

B.TECH SEM - III (2007 COURSE) (ELECTRICAL ENGG.) :
WINTER - 2017

SUBJECT : ELECTRONICS DEVICES & CIRCUITS

Day : **Wednesday**
Date : **17/01/2018**

W-2017-2368

Time : **10.00 AM TO 01.00 PM**
Max. Marks : 80

N.B.:

- 1) **Q.No.1 and Q.No.5 are COMPULSORY.** Out of the remaining attempt **ANY TWO** questions from each section.
- 2) Answers to both the sections should be written in the **SEPARATE** answer books.
- 3) Use of non programmable **CALCULATOR** is allowed.
- 4) Figures to the right indicate **FULL** marks.
- 5) Assume suitable data if necessary.

SECTION – I

- Q.1** a) Describe construction and principle of operation of NPN transistor. Write down current equation. [05]
b) Describe construction of DIAC and sketch its characteristics. [05]
c) Compare voltage amplifier and power amplifier. [04]
- Q.2** a) Sketch circuit diagram to plot input and output characteristics of NPN transistor in common emitter configuration. Draw characteristics and show DC load line and Q point on it. Explain significance of Q point. [08]
b) Draw hybrid parameter equivalent circuit for common emitter amplifier. Write the equation and define all h parameters. [05]
- Q.3** a) What is the effect of negative feedback on amplifier gain, input impedance and output impedance? Sketch different topologies of feedback amplifiers. [08]
b) Draw circuit diagram of transformer coupled push pull amplifier and explain its operation. Define collector circuit efficiency. [05]
- Q.4** a) Draw output and transfer characteristics of N channel JFET, and explain pinch off voltage, transconductance, I_{DSS} . [08]
b) Explain principle of operation of LED. Describe 7 segment displays. [05]

SECTION – II

- Q.5** a) With neat circuit diagram and truth table explain single bit comparator. [05]
b) Explain IC 7490 with its pin diagram. [05]
c) Draw a neat circuit diagram of a regulated power supply with specifications of +5Vdc, 1A. [04]
- Q.6** a) Draw the circuit diagram and explain operation of Schmitt trigger with waveforms. [07]
b) Implement full-adder with two half-adder circuits and an OR gate. [06]
- Q.7** a) Compare between SRAM and DRAM. [06]
b) Draw logic diagram of 4-bit universal shift register and explain its operation with truth table. [07]
- Q.8** a) Define the terms: [06]
i) Line regulation ii) Load regulation iii) Ripple rejection.
b) Design a +12V regulator using LM 723 with a current limiting value of 50mA. Draw the circuit diagram for the same. [07]

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