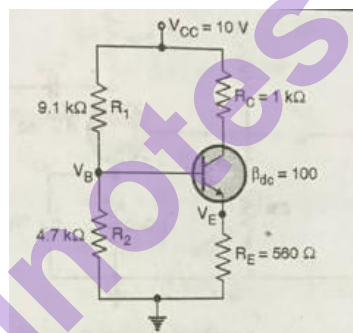


Time : (3Hours)

Total Marks: 100

- N.B (1) Question 1 is compulsory.  
(2) Solved any 3 from remaining  
(3) Make any suitable assumption wherever required.

- Q.1. Attempt **any four** of the following.
- a) Define the Characteristics of a practical OP-AMP 5M  
1) Input offset voltage 2) CMRR 3) PSRR 4) Slew rate
  - b) Explain the construction and working of Schottky diode. 5M
  - c) Explain Diode as negative series clipper. 5M
  - d) What are the advantages of voltage divider bias circuit? 5M
  - e) Differentiate between BJT and FET 5M
- Q.2. a) What are the different DC biasing techniques used for MOSFET? 10M  
Analyse any two techniques in detail.
- b) Calculate the Q-point values of  $I_c$  and  $V_{ce}$  for the voltage divider bias circuit shown below. Assume a silicon transistor. 10M



- Q.3. a) Draw Schmitt trigger circuit and explain its working. Also draw the transfer characteristic. 10M
- b) Explain the operation of an astable multivibrator using IC 555. calculate the frequency of oscillation if  $R_A = R_B = 8.5K\Omega$  and  $C = 0.01\mu F$ . 10M
- Q.4. a) Explain the operation of LC filter in full wave rectifier with neat diagram and waveform 10M
- b) What are the types of comparator? Explain the operation of a non-inverting comparator. Draw input and output voltage waveforms 10M
- Q.5. a) Draw the block diagram of a regulated dc power supply and explain the function of each block in it. 10M
- b) Write a short note on thermal stabilization and compensation. 10M
- Q.6. a) Draw and explain the drain characteristics and transfer characteristics of a n-channel depletion MOSFET. 10M
- b) With the help of an internal block diagram explain the principle of operation of a three pin fix voltage IC regulator. What do you understand by the thermal shut down? 10M

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