Roll No .....

EX - 304

B.E. III Semester

Examination, December 2013

Electronic Devices and Circuits - I

Time : Three Hours

Maximum Marks : 70

Note: Attempt any one question from each unit.
All questions carry equal marks.

UNIT - I

1. a) Describe the action of a PN junction diode under forward bias and reverse bias.

   b) With the help of a circuit diagram explain the working of a full wave rectifier and obtain expression for efficiency of rectification.

OR

2. a) Draw the V-I characteristics of zener diode and explain its operation.

   b) Describe with the help of a relevant diagram the construction of an LED and explain its working. List applications of an LED.

UNIT - II

3. a) What is a Bipolar junction transistor? What are the different configurations of BJT? Explain the operation of NPN transistor.

b) What is a MOSFET? How does the constructional feature of a MOSFET differ from that of a JFET with the help of suitable diagram explain the working of any one type of MOSFET.

OR

4. a) Why a field effect transistor is called so? With the help of neat sketches and characteristic curves explain the operation of the junction FET.

b) Draw the equivalent circuit of UJT and explain its operation. Explain the V-I characteristic of UJT.

UNIT - III

5. a) What is meant by Q point? What is the need for biasing a transistor? What factors are to be considered for selecting the operating point Q for an amplifier. Distinguish between dc and ac load lines with suitable diagrams.

b) What are multistate amplifiers explain. Also discuss bandwidth calculation of single and multistage amplifiers.

OR

6. a) What are salient features of hybrid parameters? Derive the equations for voltage gain, current gain, input impedance and output admittance for BJT using low frequency *h* parameter model for CE configuration.

b) What is thermal runaway? How can it be avoided. What are three factors contribute to thermal in stability. Define stability factor.

UNIT - IV

7. a) What do you understand by feedback in amplifiers? Explain the term feedback factor and open loop gain. Enumerate the effects of negative feedback on various characteristics of the amplifier.

b) Draw the circuit of RC phase shift oscillator and explain its working and derive the expression for the frequency of oscillation.

OR

8. a) Compare the negative feedback and positive feedback. Explain with circuit diagram a negative feedback amplifier and obtain expression for its closed loop gain.

b) Draw the circuit of Hartley oscillator and explain its working. Derive the expressions for frequency of oscillation and condition for starting of oscillation.

UNIT - V

9. a) How are power amplifiers classified? Explain their operation in brief and give the applications for each one of them.

b) Explain following types of distortion in amplifiers

i) Harmonic distortion

ii) Frequency distortion

iii) Phase distortion

OR

10. a) Derive the equation for maximum value of efficiency of class A transformer coupled amplifier.

b) Draw the circuit of Class B push pull amplifier. Explain its working. Give its advantages and disadvantages.

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