MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
(A constituent unit of MAHE, Manipal)

THIRD SEMESTER B. TECH (ELECTRONICS AND INSTRUMENTATION)

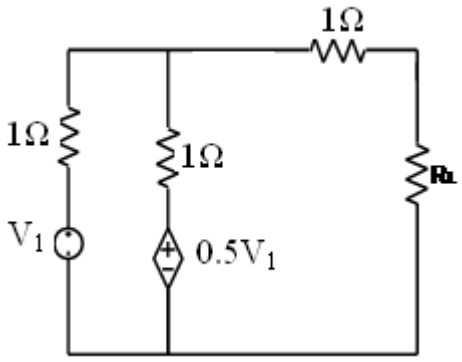
PROCTORED ONLINE END SEMESTER EXAMINATION Jan. 2022

SUBJECT: NETWORK ANALYSIS AND SIGNALS (ICE 2154)

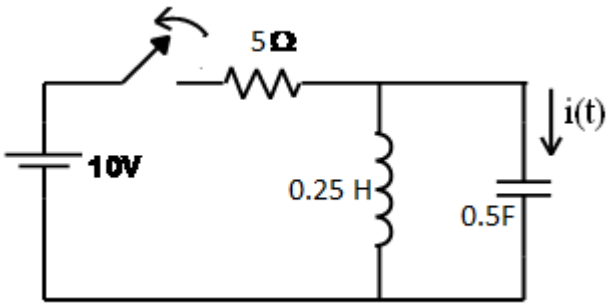
TIME: 75 MINUTES **DATE: 20-01-2022** **MAX MARKS: 20**

Note: Answer All questions.

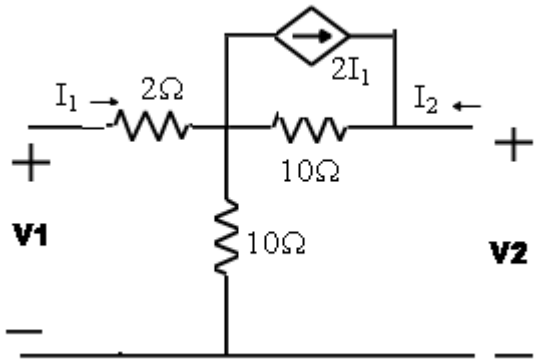
1 A For the circuit shown in figure, find the value of R_L for maximum power to the load. Also calculate the maximum power delivered to the load. 3



B In the network shown in figure, the switch k is opened at t=0 after the network has attained steady state with the switch closed. Obtain expression for current i(t) in complementary and particular solution form. Also obtain total solution for i(t). 3



C For the network shown in figure determine Z and Y parameters.



4

2 A Input x(t) and impulse response h(t) of a LTI system is given by $x(t) = u(t-2) - u(t-4)$ and ***h(t) = u(t + 2) – u(t – 2).*** Use convolution integral to evaluate the output y(t) of the system and sketch *y(t).* 4

B Evaluate appropriate Fourier representation and sketch magnitude and phase specta of 3

(i) $x(t) = 1 + \cos(2\pi t) + \sin(3\pi t)$

(ii) $x(t) = e^{3t}\, u(-t)$

C A LTI system is described by $\frac{d^2y(t)}{dt^2} + 3\frac{dy(t)}{dt} + 2y(t) = \frac{dx(t)}{dt} + 2x(t)$.

Determine (i) Frequency response of the system (ii) impulse response of the system (iii) Output of the system for an input ***x(t)= e^{-2t} u(t)*** 3

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