FACULTY OF ENGINEERING B.E. II/IV Year (ECE) II Semester (Main) Examination, May/JUNE 2011 ANALOG ELECTRONIC CIRCUITS

Answer all aspections from Part A

Time : 3 Hours]

[Max. Marks: 75

	Answer any five questions from Part B. R. ENGG. CO	
	Part A - (Marks : 10 × 2.5=25)	
1.	Draw waveforms for class – A, AB, B AND C amplifiers.	3
2.	Draw a current-series feedback circuit using FET.	2
3.	Why mismatching techniques are used in RF amplifiers.	2
4.	Draw a circuit diagram of a crystal oscillator.	2
5.	Define the Inter modulation frequencies and mention their significance.	3
6.	Why electrolytic capacitors are used as emitter or source bypass capacitors?	3
7.	Why feedback is employed in amplifiers?	2
8.	Two cascaded RC network couldbe used in a phase - shift oscillator, if yes or n	0
	explain.	3
9.	Show that 6 n dB /= octave = 20 NdB/ decode.	2
10.	Explain Gain Margin with the help of Bode-plots.	3

Part B - (Marks : 50)

- 11. Find : (a) the voltage gain with feed back A_{vsf} taking load and source resistances into account (b) R_{if} and (c) R_{of} for the Emitter follower amplifier circuit, using CE transistor hybrid model.
- 12. Show that for class B tuned amplifier
 - (i) The maximum power dissipation is 40% of the maximum available power output. 10

(ii)
$$P_{\text{Dmax}} = \left(\frac{4}{\pi^2}\right) Po_{\text{max}} = 0.4 Po_{\text{max}}$$

(iii) %
$$\eta = 78.5$$
 %

13. Derive the expression for conversion efficiency for series -fed and transformer coupled power amplifier circuits. 10

14. Explain the class –D amplifier with a neat diagram and show that $F = \frac{r_{s1}}{0.4R_r}$

- 15. Draw a flartley oscillator with an RFC using BJT obtain the expressions for the condition and frequency of oscillations. 10
- 16. If $R_1 = 25 \text{ k} \Omega$, $R_2 = 60 \text{K}\Omega$, $R_c = 40 \text{K}\Omega$, $R = 7.1 \text{k} \Omega$ and $h_{ie} = 1.8 \text{ k} \Omega$. Obtain the values of C and h_{fe} for a working frequency of 10 KHz for an RC phase shift oscillator using a BJT.
- 17. For the circuit shown below is a TC (class-A) amplifier, for the specified circuit components values result in a dc base current $I_B = 6mA$ and the input signal (V_i) results in a peak base current saving $I_{b peak} = 4MA$. 10



 $I_{b peak} = 4 mA due to Vi$

Assume = V_{CEO} = 10v and I_{CEO} = 140mA(for I_{B} - 6mA)

 $V_{CE min} = 1.7 V ; I_{C min} = 25 mA$

 $V_{CE max} = 18.3 \text{ V}$; $I_{C mac} = 255 \text{ mA}$

Calculate : (i) effective ac load reflected at the primary side (R_1^{-1})

- (ii) I_c for R_1^{-1}
- (iii) a c power delivered to the load.
- (iv) dc input power and power dissipated by transistor.
- (v) efficiency of the amplifier for the input signal.

10