Dr Prajyp

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST 3 EXAMINATIONS – MAY 2018
B.Tech II[nd] Semester (ECE/CSE/IT)

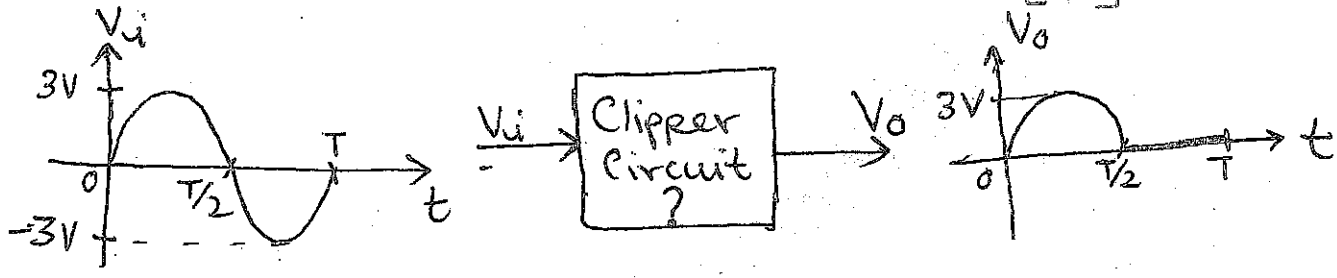
COURSE CODE: 10B11EC211 MAX. MARKS: 35
COURSE NAME: Basic Electronic Devices and Circuits
COURSE CREDITS: 04 MAX. TIME: 2 HRS

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. Assume any missing data.

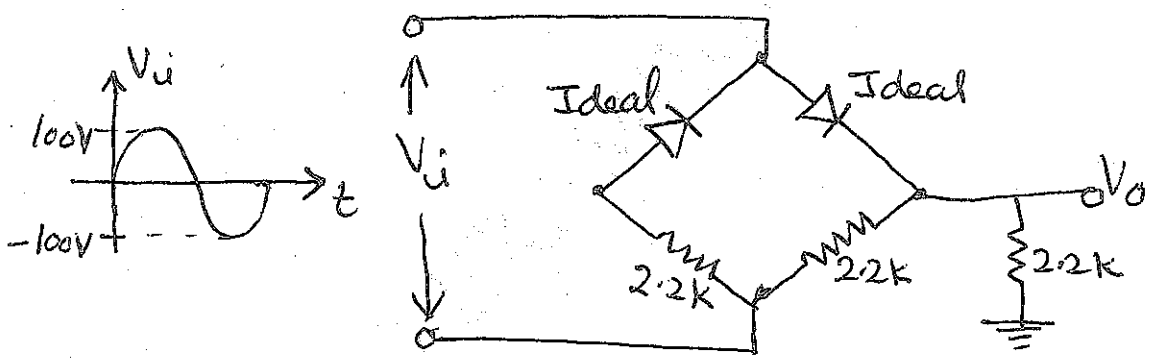
Q1. [3+3+3]

(a) Differentiate between conductors, insulators and semiconductors on the basis of energy band diagram. [CO1]

(b) Design a clipper circuit for the following input and output waveforms: [CO5]

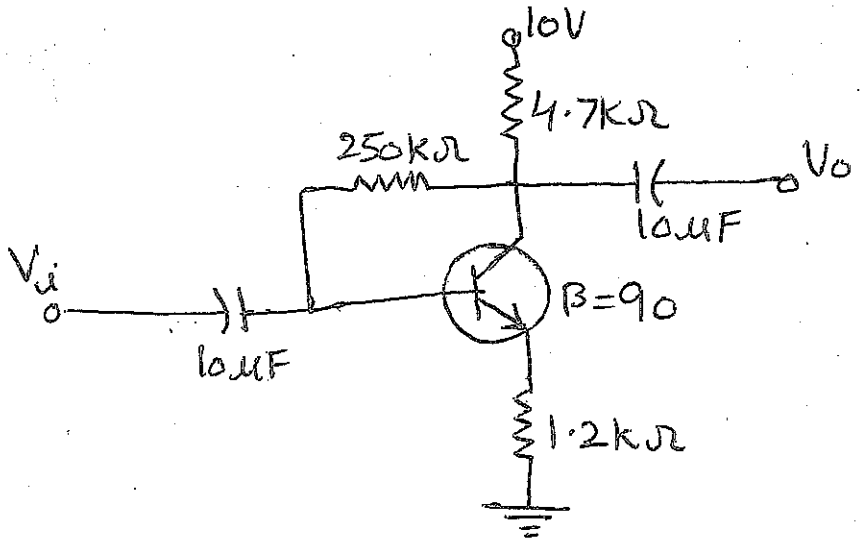


(c) Explain the working of the circuit given below and sketch the output (V_o) waveform. [CO4]



Q2. [3+3+3]

(a) Determine I_{CQ} and V_{CEQ} for the following network: [CO3]



(b) Draw the fixed bias configuration for npn BJT and derive the expression for the quiescent current and voltage. [CO3]

(c) Draw the fully labeled input and output characteristics for common emitter npn BJT. [CO2]

Q3. [4+2+3]

(a) Draw the construction of n-channel JFET and explain its working. Also define pinch-off voltage. [CO2]

(b) Differentiate between the enhancement and depletion type MOSFET on the basis of construction. [CO2]

(c) Draw the transfer characteristics of n-channel JFET defined by I_{DSS} = 12 mA and |Vp|= 6V. [CO2]

Q4. [2+3+3]

(a) Write down the characteristics of ideal operational amplifier. [CO4]

(b) Draw the circuit diagram of subtractor circuit using OP-AMP and show that the output voltage is proportional to the difference of two inputs. [CO5]

(c) For the given three stage amplifier circuit determine the value of output voltage: [CO5]