

Roll No.

Total Pages : 03

BT-4/M-20

34101

ANALOG ELECTRONICS

ECE-208N

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit.

Unit I

1. Derive the equation for voltage gain and current gain for a BJT in CE configuration. Draw its input-output characteristics with a suitable block diagram. **15**
2. (a) Estimate voltage gain, input resistance and output resistance of low frequency model of BJT. **7**
(b) Why the gate junction of FET is always reverse biased ? List the parameters of JFET from characteristics. **8**

Unit II

3. (a) Compare the different classes of operation of power amplifier. Derive the equation for power output and conversion efficiency of a class A series fed amplifier. **7**

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- (b) Draw the circuit of a two stage RC-coupled amplifier and explain its working. **8**
- 4. (a) Differentiate between positive and negative feedback. Explain, how does negative feedback improves the various characteristics of an amplifier ? **7**
- (b) For a class B power amplifier using V_{cc} 12V and driving load of 8Ω , determine the maximum load power, Dc input power and collector efficiency. **8**

Unit III

- 5. (a) State Barkhausen criterion for sinusoidal oscillator and why this must be fulfilled to sustain oscillations. **5**
- (b) Explain the working of RC phase oscillator. Derive the expression for resonant frequency. **10**
- 6. Explain the internal functional diagram of 555 timer. Explain, how can it be used as astable multivibrator to generate output signal with frequency 2 kHz and duty cycle of 75% ? **15**

Unit IV

7. Draw the inverting and non-inverting amplifier circuits of an Op-Amp in closed loop configuration. Obtain the expressions for closed loop gain in these circuits. **15**
8. (a) Explain the working of Schmitt trigger. **7**
(b) Define CMRR, slew rate, common mode gain, differential mode gain. **8**