U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

May 2023 Semester End Main Examinations

Programme: B.E.   Semester: III

Branch: ETE, EIE   Duration: 3 hrs.

Course Code: 22ES3PCECA   Max Marks: 100

Course: Electric Circuit Analysis   Date: 17.05.2023
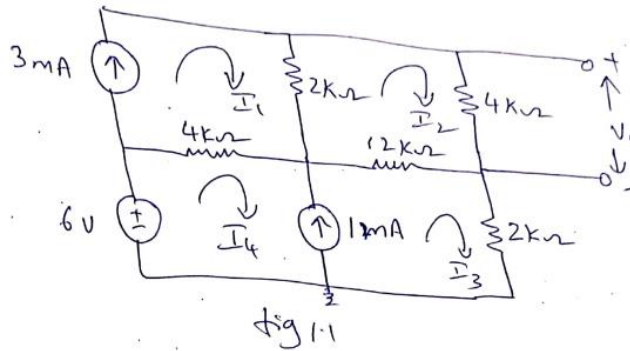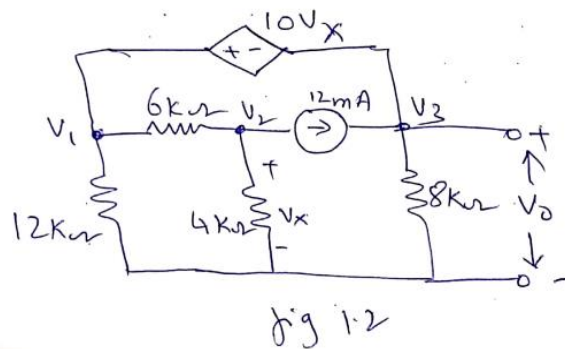
Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
                  2. Missing data, if any, may be suitably assumed.

UNIT - I

1   a)   Using loop analysis find Vo in the network shown in fig 1.1   **10**
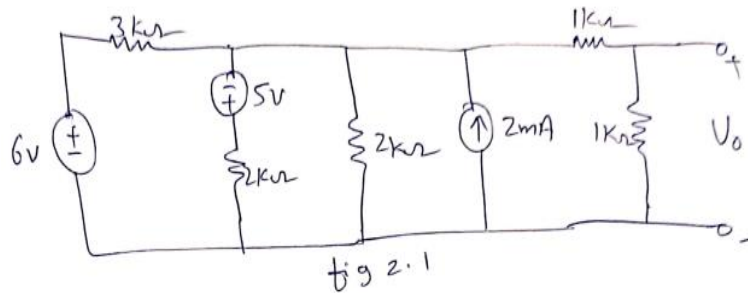

fig 1.1

   b)   Apply nodal analysis to find power dissipated across 8kΩ resistor as shown in Fig 1.2   **10**
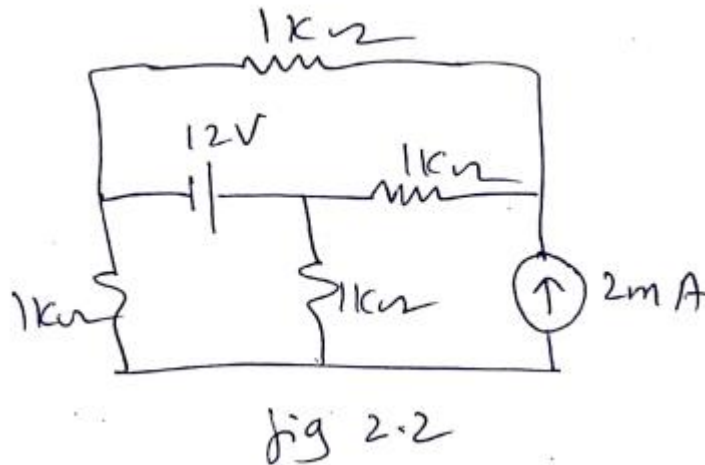

fig 1.2

OR

2   a)   Find V_o in the network using source transformation for the circuit shown in fig 2.1   **06**
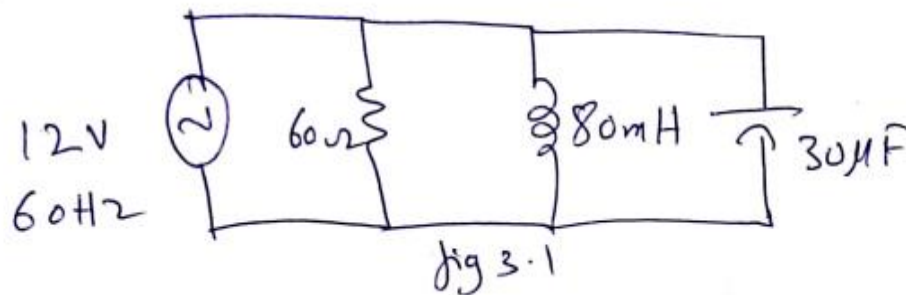
fig 2.1

b) Express star network in terms of delta network and find their equivalent resistances **06**

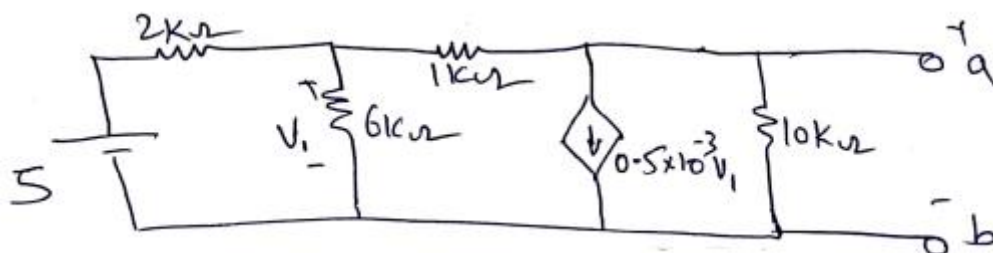c) For the circuit shown in fig 2.2, find the voltage across 2mA source **08**

fig 2.2

UNIT - II

3 a) For the parallel resonant circuit shown in fig 3.1, find Z and total current I **06**

fig 3.1

b) Derive the expression for quality factor in a series resonant circuit **04**

c) Select a 3 mesh electrical circuit and indicate graph, branch, node, oriented graph, tree, cotree. Write the incidence matrix, tieset schedule and cutset schedule for the same. **10**

UNIT - III

4 a) Find the Norton's equivalent circuit between a and b **10**

b) Apply superposition theorem to find Io in the network shown in fig 4.2   **10**
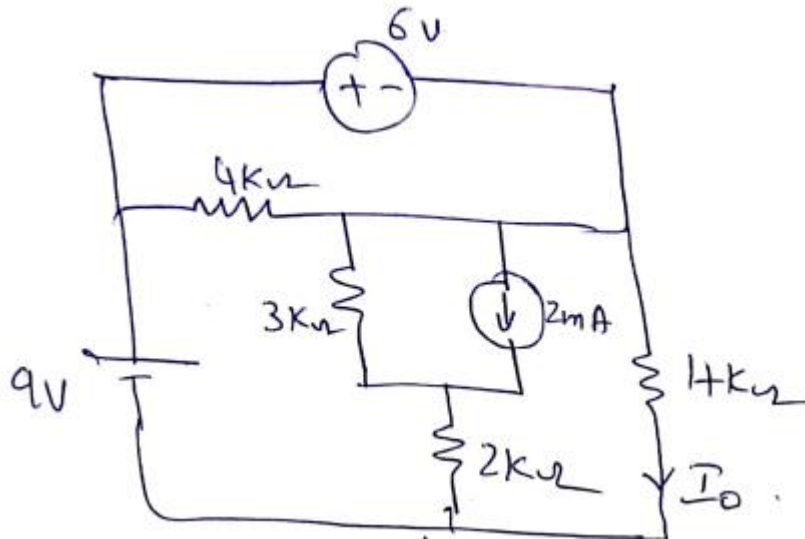

Fig 4.2

UNIT - IV

5 a) For the network shown in fig 5.1, switch k is closed and steady state has been reached. At t=0 switch is opened. Find $i(0^+)$, $di(0^+)/dt$, $d^2i(0^+)/dt^2$ at $t=0^+$ **07**
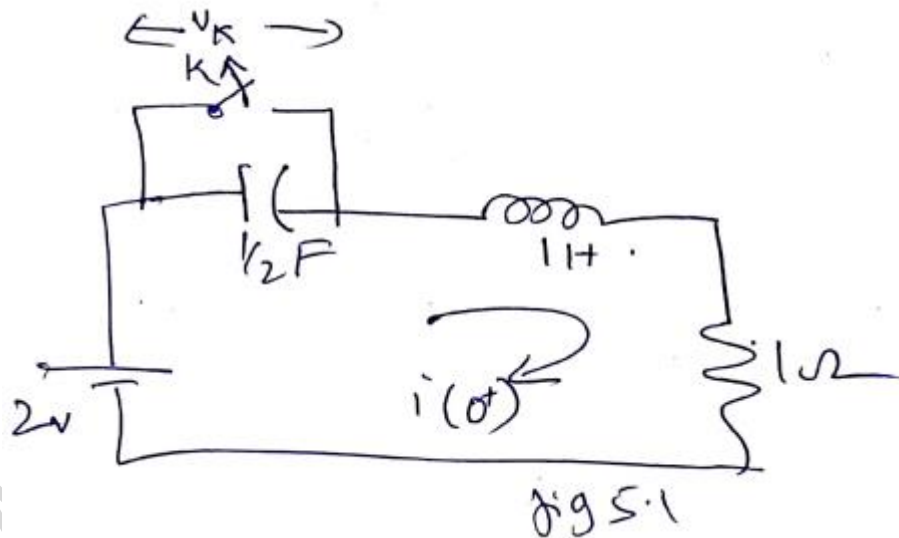

fig 5·1

b) State and prove initial value theorem   **05**

c) Find the Laplace transform of the periodic waveform shown in fig 5.2   **08**

fig 5·2

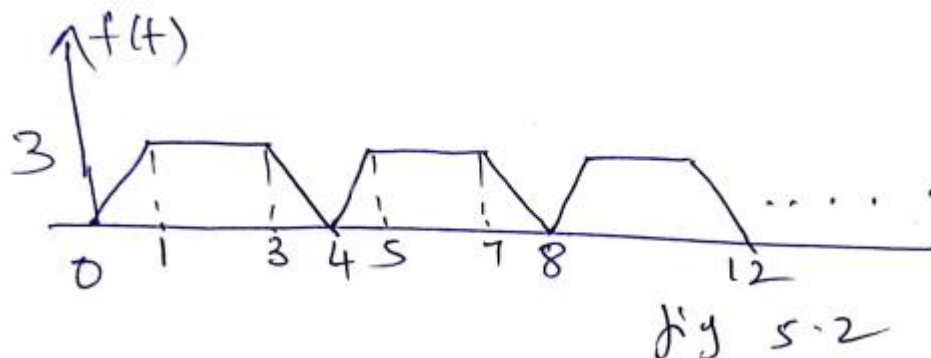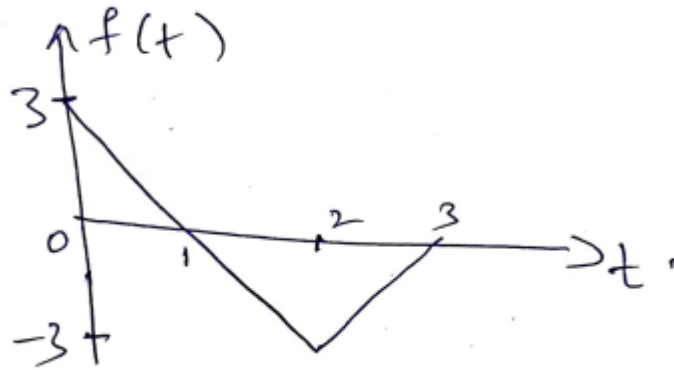6   a)   Find the Laplace transform of f(t).   **08**

   b)   Find the Laplace transform of a delayed ramp function   **04**

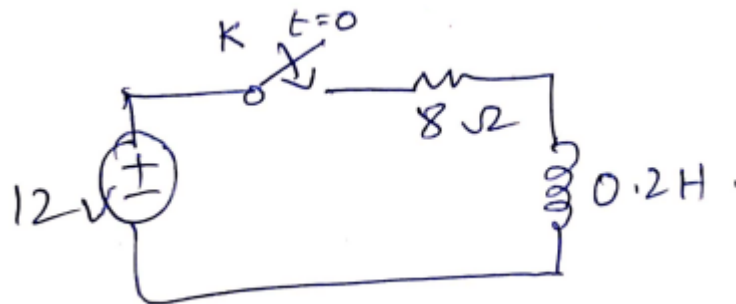   c)   In the given network fig 6.2, k is closed at t=0. Find i, di/dt, d^2i/dt^2 **08**

Fig 6.2

UNIT - V

7   a)   Define ABCD parameter with relevant mathematical expressions   **04**

   b)   Find [Z] and [T] parameters for the circuit shown   **10**
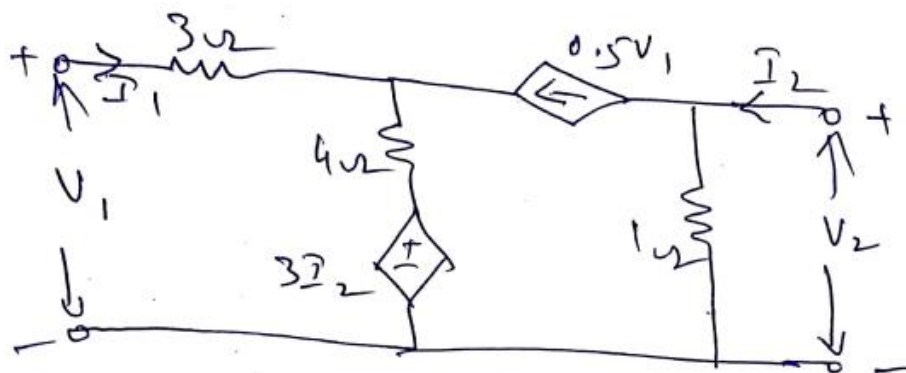

Fig 7.1

   c)   Derive the relationship between h parameter and Y parameters   **06**

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