

**Veer Surendra Sai University of Technology**  
**Department of Electronics and Telecommunication Engineering**  
**Mid Term Examination October 2015**  
**1<sup>st</sup> Semester B.Tech (Section: H, I, J, K,L, M,N)**  
**Sub: Basic Electronics**

Full Marks: 20

Time: 2Hrs.

Answer any four questions including question-1 :

1. Short type questions

[1×5]

- a) Draw the frequency response curve of a passive LPF circuit?
- b) Differentiate between Fourier series and Fourier transform
- c) Differentiate between *zener* breakdown and *avalanche* breakdown
- d) With suitable graph state the reason of barrier potential in a p-n junction
- e) Find the static and dynamic resistance of a Si-diode, if 1mA current flows through it when a forward voltage of 800 mV is applied across its terminals.

X

- a) Explain the circuit equivalent models of a diode. [3]
- b) A silicon p-n junction diode operates at 27°C. For how much increase in forward bias voltage will have the diode current getting doubled. Assume  $I \gg I_s$ . [2]

X

- a) With neat circuit diagram and supporting waveforms, explain the principle of operation of a full wave centre-tapped rectifier. [3]
- b) Describe the step-wise process of converting an analog signal into a digital signal. [2]

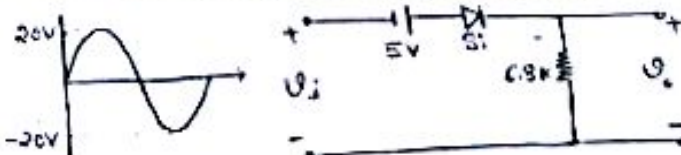
X

- a) With neat diagram, explain the relevant carrier flows in reverse bias and forward bias conditions of a p-n junction diode. Hence draw and explain the V-I-characteristics of the diode.

[2.5]

- b) Determine and sketch  $v_o$  for the following network:

[2.5]



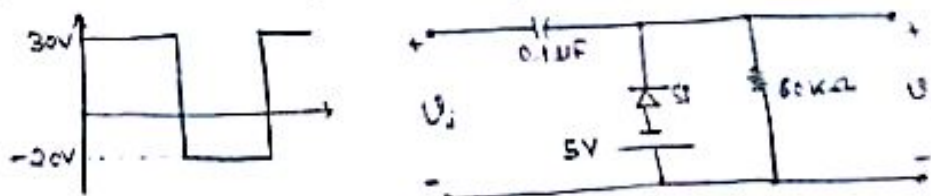
5.

- a) Explain passive differentiator circuit. Draw the output when the input is a square wave signal.

[2.5]

- b) Determine and sketch  $v_o$  for the following network:

[2.5]



- 6) Write short notes on any two.

[2.5 × 2]

- (a) LED
- (b) Intrinsic and Extrinsic semiconductor
- (c) PIV of centre-tapped full-wave rectifier