

Mid-West University
Examinations Management Office
 End-Semester Examinations -2080

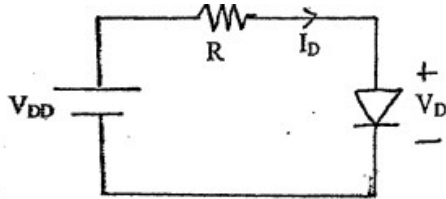
Bachelor level/ B.E. Computer/3rd Semester
 Time: 3 hours

Full Marks: 50
 Pass Marks: 25

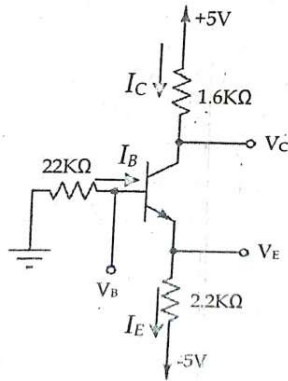
Subject: Electronics Device & Circuits (EX431/EX503)

- Attempt all the questions
- Figures in the margin indicate full marks.
- Assume suitable values, with a stipulation, if necessary.
- Candidates are required to answer the questions in their own words as far as possible.

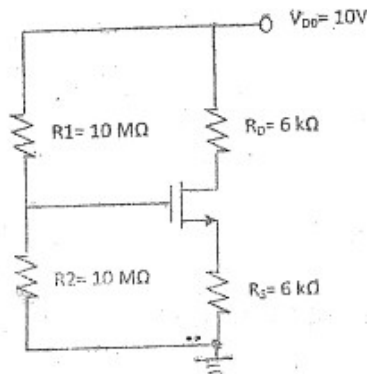
- 1 a. Determine the current I_D and the diode voltage V_D with $V_{DD} = 7v$ and $R = 7K\Omega$ assume that the diode has current of $1mA$ at a voltage of $0.9v$ and that its voltage drop changes by $0.1v$ for every decade change in current. [5]



- b. Find the indicated voltages and currents in the following transistor circuit. [4]



- 2 a. Draw and describe the Ebers Moll model for BJT. [3]
- b. Describe in brief the operation of BJT as a switch in cutoff and saturation region. [3]
- 3 a. Find the drain current (I_D) and drain to source voltage (V_{DS}) for the following circuit. Given parameter are $v_t = 1v$ and $\mu_n = 0.5mA/V^2$. [4]



- b. Explain the structure and operation of depletion type MOSFET. Also calculate its trans-conductance. [4+3]

4. a Draw the circuit diagram of class B amplifier with output transformer and explain how push pull action is achieved. Derived the general efficiency of class B push pull amplifier. [1+2+3]
b. State the condition when the efficiency of class A amplifier will occur maximum. [2]
5. a. Draw wien bridge oscillator circuit and write the expression for frequency of oscillation. [4]
b Calculate the oscillation frequency of RC phase shift Oscillator. [4]
6. a. Define voltage regulator. Explain series voltage regulator with current limiting element. [2+3]
b Draw block diagram of IC voltage regulator. [3]

The End