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

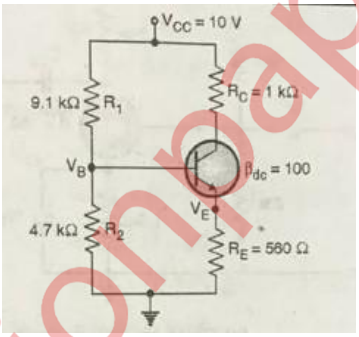
c) Explain Diode as negative series clipper. 5M

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 Ic and Vce 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 $R_{A=}R_B$=8.5KΩ and C=0.01µF. 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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