SHAHEED BHAGAT SINGH STATE TECHNICAL CAMPUS, FEROZEPUR

ROLL No: | | | | | | | | | | | | |

Total number of pages:[02]
Total number of questions: 06

B.Tech. || ECE || 3rd Semester

Network Analysis and Synthesis

Subject Code: BTEC-303

Time allowed: 3 Hrs **Max Marks: 60**

Important Instructions:

- **All questions are compulsory**
- **Assume any missing data**

PART A (2×10)

Q. 1. Short-Answer Questions: All COs

(a) Explain the term network analysis.
(b) Differentiate between loop and node.
(c) State and explain Reciprocity Theorem
(d) Define unit step function and find its Laplace transform.
(e) How will you define transfer function? Explain.
(f) List the demerits of m-derived filters.
(g) Define Kirchhoff's current Law.
(h)Define a positive real function.
(i)What is Gate function?
(j) Differentiate between loop analysis and nodal analysis.

PART B (8×5)

Q. 2. State and prove the Thevein's theorem with the help of a suitable example and also write limitations. COa

OR

What is standard signals? Explain all the functions of standards signals with example. COa

Q. 3. What is transfer function? Explain time domain behaviors from poles and zeros. COb

OR

State and Prove the convolution theorem with example. COb

Q. 4. Find the Foster-I and Foster-II form of the function COc

$$Z(s) = (s + 1)(s + 3)/\ s(s+2)$$

OR

What are the properties of R-C driving point impedance functions? How these can be synthesized? COc

Q. 5. Define composite filter. Draw the block diagram of composite filter and explain each stage in detail. COd

OR

What is a filter? Give the properties of filter. Classify the filters depending upon the and α, βrelationship between the arm impedances. Derive the expressions for characteristic impedance of a low pass filter in the pass band and stop band. COd

Q. 6. How is two terminal pair network characterized in terms of input output variables? Also mention various two port parameters and write equations in terms of these parameters.

OR

Design a constant –K band stop filter with cut-off frequencies of 3kHz and 7.5kHz and nominal characteristic impedance of Ro = 900Ω. CO6