

**B.Tech. - VIEP - ELECTRICAL ENGINEERING
(BTELVI)**

Term-End Examination

00793

June, 2018

BIEEEE-012 : ACTIVE FILTER DESIGN

Time : 3 hours

Maximum Marks : 70

*Note : Attempt any **seven** questions. All questions carry equal marks. Use of scientific calculator is permitted. Missing data may be suitably assumed.*

1. Give the expression for standard second order function in s-domain for all types of filters and their pole-zero plots. 10
2. Prove that for given specifications, the filter order required for realizing Chebyshev function is less than that for Butterworth function. 10
3. Define the terms – phase delay and group delay. Derive the expression of them for delay equalizer function. 10
4. What is pole frequency error problem ? Write down the elementary ideas of compensation in OP-AMP filters 5+5=10

5. Draw the circuit diagram of a Twin-T Notch filter and derive its transfer function. Also find the filter parameters. 10
6. Draw the circuit diagram of Sallen-key low-pass filter and carry out the sensitivity analysis of the filter parameters. 10
7. Explain how Q-enhancement is achieved in filters. 10
8. Explain the principle of operation of switched-capacitor filters. 10
9. Transform a 3rd order LC ladder filter into an active RC filter using leapfrog technique. 10
10. Write short notes on any *two* of the following : 2×5=10
- (a) Chebyshev Approximation
 - (b) Gyration
 - (c) Frequency Transformation
 - (d) Sensitivity
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