JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2024

B.Tech-II Semester (BI/BT)

COURSE CODE(CREDITS): 18B11EC212(4)

COURSE NAME: Basic Electrical Science MAX. MARKS: 25

COURSE INSTRUCTORS: Dr. Alok Kumar MAX. TIME: 1 Hour 30 Minutes

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Note: *(a)All questions are compulsory.*

(b)Marks are indicated against each question in square brackets.

(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

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Q.1 In Fig.1, find the value of R_L for maximum power transfer across load. Also find the value of maximum power transfer through load resistance (R_L).

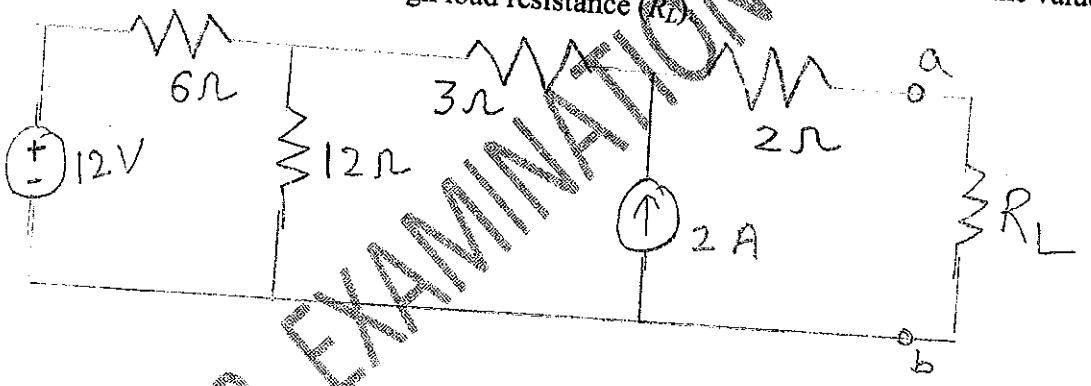

Fig.1

[CO1] **[4Marks]**

Q.2 Find the current flowing through 2Ω resistor in Fig.2 using superposition theorem.

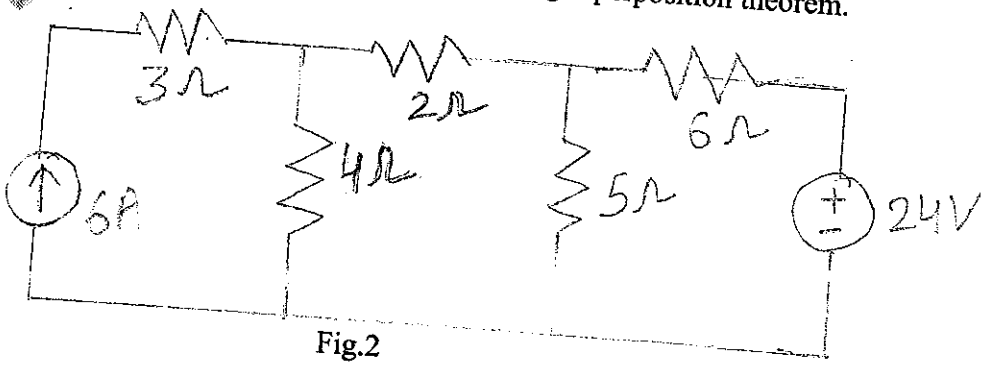

Fig.2

[CO1] **[4Marks]**

Q.3 Determine the equivalent input impedance across the terminal A and B in Fig.3. Assumed that the circuit operate at frequency ω=5 rad/s. [CO2] **[4Marks]**

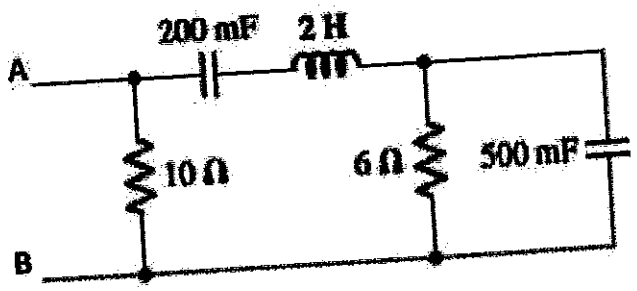

Fig.3

Q.4 Determine the v in the given figure (Fig.4) [CO1] **[4Marks]**

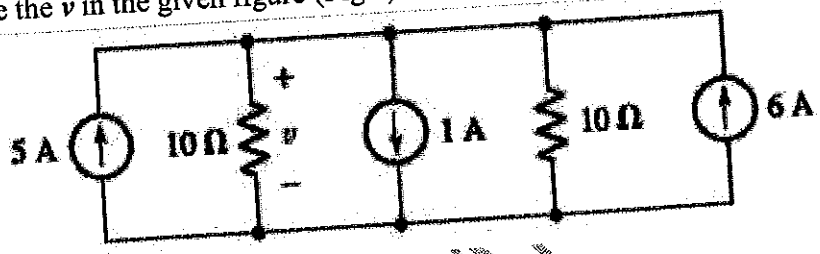

Fig.4

Q.5 The resistance of a coil is 3 Ω and its time constant is 1.8 sec.. At $t = 0$, a 10-V source is connected to it. Determine [CO2] **[4 Marks]**

a) The current at t= 1 sec.
b) The time at which the current attains half of its final value
c) The initial rate of growth of current.

Q.6 Determine the voltage v(t) and i(t) at t= 0^- , 0^+ , and t= 0.05 sec. for the circuit shown in given figure (Fig.5) [CO2,CO3] **[5 Marks]**

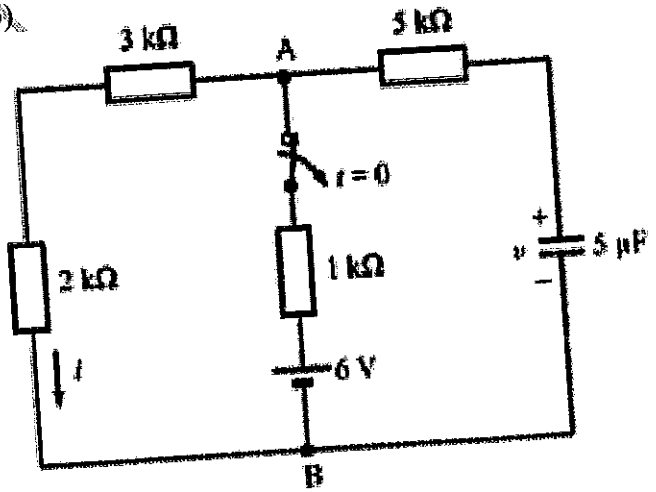

Fig. 5