CLASS: BTECH/IMSC   SEMESTER: I/BL
BRANCH: CSE/IT/ECE/EEE/FOOD TECH.   SESSION : MO/2019

SUBJECT : EC101 BASICS OF ELECTRONICS AND COMMUNICATION ENGG.
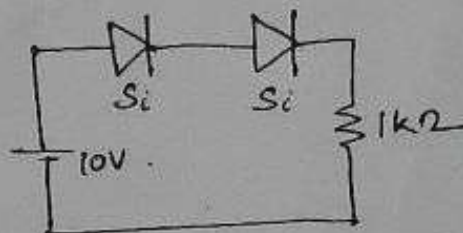
TIME: 2.00 HOURS   FULL MARKS: 25

INSTRUCTIONS:
1. The total marks of the questions are 25.
2. Candidates may attempt for all 25 marks.
3. Before attempting the question paper, be sure that you have got the correct question paper.
4. The missing data, if any, may be assumed suitably.

Q1 (a) Find the current flowing through the 1k Ω resistor in the circuit given below   [2]

Q1 (b) Explain the working of PN junction diode. Explain how the depletion region varies with   [3]
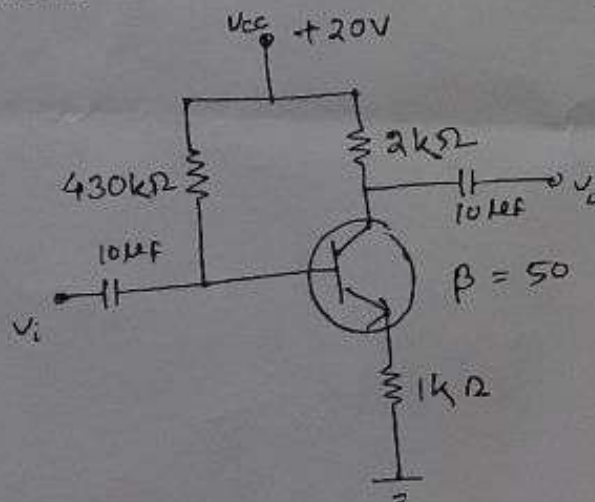   biasing.

Q2 (a) With suitable diagram explain the operation of center tap transformer type full wave   [2]
         rectifier.

Q2 (b) Determine the range of R_L that will result in V_L being maintained at 20V. V_i = 60 V, I_{ZM}=   [3]
         30 mA.
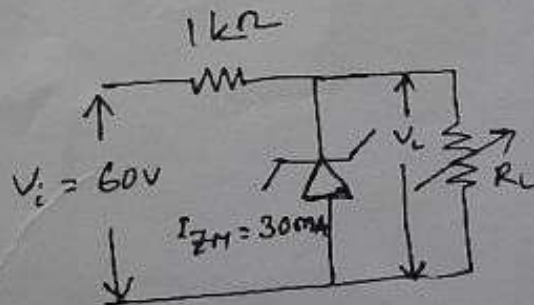
Q3 (a) Derive the relationship between α (alpha) and β (Beta) for a transistor   [2]
Q3 (b) Determine the region of operation of the silicon transistor shown in figure below   [3]

$\frac{20}{}$ $V = \frac{1}{2}R$

Q4 (a) Draw the approximate hybrid parameter equivalent circuit for a CE transistor at low [2] frequencies. Under what condition this equivalent circuit is valid.

Q4 (b) With suitable diagram explain the construction and working of n-channel JFET. Draw its [3] transfer characteristics curve.

Q5 (a) Derive the expression for determining the overall gain of a negative feedback system. [2]

Q5 (b) Define barkhausen criteria for sustained oscillation. Draw the circuit diagram of colpitt's [3] oscillator. State the formula for frequency of oscillation.

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