BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)

Computer Science & Business Systems

B. Tech. Sem - II :SUMMER : 2023

SUBJECT : PRINCIPLES OF ELECTRONICS ENGINEERING

Day : Thursday | Time : 10:00 AM-01:00 PM

Date : 1/6/2023 | S-24140-2023 | Max. Marks : 60

N.B.

1) All questions are **COMPULSORY**.
2) Figures to the **RIGHT** indicate **FULL** marks.
3) Use of non-programmable calculator is **allowed**.
4) Assume suitable data **WHEREVER** necessary.
5) Draw neat diagram **WHEREVER** necessary.

Q.1 Draw and explain P-type and N-type Extrinsic semiconductors in detail with diagram. Also define majority and minority carriers in both types of extrinsic semiconductors. **(10)**

OR

Q.1 Explain conductor, semiconductor and insulator with the help of Energy band diagram. **(10)**

Q.2 Draw and explain Bridge Rectifier with the help of waveforms. State the advantages of above circuit. **(10)**

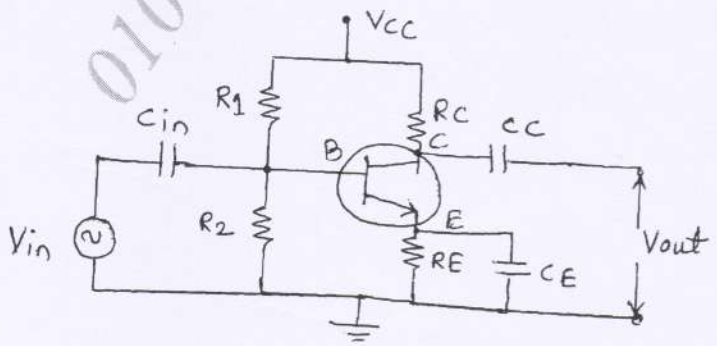
OR

Q.2 What is mean by DC load line and explain Quiescent(Q) point? Draw and explain linear piecewise model for diode. **(10)**

Q.3 Define the current amplification factor for common emitter configuration, common base configuration and common collector configuration. Derive the relation between them. **(10)**

OR

Q.3 **a)** A voltage divider circuit is shown in fig. has values as follows, I_E=2mA, I_B=50 μA , V_{BE} = 0.2 V. R_E=1KΩ , R_2 = 10 KΩ and V_{CC}= 10V. Calculate value of R_1. **(06)**



b) Describe the Thermal Runaway process with diagram. **(04)**

Q.4 Describe the construction and operation of n-channel enhancement MOSFET. Also draw drain and transfer characteristics for the same. **(10)**

OR

Q.4 Explain common source and common gate configuration of MOSFET with circuit diagram. **(10)**

PTO

Q.5 What is mean by feedback? Explain Inverting and Non-inverting Amplifier with diagram. **(10)**

OR

Q.5 Draw and explain the operation of Op-Amp as Integrator and Differentiator in detail. **(10)**

Q.6 Which gates are called as universal gates and why? Explain DeMorgans' first and second theorem with truth table and logic diagram. **(10)**

OR

Q.6 Define counter. State the types of counter. Draw and explain the operation of 4-bit Johnson counter using D-flip-flop with timing diagram. **(10)**

*****