Total No. of Printed Pages:5

SUBJECT CODE NO:- P-247

FACULTY OF ENGINEERING AND TECHNOLOGY

S.E. (EEP/EE/EEE) Examination May/June 2017

Network Analysis

(Revised)

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B
i) Use suitable data if required.
ii) Q.No.1 from section A and Q.No.6 from section B are compulsory.
iii) Solve any two questions from the remaining questions in each section A and B.

Section A

Q.1 Solve any five (2x5) 10

i. Define convolution integral.
ii. State the Thevenin theorem.
iii. Define linear and nonlinear network.
iv. Give principle of duality
v. What are magnetically coupled circuits.
vi. State compensation theorem.
vii. What is significance of critical conditions
viii. Define and give characteristics of unit step function

Q.2 A Write short note on duality and dual network 05

B Compute the voltage v for the coupled circuit in fig.1 05

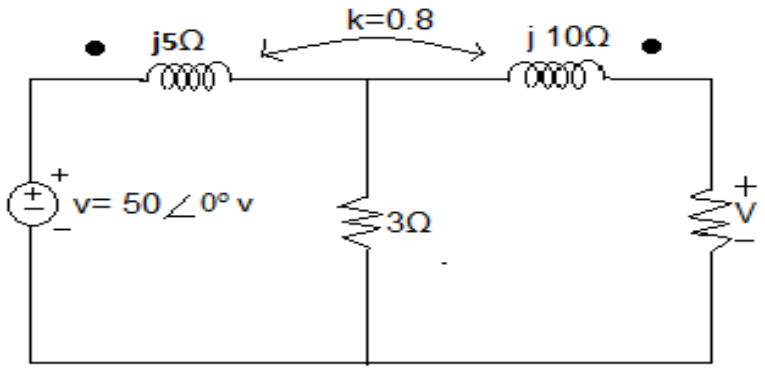

Fig 1

C Replace the network at terminals A-B with Thevenin equivalent circuit. 05

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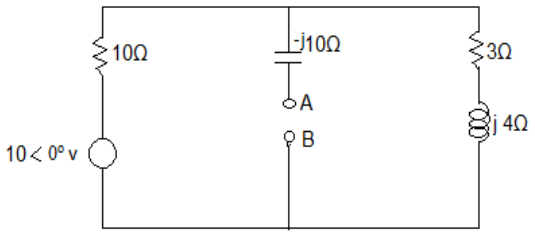

Fig 2

Q.3 A Find how many seconds after t=0 has the current i (t) become one half of its initial value in the given circuit in fig 3 05

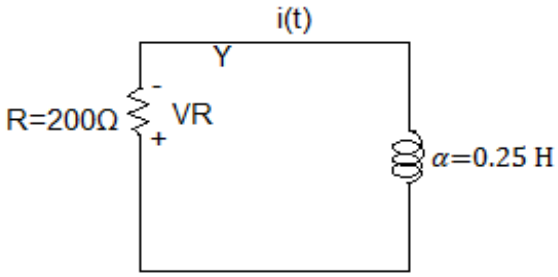

Fig 3

B The switch is closed t=0 find value of i, $\frac{di}{dt}, \frac{d^2i}{dt^2}$ at t=0^+. Assume initial current of inductor to be zero . 05

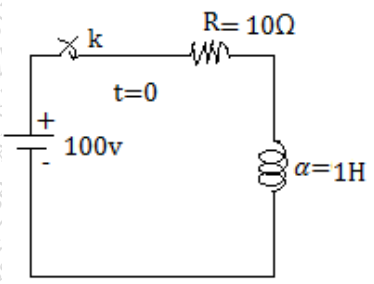

Fig 4

C Find out the Laplace transform of f(t)= e^{-at} for t≥ 0. 05

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Q.4 A Find the Laplace transform of the waveform shown in fig.5 05

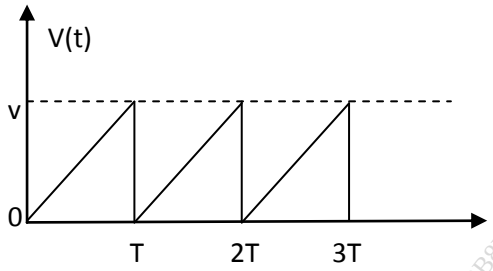

fig 5

B Find inverse Laplace transform of given F(s) 05

F(s)=$\frac{s+2}{s(s+3)(s+4)}$

C Obtain the inverse Laplace transform of given F(s) 05

F(s) =$\frac{s-2}{s(s+1)^3}$.

Q.5 A Write the advantages of s domain network. 05

B Derive the transform impedance and of induction and capacitor. 05

C Find the dimming point impedance of the given one port network shown in fig 6. 05

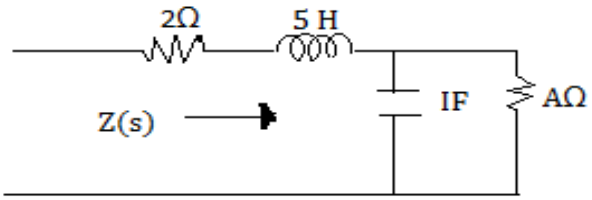

Fig 6

Section B

Q.6 Solve any five 10

i. Define pole and zero of a network function.
ii. Write the Y parameter of two port network.
iii. Define RMS value of an alternating quantity.
iv. List the network function of two port n/w
v. Test whether the following represent driving point immittances $\frac{S^2+3S+2}{S^2+6S+9}$.
vi. What is complex frequency?
vii. What is Fourier series? What are the applications of Fourier transform.
viii. What is physical significance of reactive power?

Q.7 A If I(s) = $\frac{3s(s+2)}{(s+1)(s+4)}$ plot poles and zeros in s plane and obtain time domain response i(t) 05

B Plot the poles and zeros of the network function F(s) = $\frac{s(s+1)}{(s+3)(s^2+4s+5)}$ 05

C Derive the inter conversion to connect h parameter into z parameters. 05

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Q.8 A Find h parameters for the network 05

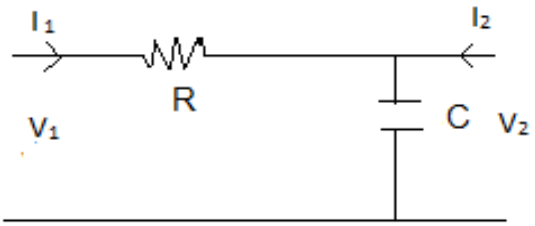
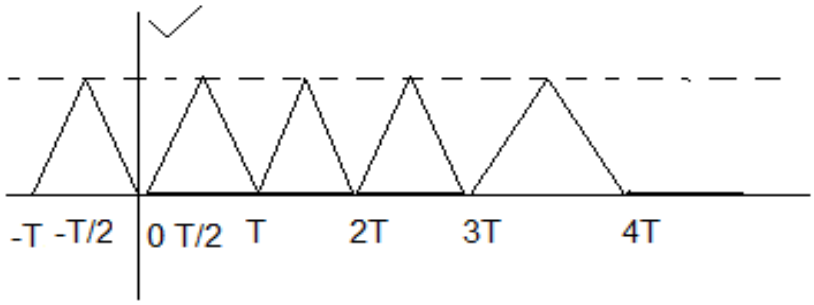


Fig 7

B State the limitations on pole and zero location in transfer function of two port network. 05

C What is the power transfer optimization what are the problems in optimizing power transfer 05

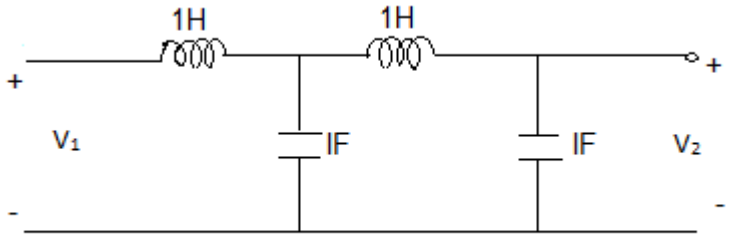
Q.9 A Find the Fourier coefficients of waveform f (t). 05



B Write short note on insertion loss 05

C Explain in detail average power and complex power. 05

Q.10A Find the network functions $\frac{V_1}{I_1}$ for the network fig. 9 05



B For the following network show. 05
$\frac{v_2}{v_1} = \frac{1}{s^2+3s+1}$ in fig.10

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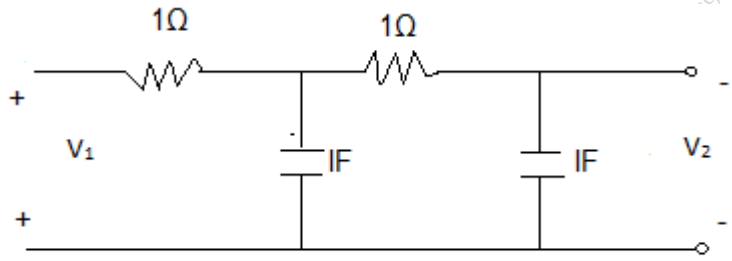

C Write short note on half wave symmetry. 05