Enroll. No. _____

SILVER OAK COLLEGE OF ENGINEERING & TECHNOLOGY

BE - SEMESTER–I • MID SEMESTER-I EXAMINATION – WINTER 2018

SUBJECT: BASIC ELECTRONICS (3110016) (IT)

DATE: 09-10-2018 TIME: 02:00 pm to 3:30 pm TOTAL MARKS:40

Instructions: 1.Q. 1 is compulsory.
2. Figures to the right indicate full marks.
3. Assume suitable data if required.

Q.1 (a) Give Answer with most suitable/correct option. [05]

(i) An ideal diode has forward resistance of _____.
(a)10 ohm (b) 0 ohm (c)100K ohm (d) 1M ohm

(ii) _____ region of transistor is most heavily doped.
(a)Emitter (b)Collector (c)Base (d)Both Emitter and Collector

(iii) The Peak Inverse Voltage of Bridge rectifier is _____.
(a)V_m (b) $2V_m$ (c)0 (d)Infinite

(iv) The cut-in voltage of Silicon p-n junction diode is _____ V.
(a)0 (b)1 (c)0.7 (d)0.3

(v) Transistor works as an amplifier if it operates in _____ region.
(a)Cutoff (b)Saturation (c)Active (d)Inverse

(b) Explain the formation of barrier potential in open circuited PN junction diode. [05]

Q.2 (a) Explain operation of PN junction diode in forward biased and reverse biased condition with the help of V-I characteristics. [06]

(b) Draw neat circuit diagram of Full wave center tapped rectifier and explain its operation with the help of waveforms. [05]

(c) Show that NAND gate is Universal gate. [04]

OR

Q.2 (a) Draw neat circuit diagram of Full wave Bridge rectifier and explain its operation with the help of waveforms. [06]

(b) Differentiate Avalanche breakdown and Zener breakdown phenomenon in p-n junction diode. [05]

(c) Construct all logic gates with the help of NOR gate. [04]

Q.3 (a) A sinusoidal voltage of peak value of 40 V and frequency 50 Hz is applied at the input of a half wave rectifier, No filter is used. The load resistance is 500 Ω. Diode has Rf = 5 Ω, Rr = ∞. Calculate: (i) DC value, rms value of load current and load voltage, (ii)Rectification Efficiency. [06]

(b) Explain the operation of npn transistor with the help of various current components in transistor. Draw necessary diagram. Also, consider that transistor is biased in active region. [05]

(c) With the help of circuit diagram, explain the operation of positive clamper circuit. [04]

OR

Q.3 (a) Explain the construction of transistor and also mention its regions of operation. [06]

(b) Discuss the working of series positive and negative clipper circuits with the help of input-output waveforms. [05]

(c) Draw three approximations of a diode. [04]