PRANVEER SINGH INSTITUTE OF TECHNOLOGY KANPUR

Odd Semester Session 2021-22 CT -I

B. Tech I Semester (AI, DS, IoT, EC)

Emerging Domain in Electronics Engineering (KEC-101T)

CO Number	Course Outcome
CO1	To Define [L1] the various terminologies of semiconductor devices, communication system, Boolean algebra and number system.
CO2	To Discuss [L2] the working of different semiconductor devices, communication technologies and logic gates.
CO3	To Apply [L3] the concepts of semiconductor devices to solve the various electronics devices.
CO4	To Analyze [L4] the various semiconductor devices, communication technologies and Boolean Algebra reduction methods.

Time: 1.5 Hrs. M. M. 15

Section A

Q1. Attempt all questions: **(1X3 = 3 Marks)**

a) Define Depletion layer. CO1

b) Write down in brief about n-type and p-type semiconductors. CO1

c) Define PIV. CO1

Section B

Q2. Attempt all questions: **(2X4 = 8 Marks)**

a i) Classify the materials with the help of energy band. CO2

Or

ii) Explain the effect of temperature on V-I characteristics of semiconductor diode. CO2

b i) Explain current flow mechanism in a p-n junction diode under forward bias and reverse bias condition. CO2

Or

ii) Explain the working of Full Wave Bridge Rectifier. Find the values of PIV for each diode CO2

c i) Calculate the value of V_0 and I for the network of Fig. 2.1. CO3

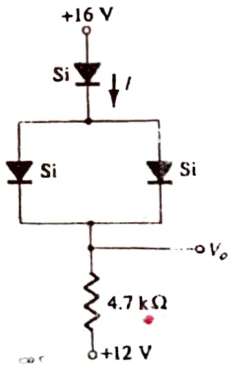

Fig. 2.1

Or

ii) A full wave centre tapped rectifier with 220V, 50 Hz sinusoidal input and turns ratio of 5:1 has a load resistance of 500Ω. Determine : CO3

(a) RMS value of output voltage
(b) DC output voltage
(c) Rectifier Efficiency
(d) Ripple factor

d i) Differentiate between Half Wave Rectifier and Full Wave Rectifier. CO2

Or

ii) Differentiate between Ideal Diode and Practical Diode. CO2

Section C

(4X1 = 4 Marks)

Q3

i) Determine V_o for the following network with the input shown (for ideal diode) CO4

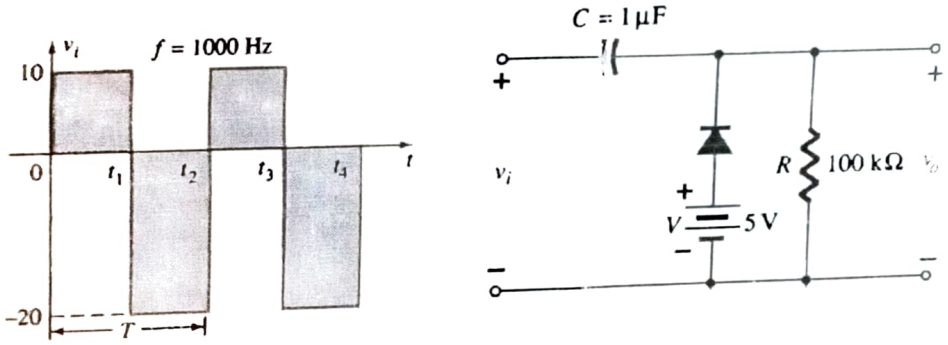

Fig. 3.1

Or

ii) Determine V_0 for the network of Fig. 3.2 for the input shown. CO4

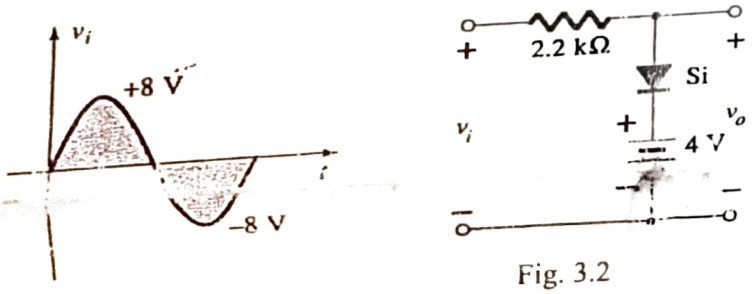

Fig. 3.2