

B.E./B.TECH. Degree Examination, December 2020

Fourth Semester

**EC16403- ELECTRONIC CIRCUITS -II**

(Regulation 2016)

Time: Three hours

Maximum :80 Marks

Answer **ALL** questions**PART A - (8 X 2 = 16 marks)**

1. In a voltage series negative feedback amplifier
  - a) Gain increases
  - b) Bandwidth increases
  - c) output impedance increases
  - d) Distortion increases
2. The main advantage of Crystal oscillator is
  - a) Amplitude stability
  - b) Can vary frequency
  - c) frequency stability
  - d) Low frequency oscillator
3. Staggered tuned amplifier is used to
  - a) Increase bandwidth
  - b) Increase gain
  - c) Decrease bandwidth
  - d) Decrease gain
4. The basic principle in SMPS is
  - a) Pulse amplitude modulation
  - b) Pulse position modulation
  - c) Frequency modulation
  - d) Pulse width modulation
5. Determine the range of open loop gain of negative feedback for the amplifier closed loop gain of 100 and feedback factor of 0.01
6. Differentiate the feedback network used in oscillator and negative feedback amplifier
7. A circuit has a coil of inductance  $100\mu\text{H}$  and a series resistance  $12\Omega$  at the resonant frequency 1MHz. Find the quality factor of the coil, capacitance and band width.
8. What is the need of using commutating capacitors in Bistable multivibrator.

**PART B - (4 X16 = 64 marks)**

09. (a) Draw the circuit diagram of a Current series negative feedback amplifier using BJT and analyze the circuit to determine  $G_m$ ,  $G_{mf}$ ,  $R_{in}$  with and without negative feedback. **(16)**
- (OR)**
- (b) With a neat diagram explain which type of feedback is employed in a BJT emitter follower amplifier and obtain the expressions of  $A_{vf}$ ,  $R_{if}$  and  $R_{of}$ . **(16)**
10. (a) Explain the operation of oscillator with two inductors and one capacitor in feedback indicators and one capacitor in feedback with a neat circuit diagram and derive the expression of frequency of oscillation and the condition for sustained oscillation. **(16)**

**(OR)**

- (b) (i) Draw the circuit diagram of tuned collector oscillator and explain its working. **(8)**  
(ii) Write in detail about crystal equivalent circuit and crystal oscillator. Why do we prefer crystal oscillator over LC oscillators? **(8)**

11. (a) Explain the operation of Synchronously tuned amplifier using two stages. Derive an expression for the gain stage and that cascaded gain as function of frequency. Also deduce an expression cascaded bandwidth in terms of single stage bandwidth. **(16)**

**(OR)**

- (b) Draw the single tuned amplifier and explain the frequency response. Derive the expression for current gain as a function of frequency and hence derive an relationship between resonant frequency, bandwidth and quality factor. **(16)**
12. (a) Explain the operation of collector coupled Monostable multivibrator with neat circuit diagram and waveforms. Derive the expression of the time period of Quasistable state **(16)**

**(OR)**

- (b) (i) Describe the low pass RC circuit and explain its response for step input. Sketch the circuits and wave forms. **(10)**  
(ii) Explain how RC circuit can be used as differentiator. Draw the output waveform for a square wave input. **(6)**