

(iii) Slew rate

(iv) Virtual ground

(b) Explain the Op-Am differential Amplifier. 10

**SECTION – D**

8. Explain the circuit diagram and working of Op-Amp as : 5 × 4 = 20

(a) Phase shifter

(b) Integrator

(c) Adder

(d) Bridge Amplifier

9. Write short note on (any *three*) : 20

(a) Lagarithmic Amplifier

(b) Miller and Bootstrap sweep generators

(c) Multivibrator

(d) Regenerative comparator

Roll No. ....

**24227**

**B. Tech. 5th Semester (ECE)  
Examination – December, 2016**

**ANALOG ELECTRONIC CIRCUITS**

Paper : EE-305-F

*Time : Three Hours ]*

*[ Maximum Marks : 100*

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

*Note : Attempt five questions. Question No. 1 is compulsory. Attempt one question from each Section. All questions carry equal marks.*

1. (a) List out the parameters that effects the amplifier gain at low frequencies. 2
- (b) What is Barkhausen criteria for sustained oscillations ? 4
- (c) List out the characteristic of ideal op-Amp. 4

(d) Write the general equation for LC oscillator. 2

(e) What is crossover distortion? 4

(f) What is PSRR and CMRR? 4

### SECTION – A

2. (a) Discuss the classification of Amplifiers. 8

(b) Draw the circuit diagram and working of RC-coupled amplifier. Also discuss the frequency response curve of this amplifier. 12

3. (a) Discuss how the application of negative feedback in Amplifier affects : 10

(i) Stability of gain

(ii) Bandwidth

(iii) Distortion

(b) A negative feedback of  $\beta = 0.02$  is applied to an amplifier of gain 2000. Calculate the change in overall gain of the feedback Amplifier if the internal amplifier is subjected to a gain reduction of 10%. 10

### SECTION – B

4. (a) Explain the working of Colpitt oscillator. 10

(b) State and explain the condition under which feedback amplifier works as an oscillator. 10

5. (a) Draw the circuit diagram and discuss the working of RC phase shift oscillator. 12

(b) The parameters of a crystal oscillator circuit are  $L_s = 0.1$  H,  $C_s = 0.03$  pF,  $R_s = 7$  K $\Omega$  and  $C_p = 1.2$  PF. Determine the resonance frequencies  $f_s$  and  $f_p$ . 8

### SECTION – C

6. (a) Draw the circuit diagram of class B push pull amplifier and explain its operation. Also derive an expression for its maximum efficiency. 10

(b) A power amplifier working in class A operation has a transformer as load. If transformer has a turn ratio of 12 and the secondary load is 105  $\Omega$ , find maximum a.c. power output. Given that zero signal collector current is 0.1 A. 10

7. (a) Explain the following in context with Op-Amp : 10

(i) Offset voltage

(ii) Offset current