

# Electronic Circuits

Con. 4879-07.

(REVISED COURSE)

CD-5763

(3 Hours)

[Total Marks : 100

MASTER

**N.B. :** (1) Question No. 1 is compulsory.

(2) Assume any suitable data wherever required but justify the same.

(3) Attempt any four questions from remaining six questions.

(4) Figures to the right indicate marks.

1. Explain Barkhausen's criteria. Compare RC and LC oscillator. Derive equation for frequency of oscillation of RC phase shift oscillator using BJT as basic amplifier. Derive the condition of oscillation. 20
  
2. Design a two stage RC coupled CE amplifier to meet the following requirements : 20  
 $A_v \geq 1600$   
 $V_{omax} = 3v$   
 $F_e \leq 20 \text{ Hz}$   
Stability factor  $S \leq 10$   
Assume  $h_{fe} = 220$ ,  $h_{ie} = 2.7 \text{ k } \Omega$ ,  $\beta = 150$
  
3. (a) Draw various types of negative feedback topologies. Explain their effect on gain, input impedance and output impedance. State advantages of negative feedback. Explain each one in brief. 14
- (b) Explain Instrumentation amplifier. 6
  
4. (a) Derive  $A_d$ ,  $R_i$  and  $R_o$  for SISO differential amplifier. 10
- (b) Write down the designing steps for class A power amplifier. 10
  
5. (a) Draw block diagram of OP-AMP. Explain each block in brief. Explain virtual ground concept. 10
- (b) Draw neat diagram of UJT relaxation oscillator. Explain its operation. Derive the expression for frequency of output signal. Draw various waveforms. 10
  
6. (a) What is Miller Effect ? How it is useful in analysing frequency response of amplifier ? 10
- (b) Explain the classification of large signal amplifiers. Explain crossover distortion. 10
  
7. Write short notes on :- 20
  - (a) Differential amplifier using FETs and its ac analysis.
  - (b) Op-amp parameters.
  - (c) Darlington pair and its application.
  - (d) Push-pull amplifiers.

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