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Total No. of Pages : 03

Total No. of Questions : 18

B.Tech. (ECE/Electronics Engg/Electronics & Computer Engg)

(2012 to 2017) (Sem.-3)

NETWORK ANALYSIS AND SYNTHESIS

Subject Code : BTEC-303

M.Code : 57585

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A**Answer briefly :**

Q1. State various properties of LC networks.

Q2. Find convolution between $u(t)$ and $e^{-t}u(t)$.Q3. Find $F(t)$ if $F(s) = \frac{s+1}{s^2(s+5)}$.

Q4. What is the relation between transfer function of a system and impulse response.

Q5. Check the positive realness of $F(s) = \frac{(s+2)(s+4)}{(s+1)(s+3)}$.

Q6. Differentiate between Network Analysis and Network Synthesis. Name the methods to solve them.

Q7. Give the reason: why a system is stable if poles are on left hand side of s-plane?

Q8. Explain the relation between step, ramp and impulse function.

Q9. Define all parameters of the characteristic output of a pass band filter.

Q10. Find condition for a 2-port network using Z and Y-Parameters to be reciprocal

SECTION-B

Q11. In the given circuit find current in all resistors using nodal analysis in Fig. 1.

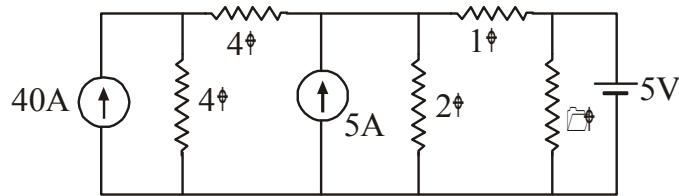


FIG.1

Q12. Find h-parameters of the network of Fig. 2.

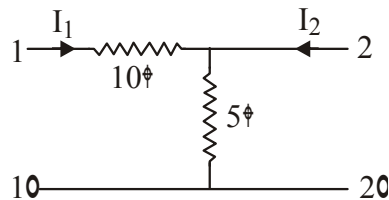


FIG.2

Q13. Find driving point admittance and transfer admittance for bridged T-network shown in Fig. 3 with a 2Ω load resistor connected across port 2.

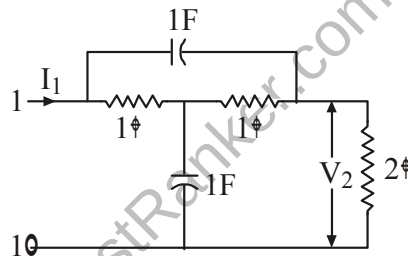


FIG.3

Q14. Determine the current produced by each battery in the circuit of Fig. 4.

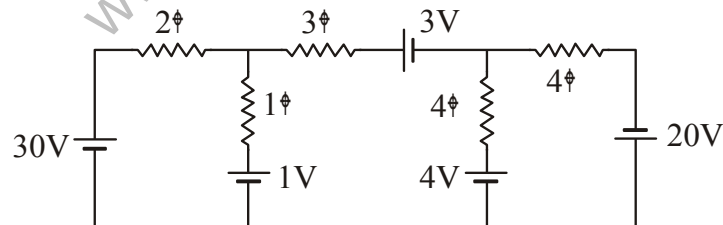


FIG.4

Q15. Classify filters and analyze any one type of filter in detail.

SECTION-C

Q16. Synthesize a network using Foster-I and Foster -II forms for the impedance function :

$$Z(s) = \frac{s(s^2 + 9)}{(s^2 + 5)(s^2 + 13)}$$

Q17. Design an m-derived T and π network low pass filter with design impedance of 600Ω and cut off frequency of 1.8 KHz and infinite attenuation at 2 KHz.

Q18. a) Define Composite filters.

b) Find Laplace transform of Fig. 5

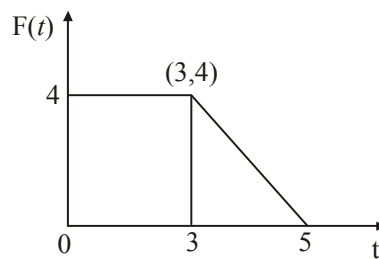


FIG.5

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.