

B.E. Electronics & Communication / Telecommunication Engineering (Model Curriculum) Sem-IV
SE204 : Analog Circuits

P. Pages : 2

Time : Three Hours

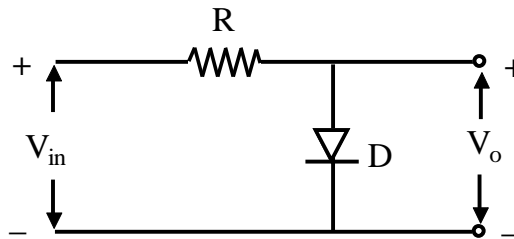


GUG/W/22/13914

Max. Marks : 80

- Notes :
1. Solve Q. 1 or Q.2, Q. 3 or Q.4, Q. 5 or Q.6, Q. 7 or Q.8, Q. 9 or Q.10
 2. All questions carry marks as indicated.
 3. Due credit will be given to neatness and adequate dimensions.
 4. Assume suitable data wherever necessary.
 5. Illustrate your answers wherever necessary with the help of neat sketches.

1. a) Identify the circuit as shown in following fig. and describe the working of the same with input and output waveforms. 8



- b) Explain the operation of two stage RC coupled amplifier. 8

OR

2. a) Draw and explain high frequency hybrid π –model of a transistor. 8

- b) Define clamper. Explain the operation of –ve clamper. 8

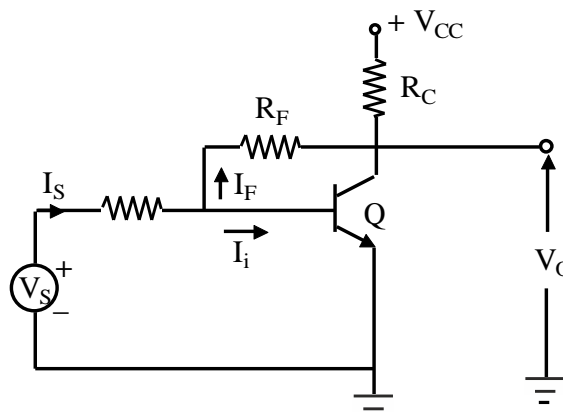
3. a) Prove that the gain of amplifier with –ve feedback is 8

$$A_{v_F} = \frac{A_v}{1 + A_v \beta}$$

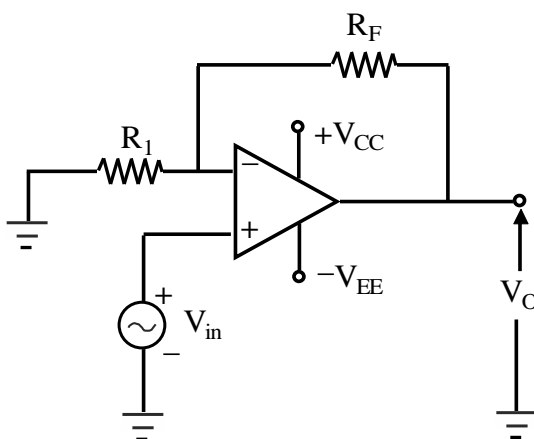
- b) Derive the expression of maximum efficiency of transformer coupled class ‘A’ power amplifier. 8

OR

4. a) Identify the –ve feedback topology used in following ckt; and state its effect on input resistance and output resistance. 8



- b) The loudspeaker of 8Ω is connected to the secondary of the output transformer of a class A amplifier ckt. The quiescent collector current is 140 mA. The turn's ratio of transformer is 3:1 the collector supply is 10 v. If ac power delivered to the loudspeaker is 0.48 watt. Calculate
- Effective value of load resistance R_L
 - The DC power input
 - Ac power delivered to load
 - The efficiency.
5. a) Draw circuit diagram and explain working of UJT relaxation oscillator list the factors affecting output frequency. 8
- b) Draw circuit diagram and explain working of free running multivibrator. Explain why it is called as free running multivibrator. 8
- OR**
6. a) Draw circuit diagram of symmetrical square wave generator using BJT. State on which components the frequency of waveforms depends. 4
- b) Write comparison of Astable, monostable and Bistable multivibrator. 4
- c) List types of oscillators, which generates frequencies in RF range. Explain working of any one RF oscillator with their circuit diagram and output frequency expression. 8
7. a) Explain the working of differential amplifier with current mirror ckt. 8
- b) Prove that the gain of dual input balanced output differential amp^r is. 8
- $$A_d = \frac{RC}{r_e}$$
- OR**
8. a) Define. 8
- CMRR
 - Slew Rate
 - PSRR
 - Input offset voltage.
- b) Draw and explain the basic block diagram of operational amplifier. 8
9. a) Derive the output expression of op – amp as a subtractor. 8
- b) Identify the following circuit diagram and derive its output gain expression. 8



OR

10. a) Draw the circuit diagram of op – amp Schmitt trigger and explain its operation with waveforms. 8
- b) With the help of neat diagram explain the operation of half wave precision rectifier circuit. 8
