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B.E. / B.TECH. DEGREE EXAMINATIONS, DEC 2019

Third Semester

EC18305 – ELECTRONIC CIRCUITS*(Electrical and Electronics Engineering)***(Regulation 2018)****Time: Three Hours****Maximum : 100 Marks**

Answer ALL questions

PART A - (10 X 2 = 20 Marks)

	CO	RBT
1. Why biasing is necessary in BJT amplifiers?	1	R
2. What is thermal stability?	1	R
3. Define Miller's theorem.	2	R
4. What is cross over distortion?	2	R
5. If an amplifier has a gain of 500 and feedback ratio is 0.1, find the gain with negative feedback.	3	AP
6. Draw the equivalent circuit of a transconductance amplifier.	3	R
7. State Barkhausen's criterion for oscillation.	3	R
8. Draw the equivalent circuit of a Quartz crystal.	3	R
9. A tuned amplifier has its maximum gain at a frequency of 2 MHz and has a bandwidth of 50KHz. Calculate the Q-factor.	4	AP
10. Mention the applications of tuned amplifiers.	4	R

PART B - (5 X16 = 80 Marks)

11. (a) (i) What is stability? What is the need for load line and quiescent point calculation? (6) 1 U
- (ii) Briefly describe about any two bias compensation techniques of BJT. (10) 1 U

(OR)

- (b) With neat circuit diagram and needed expressions, explain the working principle of voltage divider bias of transistor. (16) 1 U

12. (a) Derive the needed expressions for high frequency Π model for a transistor with neat circuit diagram. **(16)** **2** **U**

(OR)

- (b) (i) Draw the circuit of a transformer coupled class A amplifier and explain how conversion efficiency is improved using the circuit. **(8)** **2** **U**
- (ii) Draw the circuit of a Class B push pull amplifier circuit and explain its operation. Derive its conversion efficiency. **(8)** **2** **U**

13. (a) Give the block diagram of feedback amplifier and discuss the effect of negative feedback with respect to stability, closed loop gain, noise, distortion and bandwidth. **(16)** **3** **U**

(OR)

- (b) Draw the circuit diagram of an amplifier with voltage series feedback and current shunt feedback. Derive the expressions for gain, input and output resistances with feedback. **(16)** **3** **U**

14. (a) Draw the circuit diagram and explain the operation of a RC phase shift oscillator. Describe the phase shift network and amplifier gain requirements. Derive the expression for frequency of operation of the circuit. **(16)** **3** **U**

(OR)

- (b) Describe Colpitt's oscillator with neat circuit diagram. Determine the frequency of oscillations and the oscillation condition for it. **(16)** **3** **U**

15. (a) Draw the circuit of a single tuned amplifier. Draw its frequency response. Using small signal equivalent circuits derive expressions for gain at resonance and 3 dB bandwidth. **(16)** **4** **U**

(OR)

- (b) (i) What is stagger tuned amplifier? Explain its working. **(8)** **4** **U**
- (ii) Write brief notes on Hazeltine neutralization. **(8)** **4** **U**