISTRY
(Candidates admitted under 2021 Regulations-SCBCS)

Time : 1 1/2 Hours

Maximum Marks:50 Marks

Answer **ALL** questions
Part-A (5 x 2 =10 Marks)

- 1 What is EDTA? Write its structure?
- 2 How calgon conditioning is superior than other methods?
- 3 Define electrochemical series.
- 4 State pilling bed worth rule.
- 5 Recall cetane number.

Answer **Any FIVE** questions
Part-B (2 x12 =24 Marks)

- 6 a. How is exhausted resin regenerated in an ion-exchanger? What are merits and demerits of ion-exchange method?

OR

- b. List out the various water quality parameters for the drinking water.

- 7 a. Discuss about electrochemical series and their applications.

OR

- b. What is power alcohol? Explain its manufacture, properties of power alcohol.

Answer **ALL** questions
PART-C (1 x 16 = 16)

- 8 a. How is internal treatment of boiler water carried out using phosphate, Carbonate, Sodium aluminate and calgon conditioning?

OR

- b. Explain Otto-Hoffman's by product oven method for manufacture of metallurgical coal.
