

**AMIETE – CS/IT (New Scheme)**

Time: 3 Hours

**DECEMBER 2016**

Max. Marks: 100

**PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.**

**NOTE: There are 9 Questions in all.**

- Question 1 is compulsory and carries 20 marks. Answer to Q. 1 must be written in the space provided for it in the answer book supplied and nowhere else.
- The answer sheet for the Q.1 will be collected by the invigilator after 45 minutes of the commencement of the examination.
- Out of the remaining EIGHT Questions answer any FIVE Questions, selecting at least TWO questions from each part. Each question carries 16 marks.
- Any required data not explicitly given, may be suitably assumed and stated.

**Q.1 Choose the correct or the best alternative in the following: (2×10)**

- a. A Zener Diode is useful as a \_\_\_\_\_.
- (A) Regulator (B) Amplifier  
(C) Switch (D) Oscillator
- b. Level shifter circuit is also known as \_\_\_\_\_.
- (A) clamper circuit (B) clipper circuit  
(C) diode (D) transistor
- c. Current gain of BJT in common base is \_\_\_\_\_.
- (A)  $\alpha$  (B)  $\beta$   
(C)  $\gamma$  (D) None of these
- d. Early effect in BJT refers to \_\_\_\_\_.
- (A) Base Width Modulation (B) Zener Breakdown  
(C) Avalanche Breakdown (D) None of these
- e. A Hartley oscillator uses which feedback?
- (A) Inductive (B) Capacitive  
(C) Resistive (D) Coupled Inductive Capacitive
- f. Convert  $(238)_{10} = ( \quad )_{16}$ .
- (A) 2C (B) EE  
(C) 4F (D) 7E
- g. Which code is used for solving k-Map?
- (A) Binary (B) Gray  
(C) Octal (D) Hamming



**PART B****Answer at least TWO questions. Each question carries 16 marks.**

- Q.6** a. Realize OR, AND and NOT gates with the help of switch and lamp logic. (8)
- b. Convert the following (8)
- (i)  $(6715)_8 = ( \quad )_{10}$
- (ii)  $(2.333)_{10} = ( \quad )_2$
- (iii)  $(0.11001100)_2 = ( \quad )_8$
- (iv)  $(1.5)_{10} = ( \quad )_2$
- Q.7** a. Determine the min Term and max Term present in the boolean expression  $f(a,b,c) = a + bc$  (8)
- b. Realize all basic gates individually
- (i) using NOR gates only
- (ii) using NAND gates only (4+4)
- Q.8** a. Draw and explain the working of Full adder. Design the same. (8)
- b. Compare Decoder and Demultiplexer. Give a design of making 1:8 Demux with the help of two 1:4 Demux. (8)
- Q.9** a. What is the difference between Latch and a flip-flop? (4)
- b. How we can realize D & T flip flops from J-K flip flop? (4)
- c. Explain the working and circuit diagram of Ring counter. (8)