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Question Paper Code: 42444

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018

Fourth Semester

Electronics and Communication Engineering EC2251 – ELECTRONIC CIRCUITS – II

(Regulations 2008)

(Common to PTEC2251 – Electronic Circuits II for B.E. (Part-Time) Third Semester – ECE – Regulations 2009)

Time: Three Hours

Maximum: 100 Marks

Answer ALL questions

PART - A

 $(10\times2=20 \text{ Marks})$

- 1. List the properties of negative feedback.
- 2. State Nyquist stability criterion.
- 3. Calculate the frequency of oscillation of colpit oscillator with L = 3 mH, C_1 = 13nF and C_2 = 5 nF.
- 4. State Barkhausen criterion.
- 5. The 3-dB bandwidth of three stages of synchronously tuned amplifier IS 200 KHz. Calculate the 3-dB bandwidth of individual stage.
- 6. Define Q factor of parallel tuned circuit.
- 7. Define rise time and fall time.
- 8. Compute the frequency of oscillation of a univibrator with $R = 10 \text{ k}\Omega$ and C = 14 nF.
- 9. Draw the circuit of UJT sawtooth waveform generator.
- 10. What is a pulse transformer?



(8)

PART - B

(5×16=80 Marks)

11. a) For the circuit shown in Figure 1, the parameters are $R_1 = 150 \text{ k}\Omega$, $R_2 = R_3 = 47 \text{ k}\Omega$, $R_4 = 33 \text{ k}\Omega$, $R_{C1} = 10 \text{ k}\Omega$, $R_{C2} = 4.7 \text{ k}\Omega$, $R_{E1} = R_{E2} = 4.7 \text{ k}\Omega$, $h_{ie} = 1.1 \text{ k}\Omega$, $h_{fe} = 50$, $R_{F2} = 4.7 \text{ k}\Omega$ and $R_{F1} = 100\Omega$. Determine the value of voltage gain, input impedance and output impedances by considering with and without feedback. (16)

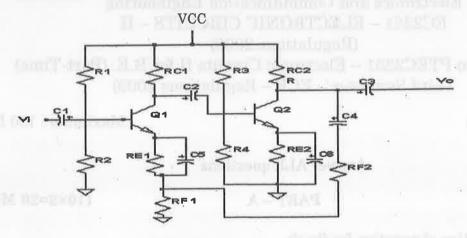


Figure.1

(OR)

b) i) Determine the required feedback transfer function β to yield a specific phase margin. Consider a three pole feedback amplifier with a loop gain function given by:

$$T(f) = \frac{\beta (100)}{\left(1 + j\frac{f}{10^3}\right) \left(1 + j\frac{f}{5x10^4}\right) \left(1 + j\frac{f}{10^6}\right)}$$

Determine the value of β that yields a phase margin of 45 degrees.

- ii) Compare the four types of feedback amplifiers in terms of its voltage gain, input and output impedances.(8)
- 12. a) i) With neat circuit diagram, explain and derive the frequency of oscillations of a Hartley oscillator. (8)
 - ii) With neat circuit diagram, explain the audio frequency oscillator which has lead-lag network in its feedback path. (8)

(OR)



	b) i)	With neat circuit diagram, explain and derive the frequency of oscillations	3
		of a RC phase shift oscillator. Also derive the minimum \mathbf{h}_{fe} required to get sustained oscillation.	(12)
	ii)	Write short notes on crystal oscillators.	(4)
13.	a) i)	Explain in detail, how the stability is achieved in tuned amplifiers using	
		neutralization techniques.	(8)
	ii)	What is synchronous tuning? Derive the bandwidth relationship of cascaded	
		synchronously tuned amplifiers.	(8)
		(OR)	
	b) i)	With neat circuit, explain and derive the Q factor, Centre frequency gain, resonant	
		frequency and bandwidth of single tuned amplifier.	(12)
	ii)	Write short notes on stagger tuned amplifier.	(4)
14.	a) i)	With neat circuit diagram, explain and derive the frequency of oscillation of	
		collector coupled free running oscillator.	(10)
	ii)	Discuss about clippers and clampers.	(6)
		(OR)	
	b) i)	With neat circuit, explain the working principle of schmitt trigger.	(6)
	ii)	Explain the triggering methods of bistable multivibrator.	(10)
15.	a) E	Explain in detail about voltage and current time base circuits.	(16)
		(OR)	
	b) F	Explain in detail about astable and monostable blocking oscillators.	(16)

		(12)
	 With next circuit diagram, explain and durive the frequency of circlinial collector coupled free reasoning oscillator. 	(0.1)
	(900)	
	With most circuit, explain the weighing principle of editmits trigger-	
	I Explain the triggering methods of biotoble multivibrator.	
	Explain in detail about estable and reconstable blocking incillators	(31)