B.Tech. – VIEP – ELECTRICAL ENGINEERING (BTELVI)

Term-End Examination

00323   **December, 2018**

BIEEE-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. A maximally flat magnitude transfer function is the Butterworth approximation. Prove that its poles lie on a unit circle.   *10*

2. Prove that the poles for Chebyshev function lie on an ellipse.   *10*

3. Draw the ideal and practical frequency response curves for the five filter functions.   *10*

4. Discuss Antoniou Gyrators. Realise various filters using Antoniou Gyrators.   *5+5=10*

5. Draw and explain the use of bridged T network in active filters.   *10*

6. Draw the circuit diagram of a KHN Biquad. Derive the transfer functions and hence the filter parameters. *10*

7. Draw the circuit diagram of Tow-Thomas Biquad. Derive its transfer function and hence the filter parameters. *10*

8. Transform a second order passive RLC high pass filter circuit into an active RC filter using Antoniou Gyrators. *10*

9. Describe how Q enhancement technique is achieved in filters. What is pole frequency error problem ? *10*

10. Write short notes on any *two* of the following : *2×5=10*

   (a) Bessel's Approximation

   (b) Phase and Group Delay

   (c) Switched-Capacitor Filters

   (d) Elementary Ideas of Compensation

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