



Machakos University

ISO 9001:2008 Certified

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

Supplementary Examination for Bachelor of Science in Information Technology

SIT 112

INTRODUCTION TO DIGITAL ELECTRONICS

Date: /11/2019

Time: 2 HOURS

Instruction

Answer question **ONE** and Any other **Two** among the four selective questions

Question one (Compulsory)

- (a) Discuss common logic hazards including relevant diagrams and symbols **(10 Marks)**
- (b) Minimize the function and realize it using minimum number of gates.
 $F = \sum m(0, 3, 5, 6, 9, 10, 12, 15)$ **(8 Marks)**
- (c) Explain any three applications of sequential logic circuits **(6 Marks)**
- (d) Using block diagrams, explain operations of the following logic circuits
 - (i) 8-to-3 line Encoder **(3 Marks)**
 - (ii) 1 x 4 Demultiplexer **(3 Marks)**

Question two

- a) Discuss various number systems in digital electronics **(8 Marks)**
- b) Discuss Half Adder **(6 Marks)**
- c) Flip flop triggering **(6 Marks)**

Question three

- a) Perform the binary arithmetic $18.75_8 - A9_{16}$ **(6 Marks)**
- b) Discuss the conversion of SR into JK flip flop **(8 Marks)**
- c) Compare SRAM and DRAM capacitor **(6 Marks)**

Question four:

- a) Discuss the various types of ROM (8 Marks)
- b) Discuss J-K Flip Flop (6 Marks)
- c) Discuss boolean algebra laws (6 Marks)

Question five:

- a) Explain the working of a seven segment display using relevant example (6 Marks)
- b) Explain the working of a Shift-register (5 Marks)
- c) Using circuit symbols, truth tables, and boolean expressions, describe AND, OR and NOR gates (9 Marks)