B.E. Electrical (Electronics & Power) Engineering (Model Curriculum) Semester - III

003 - Analog Electronics Circuits

P. Pages : 2 **GUG/S/23/13854**

Time : Three Hours * 2 5 9 1 * 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) Draw and explain low frequency small signal Hybrid-π model of Transistor. **8**

b) What is amplifier draw and explain single stage common emitter amplifier. **8**

OR

2. a) Explain BJT as a switch state its advantages. **8**

b) A 5kΩ load is fed from a bridge rectifier connected across a transformer secondary whose primary is connected in 460V, 50Hz supply. The ratio of number of primary turns to secondary turns is 2:1 calculate d-c load current, d.c. load voltage, ripple voltage and P.I.V. rating of diode. **8**

3. a) With the help of neat diagram, explain the operation of an n-channel JFET. **8**

b) Data sheet of a JFET indicates that IDSS = 10mA and VGS(off) = –4V. Determine the drain current for VGS = 0V, VGS = –1V and VGS = –4V. **8**

OR

4. a) With the help of neat diagram explain the operation of an n-channel enhancement type MOSFET. **8**

b) Draw and explain the voltage divider bias circuit for n-channel enhancement type MOSFET. **8**

5. a) Draw and explain the operation or class-B power amplifier. **8**

b) What is differential amplifier. Explain the operation of dual input balanced output differential amplifier. **8**

OR

6. a) What is operational amplifier. Explain ideal characteristics of Op-amp. **8**

b) Define- **8**

i) Output offset voltage ii) Input bias current

iii) CMRR iv) Slew rate

7.	a)	Explain the working of op-amp non-inverting amplifier. Derive the expression for its voltage gain.	**8**
	b)	With neat diagram explain the operation of successive Approximation ADC.	**8**

OR

8.	a)	Draw and explain the circuit diagram and frequency response of second order low pass active filter.	**8**
	b)	What is oscillator. Draw and explain the operation of Op-amp RC phase shift oscillator.	**8**
9.	a)	What the help of neat circuit diagram and waveforms explain operation of no-inverting op-amp comparator.	**8**
	b)	Draw and explain the circuit diagram of op-amp peak to peak detector.	**8**

OR

10.	a)	Draw and explain full wave precision rectifier circuit with its input, output waveforms.	**8**
	b)	Explain the working of Op-amp triangular wave generator.	**8**

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