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B.Tech. IN ELECTRONICS AND COMMUNICATION ENGINEERING (BTECVI)

Term-End Examination

December, 2012

BIEL-005 : ANALOG ELECTRONIC CIRCUITS

Time : 3 hours

Maximum Marks : 70

Note : (i) Attempt **any seven** questions.

(ii) All questions carry **equal** marks.

1. For the network of Figure-1, determine : 10

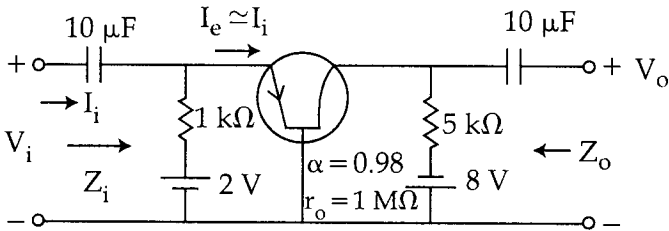
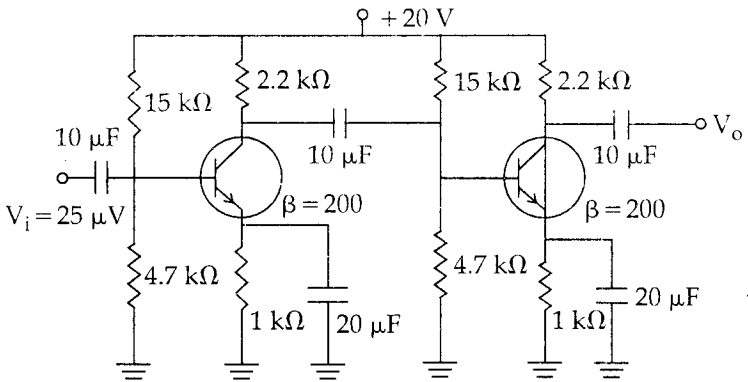


Fig. 1

- (a) r_e
- (b) z_i
- (c) z_0
- (d) A_v
- (e) A_i

2. Calculate the voltage gain, output voltage, input impedance and output impedance for the given cascade BJT amplifier : 10



3. Explain the effect of coupling and by-pass capacitors in a circuit. Define f_{α} , f_{β} and f_{τ} and derive the relation between f_{β} and f_{τ} . 10
4. Define the harmonic distortion in Amplifier. Calculate the total harmonic distortion for an output signal having fundamental amplitude of 2.5 V, second harmonic amplitude of 0.25 V, third harmonic amplitude of 0.1 V and fourth harmonic amplitude of 0.05 V. 10
5. Draw the circuit of single tuned amplifier and explain the voltage gain and frequency response of it. Also write the disadvantage of tuned amplifier. 10

6. Explain the general properties of negative feedback. What are the advantage and disadvantage of it. Also write the application of negative feedback. 10
7. Which type of feedback is used in the emitter follower circuit. Also comment the effect of feedback on input and output resistance. 10
8. Draw the circuit of R-C phase shift Oscillator using transistor and explain it for an R-C phase shift oscillator : 10
 $R = 8.2 \text{ k}\Omega$, $C = 0.01 \mu\text{F}$, $R_1 = 1.2 \text{ k}\Omega$, $R_F = 39 \text{ k}\Omega$
Determine the frequency of oscillation.
9. Define multivibrator and draw the circuit of it and explain the operation of UJT. 10
10. Write short notes on *any two* : 2x5=10
- (a) Crystal Oscillator
 - (b) Q factor of a circuit and coil
 - (c) Merits and demerits of RC coupled amplifier
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