BTS-I(R/S)/II(S)-11.18-1910 Reg.No. | | | | | | | | |

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B.Tech. Degree I Semester Regular and Supplementary/ II Semester Supplementary Examination November 2018

CS/EC/IT GE 15-1105 B & CE/EE/ME/SE GE 15-1205 A
BASIC ELECTRONICS ENGINEERING
(2015 Scheme)

Time : 3 Hours Maximum Marks : 60

PART A
(Answer *ALL* questions)

(10 × 2 = 20)

I. (a) Differentiate between Photodiode and LED.

(b) Determine β_{DC} and I_E for a transistor where $I_B = 45\mu A$ and $I_C = 5.36mA$.

(c) Draw the complete diode model of a pn junction diode in the reverse biased condition.

(d) State the Barkhausen criteria for oscillation.

(e) Define load regulation and line regulation.

(f) What is Piezoelectric effect? Draw the electrical equivalent circuit of a piezo electric crystal?

(g) Convert the following :
(i) $(110111.101)_2 = (\quad)_{10}$ (ii) $(9AB2.35)_{16} = (\quad)_8$

(h) Differentiate between a Microprocessor and Microcomputer.

(i) State sampling theorem. What is the significance of sampling frequency?

(j) Draw the transfer characteristics of ideal filters.

PART B

(4 × 10 = 40)

II. (a) Explain the working of Zener diode as a voltage regulator. (4)

(b) Explain the working of transistor as an amplifier. (6)

OR

III. Describe the working of a full wave bridge rectifier with the necessary circuit diagram and waveform. What is the effect of a capacitor filter on its output and find out the V_{avg} if $V_p = 2V$ for a full wave bridge rectifier? (10)

IV. (a) Compare the CE, CB and CC amplifier. (4)

(b) Explain the working of an Uninterrupted Power Supply (UPS) with its block diagram. (6)

OR

(P.T.O.)

V. Draw and explain the circuit diagram of an RC phase shift oscillator with $R_1 = R_2 = R_3 = 15$ K and $C_1 = C_2 = C_3 = 0.1\ \mu F$ and determine its frequency of oscillation and the conditions for oscillation. (10)

VI. Which are the universal gates? Why are they called so? Implement the basic gates (AND, NOT, OR) using universal gate and state De-Morgans law. (10)

OR

VII. (a) Draw and explain the working of a CRO with its block diagram. (5)

(b) Differentiate between Sensors and Actuators with an example. (2)

(c) Differentiate Opcode and Operand with an example instruction. (3)

VIII. (a) Define Modulation and its need. Discuss the different type of analog modulation with its waveform (AM, FM, PM). (7)

(b) Prove that, the bandwidth required for amplitude modulation is twice the frequency of the information signal. (3)

OR

IX. Write notes on : (10)

(i) Sampling
(ii) Quantization
(iii) Systems with example
(iv) Signals with example

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