

**FACULTY OF ENGINEERING**  
**B.E. 2/4 (ECE) II – Semester (Main) Examination, June 2014**

**Subject: Analog Electronic Circuits**

Time: 3 Hours

Max.Marks: 75

**Note: Answer all questions from Part A. Answer any five questions from Part B.**

**PART – A**

- 1 What is the range of frequency in terms of ' $f_1$ ' upto which the hybrid - $\pi$  equivalent circuit of CE amplifier is valid? (2)
- 2 Why a voltage amplifier cannot be used as power amplifier? (3)
- 3 What is the effect of negative feedback on the input and output resistance of trans resistance amplifier. (2)
- 4 If an amplifier has a bandwidth of 200 kHz and voltage gain of 80, what will be the new bandwidth and gain if 5% of negative feedback is introduced? (3)
- 5 Explain Barkhausen criterion for oscillations. (3)
- 6 Comment why RC oscillators can not be used at radio frequencies. (2)
- 7 Why class 'AB' is preferred over class 'B' in audio frequency power amplifiers. (2)
- 8 In a class A power amplifier  $V_{CE_{max}} = 15\text{ V}$ ,  $V_{CE_{min}} = 1\text{ V}$ , find the over all efficiency for (i) series-fed load (ii) transformer coupled load. (3)
- 9 State the advantages of class C amplifier over class B tuned amplifier. (2)
- 10 What is stagger tuned amplifier? Explain its working. (2)

**PART – B**

- 11 Explain RC-coupled amplifier. Derive,  $f_1$ ,  $f_2$ , B.W and draw the equivalent ckt used in finding  $f_1$ ,  $f_2$ . (10)
- 12 For the RC phase shift oscillator, briefly explain the operation and derive the expression for frequency of oscillations. (10)
- 13 (a) Draw the current series feedback amplifier if  $R_c = 1\text{ k}\Omega$ ,  $R_e = 100\text{ k}\Omega$ ,  $R_2 = 20\text{ k}\Omega$ ,  $R_1 = 30\text{ k}\Omega$  and  $h_{fe}=100$ . Calculate  $A$ ,  $R_i$ ,  $R_{if}$  and  $A_f$ . (8)
- (b) Briefly explain the effect of negative feedback on gain stability. (2)
- 14 (a) Draw the circuit diagram of class B push-pull audio power amplifier and explain its working. (5)
- (b) Show that for class B power amplifier  $P_d(\text{Max}) = \left(\frac{4}{\pi^2}\right) p_{ac}(\text{Max})$ . (5)
- 15 (a) What are the advantages of double tuned amplifiers over single tuned amplifiers. (3)
- (b) Explain the operation of single tuned synchronously tuned FET and find an expression for its voltage gain and bandwidth. (7)
- 16 (a) Discuss on low frequency analysis of BJT. (5)
- (b) Compare various feedback amplifiers with different topologies. (5)
- 17 (a) Explain how regulation is achieved in transistorized shunt regulator. (3)
- (b) Explain unilaterisation. (4)
- (c) What is a heat sink and what is its function. (3)