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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)**

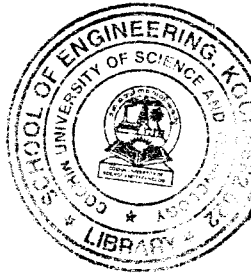
Time : 3 Hours

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 $I_C = 5.36 mA$.
- (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 $R_1 = R_2 = R_3 = 15 \text{ K}$ 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
