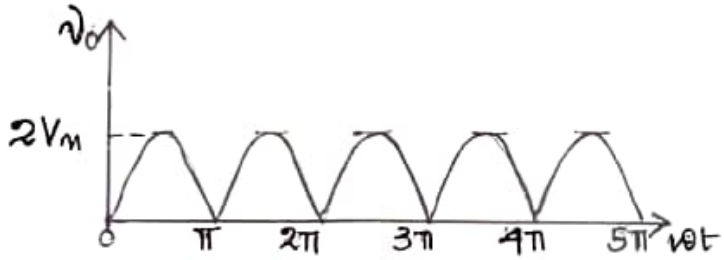
VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY (VSSUT), ODISHA

Odd Mid Semester Examination for Academic Session 2024-25

COURSE NAME: B. Tech	SEMESTER: 1st
BRANCH NAME: A, B, C, K, L, M, N	
SUBJECT NAME: BASIC ELECTRONICS	
FULL MARKS: **30**	TIME: **90 Minutes**

Answer **All** Questions.

The figures in the right hand margin indicate Marks. *Symbols carry usual meaning.*

Q1.		Answer all Questions.	*[2 × 3]*
	a)	Differentiate between intrinsic and extrinsic semiconductor.	- CO1
	b)	Write the doping and width profile of BJT.	- CO1
	c)	Explain the term 'nibble' and 'byte' in digital electronics.	- CO4
Q2.			**[8]**
	a)	Explain the V~I characteristic of practical PN diode and discuss the important voltage and current parameters of this characteristic.	- CO1
	b)	Using the Shockley equation, determine the diode current at 20°C for a Ge diode with I_S = 0.1 mA at a forward-bias potential of 10V. Determine the DC and AC resistance of the diode at that point.	
		OR	
	a)	Explain the operation of a bridge rectifier with the help of a circuit diagram. Draw the input and output waveform.	- CO1
	b)	Evaluate the PIV rating of the diodes used in center tapped and bridge FWR, if the waveform shown in Fig.1 is observed at the output of both configurations.  Fig. 1.	
Q3.			**[8]**
	a)	What is an amplifier? With neat circuit diagram, explain how transistor is used as a voltage amplifier.	- CO1
	b)	In a common base connection, the emitter current is 1mA. If the emitter circuit is open, the collector current is 50 μA. Calculate the total collector current. Given that α = 0.92.	
		OR	
	a)	Explain all the logic gates with the symbols and truth tables.	- CO4