JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST 1 EXAMINATION – FEBRUARY 2018

B.Tech II Semester (ECE/CSE/IT)

COURSE CODE: 10B11EC211   MAX. MARKS: 15

COURSE NAME: Basic Electronic Devices and Circuits

COURSE CREDITS: 04   MAX. TIME: 1 HRS

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

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1. (a) In the reverse bias region the saturation current of a silicon diode is about 0.1 μA (at $T=20^{o}C$). Determine its approximate value if the temperature is increased by $40^{o}C$.

(b) Discuss the working of PN diode under forward bias condition.

**(c)** Write a short note on reverse recovery time for silicon diode.

$$[2+1.5+1.5=5]$$

2. (a) Discuss the effect of temperature on knee voltage, breakdown voltage, and reverse saturation current of a silicon PN junction diode. Also draw the characteristic curve.

(b) Derive an expression for diode AC (Dynamic) resistance from Shockley (or diode) equation.
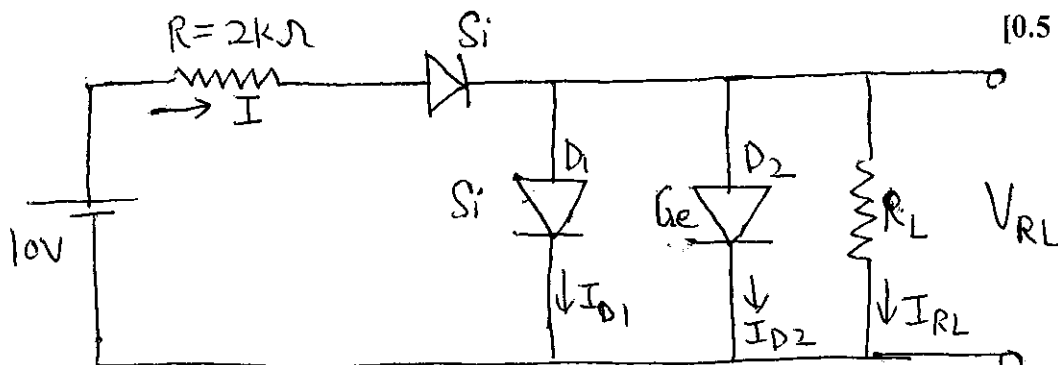
$$[3+2=5]$$

3. (a) Explain the working of the given circuit and plot the output waveform, V_o. (Assume ideal diode).
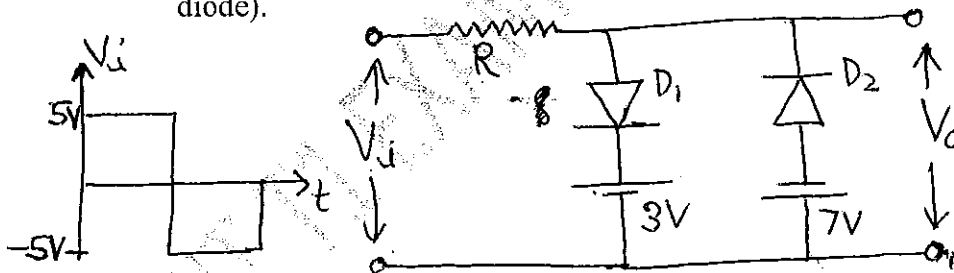
$$[1.5+1=2.5]$$

(b) For the circuit given below, determine the values of I_{D1}, I_{D2}, I_{RL}, V_{RL}, and I.

$$[0.5 \times 5 = 2.5]$$