Reg. No. : ....

Name : ....

Third Semester B.Tech. Degree Examination, January 2015
(2008 Scheme)
08.305 : ELECTRONIC CIRCUITS – I (T)

Time : 3 Hours

Max. Marks : 100

PART – A

Answer **all** questions. **Each** question carries **4** marks.

1. Compare the characteristics of full wave and bridge rectifiers.

2. Explain the response of low pass RC circuit to step and pulse inputs.

3. How does the current limiting circuit operate in a series regulator ?

4. Draw the small signal equivalent circuit of MOSFET and explain the significance of each element.

5. What is cross-over distortion ? Draw its transfer characteristics.

6. Define ON time of a transistor. What are the factors on which this parameter depend ?

7. Define stability factors S' and S".

8. Explain Miller effect.

9. What is f_T ? Obtain an expression for f_T.

10. Compare common gate and common source amplifiers. **(10×4=40 Marks)**

PART – B

Answer **any two** questions from **each** Module. **Each** question carries **10** marks.

Module – I

11. Design a series voltage regulator to deliver an output of 10 V at a maximum load current of 100 mA. The input voltage is 15-20 V.

12. Draw the response of a low pass RC circuit for a periodic square waveform of ±5V and frequency 1 kHz for time constant

    a) 0.01 ms   b) 1 ms

13. Design a full wave rectifier with LC filter to provide 10 V dc at 150 mA with a maximum ripple of 3%. The operating frequency is 50 Hz and input voltage is 230 V AC.

Module – II

14. Analyse a common source MOSFET amplifier and obtain expressions for voltage gain and output resistance.

15. With relevant circuit and analysis, explain any two biasing methods for enhancement MOSFETs.

16. Design an RC coupled Common Emitter Amplifier for a voltage gain of 40. Choose a transistor with β =100. Assume suitable parameters.

Module – III

17. a) What are different possible distortions in a power amplifier ? Explain.

    b) Why heat sink is used in power amplifiers ?

18. A transistor supplies 0.85 W to a 4 kΩ load. The zero signal dc collector current is 31 mA and the dc collector current with signal is 34 mA. Determine the percentage second harmonic distortions.

19. Derive expressions for high frequency poles of a common emitter amplifier.

(6×10=60 Marks)