

COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY

B.TECH. DEGREE I SEMESTER REGULAR/SUPPLEMENTARY EXAMINATION IN MARINE ENGINEERING MAY 2021

19-208-0105 BASIC ELECTRICAL ENGINEERING (2019 Scheme)

Time: 30 Minutes [for Answering and Scanning/Uploading the page of the Answer Sheet]

Max. Marks: 9

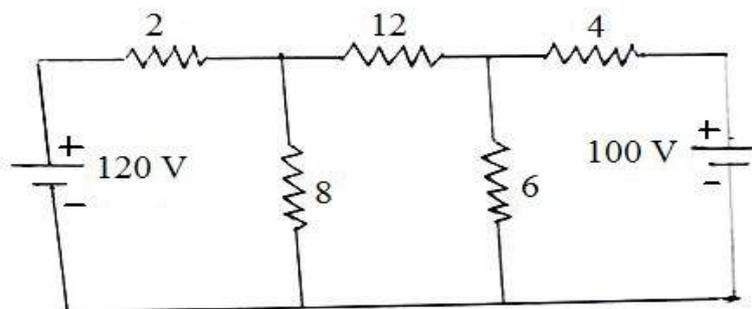
INSTRUCTIONS

1. You have to be available in Google Meet Video Camera throughout the examination hours.
2. Those students who are not present through Google Meet Video Camera will not be permitted to write the online examination.
3. You have to share your '**live location**' to the faculty before uploading the answer sheet.
4. You have to answer only one question.
5. You have to write Register Number, Subject code and Module/Group Number (as given in the Question Paper) in each page.
6. Answer may not exceed one page of an A4 size paper in a standard handwriting, as far as possible.
7. If at all an answer goes beyond one page, (due to your handwriting) another page can also be used. In such a situation, the page number should be given as 1/2, 2/2.
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MODULE - I

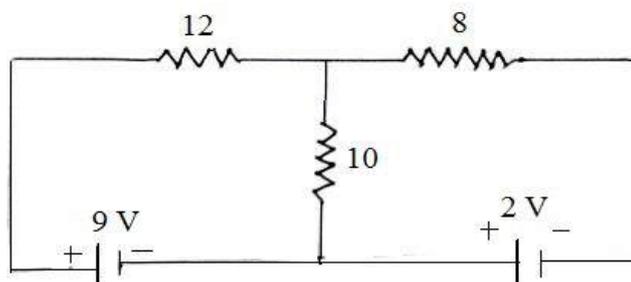
(Answer *ANY ONE* question)

- I(1). Use any of the network theorems to calculate the magnitude and direction of flow of current through the 12 ohm resistance in the circuit below. (9)



OR

- I(2). Consider the 10 ohm resistor as load for the following circuit. Find Thevenin's and Norton's equivalent across the load terminals of the circuit. (9)



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MODULE - II

(Answer *ANY ONE* question)

II(1). Two capacitors A & B having capacitances $20\mu\text{F}$ and 30mF respectively are connected in series. When a third capacitance C is connected in parallel with A, the potential difference across B is 400 V. Calculate the value of C and the energy stored in it. (9)

OR

II(2). A coil consists of 750 turns and a current of 10A in the coil gives rise to magnetic flux of $1200\mu\text{Wb}$. Calculate the inductance of the coil and determine the average Emf induced in the coil when this current is reversed in 0.01 sec. (9)

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MODULE - III

(Answer *ANY ONE* question)

III(1). An inductor having a resistance of 10Ω supplied with 240 V, 50Hz ac draws a current of 12 A. Calculate the impedance, inductive reactance and inductance. Draw the vector representation of the voltages, current and phase angle of the circuit. (9)

OR

III(2). A series circuit consisting of lossless capacitor of capacitance 10picofarad and a coil of inductance 100mH and resistance 1000Ω are supplied from a variable frequency source. The frequency is to be varied till maximum current flows in the circuit. Calculate the maximum current, the frequency at which it occurs and half power frequencies. (9)

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MODULE - IV

(Answer *ANY ONE* question)

- IV(1). Compare Hydro and Diesel power stations. (9)
- OR**
- IV(2). Three impedance coils, each having a resistance of 20Ω and a reactance of 15Ω are connected in star to a 400 V, 3 phase, and 50 Hz supply. Calculate the line current power supplied and the power factor. (9)

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MODULE - V

(Answer *ANY ONE* question)

- V(1). (a) Discuss the advantages of using AC power over DC power. (5)
(b) What is electric shock, how can it be prevented? (4)

OR

- V(2). Write notes on:
(a) MCB & Fuse. (5)
(b) Interconnected AC distribution system. (4)
