



Reg. No. : .....

Name : .....

**Third Semester B.Tech. Degree Examination, October 2016  
(2008 Scheme)**

**08.304 : ELECTRONIC CIRCUITS (R F)**

Time : 3 Hours

Max. Marks : 100

**Instructions :** Answer **all** questions from Part A. Each question carries 4 marks.  
Answer **any one** question from each Module of Part B. Each question carries 20 marks.

**PART – A**

1. Draw response of a low pass circuit to square wave input and explain.
2. Draw the block diagram of an inverter and explain the principle.
3. Draw the transfer characteristics of a bottom clipper with  $V_R = -3\text{ V}$ ,  $V_\gamma = 0.5\text{ V}$ ,  $R_f = 40\ \Omega$  and  $R = 800\ \Omega$ .
4. What is an emitter follower ? What are its characteristics ?
5. Compare astable, monostable and bistable multivibrators.
6. Compare RC and LC oscillators.
7. Define slew rate. What is its significance ?
8. Give any four ideal characteristics of an op amp.
9. Draw the circuit diagram of a differential amplifier using op amp.
10. Derive the expression for voltage gain of an inverting amplifier. **(10×4=40 Marks)**



**PART – B**

**Module – I**

11. a) A square wave whose peak-to-peak value is 1 V extends from  $\pm 0.5\text{ V}$  with respect to ground. The duration of the high section is 0.1 sec. and of the low section is 0.2 sec. If the waveform is impressed upon an RC differentiating circuit whose time constant is 0.2 sec., calculate the maximum and minimum values of the output waveform. **10**
- b) A bridge rectifier uses a transformer of turn ratio 5. Supply voltage is 230 V rms. Determine o/p voltage, current rating, ripple factor, efficiency and diode rating if the load resistance is  $20\ \Omega$  and diode resistance is  $2\ \Omega$ . **10**

OR

P.T.O.



12. a) Draw the response of a low pass RC circuit for a periodic square waveform of  $\pm 5$  V and frequency 1 kHz for time constants
- a) 0.01 ms      b) 0.1 ms and      c) 10 ms      **10**
- b) Explain the working principles of
- i) SMPS      ii) Inverter      **(5+5)**

### Module - II

13. a) Draw the circuit of an emitter follower. Derive expression for voltage gain and input resistance.      **10**
- b) Discuss various feedback topologies used in amplifiers. Give examples.      **10**

OR

14. a) Draw the circuit of a Colpitts oscillator using BJT and explain how it satisfies the condition for oscillation.      **10**
- b) Draw the circuit of an monostable multivibrator using BJT and explain. Write expression for period of oscillation.      **10**

### Module - III

15. a) Draw the circuit diagram of a summing amplifier using op amp and derive expression for its output.      **10**
- b) Design a second order active butterworth low pass filter using op amp for a cut-off frequency of 5 kHz.      **10**

OR

16. a) Draw the block diagram of an op amp and explain. Discuss its non-ideal characteristics.      **10**
- b) Draw the circuit of phase shift oscillator using op amp and explain its working. Write down the expression for the frequency of oscillation.      **10**

**(3×20=60 Marks)**