B.Tech. ELECTRONICS AND COMMUNICATION ENGINEERING (BTECVI)

00024   **Term-End Examination**

June, 2014

BIEL-005 : ANALOG ELECTRONIC CIRCUITS

Time : 3 hours   *Maximum Marks : 70*

*Note : Attempt any **seven** questions. Assume suitable missing data, if any. Use of scientific calculator is permitted.*

1. Define the h-parameters for a transistor in CB and CE configuration and also discuss these briefly. **10**

2. Draw the circuit diagram of an R-C coupled amplifier employing potential divider bias and explain the function of each component. **10**

3. A BJT is found to have $f_T = 500$ MHz, $h_{fe} = 100$, $r_{bb'} = 100\ \Omega$, $r_{b'e} = 900\ \Omega$ and $C_{b'c} = 5$ pF. It is used as a CE amplifier with $R_S = 1$ kΩ and $R_L = 500\ \Omega$. Determine the amplifier mid-band voltage gain $A_{VS} = \dfrac{V_0}{V_S}$. **10**

4. Draw the circuit of a Class B push-pull amplifier and explain its operation. What is cross-over distortion ? How is it minimised ? *10*

5. Discuss briefly the double turned amplifier with a help of its circuit diagram. *10*

6. A single stage amplifier has a voltage gain of 10 and a bandwidth of 1 MHz. Three such stages are cascaded and a negative feedback of 10% is applied to the cascade stage. Find the overall voltage gain and bandwidth of the cascaded stage with feedback. *10*

7. (a) An oscillator circuit has an inductor of 80 mH and capacitor of 6 pF. Determine the frequency of oscillation. *4*

(b) Why are R-C oscillators preferred in audio frequency range ? *6*

8. With the help of circuit diagram explain the working of monostable multivibrator circuit. Give its waveforms. *10*

9. (a) Calculate the frequency of oscillation for an astable multivibrator with $R_1 = R_2 = 1\ k\Omega$, $C_1 = C_2 = 1\ \mu F$. *5*

(b) State the advantages and disadvantages of tuned amplifiers. *5*

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

(a) Monostable multivibrator

(b) UJT

(c) Wein Bridge oscillator

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