

B.E. / B.Tech. Electrical (Electronics & Power) Engineering (Model Curriculum) Semester-III
003 / SE103 - Analog Electronics Circuits

P. Pages : 2

Time : Three Hours



GUG/W/24/13854

Max. Marks : 80

- Notes :
1. All questions carry marks as indicated.
 2. Assume suitable data wherever necessary.
 3. Illustrate your answers wherever necessary with the help of neat sketches.

1. a) Define α , β and γ of transistor. Express the relationship between them. 8

b) Draw and explain the input and output characteristics of transistor in CE configuration. 8

OR

2. a) Compare Halfwave full wave center tap and Bridge wave rectifier with respect to following points. 8

- | | |
|----------------------------------|---------------------|
| i) Average DC current. | ii) AC Power input. |
| iii) DC Power output. | iv) RMS current. |
| v) Maximum rectifier efficiency. | vi) Ripple factor. |
| vii) PIV | viii) TUF. |

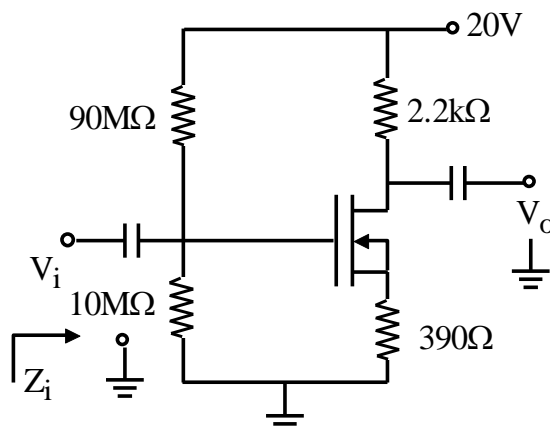
b) What is clamper. Explain the operation of negative clamper with circuit diagram and waveform. 8

3. a) What is Enhancement type MOSFET. Explain the operation of P-channel enhancement type MOSFET with its drain and transfer characteristics. 8

b) Draw and explain the DC Analysis of voltage divider biasing of enhancement type MOSFET. 8

OR

4. a) For the circuit shown in following fig. $V_{GSQ} = 2V$ with $I_{DQ} = 5mA$
 $y_{os} = 20ms$, $I_{DSS} = 4mA$, $V_P = -3V$ Calculate g_m , r_d , z_i , z_o and A_V 8



- b) Explain the operation of p-channel depletion type MOSFET with its drain and transfer characteristics. **8**
5. a) Define power amplifier with the help of neat circuit diagram. Explain the operation of transformer coupled class-A power amplifier. **8**
- b) Define **8**
- i) Input bias current ii) Input offset current
- iii) CMRR iv) PSRR

OR

6. a) What are the ideal characteristics of op-amp. Also draw the symbol and pin diagram of op-amp IC-741 **8**
- b) What is class A, class B, class C and class AB power amplifier. What is cross over distortion and how it can be eliminated. **8**
7. a) What is op-amp integrator. Draw circuit diagram and input, output waveform of op-amp integrator also derive its output equation. **8**
- b) What is instrumentation amplifier. Explain the operation of instrumentation amplifier using three op-amp. **8**

OR

8. a) What are the different types of analog to digital converter. Explain any one type of A to D converter with neat diagram. **8**
- b) What is oscillator. Draw and explain the operation of op-amp Wein bridge oscillator. **8**
9. a) Draw and explain the operation of half wave precision rectifier circuit. **8**
- b) Explain the working of square wave generator using op-amp. Also draw its waveforms. **8**

OR

10. a) Explain how an op-amp be used as comparator. **8**
- b) What do you understand by precision rectifier. How do they differ from conventional rectifier. Explain operation of full wave precision rectifier. **8**
