



MACHAKOS UNIVERSITY

University Examinations for 2020/2021

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

SECOND YEAR FIRST SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (MECHANICAL ENGINEERING)

EMM 201: STRUCTURED PROGRAMMING

DATE: 12/8/2021

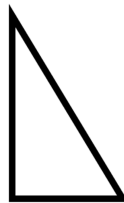
TIME: 8:30 – 10:30 AM

INSTRUCTIONS

Answer question ONE and any other Two questions

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) Name three objects of a computer system. (3 marks)
- b) Explain the relationship between system software and application software. (4 marks)
- c) List five types of computing environments. (5 marks)
- d) Analyse the three computer languages, stating clearly the advantages of each. (6 marks)
- e) Differentiate between compiler and a translator (4 marks)
- f) Create a C program which draws the following image as the output. (4 marks)



- g) Discuss the procedure for turning a program written in C into machine Language (4 marks)

QUESTION TWO (20 MARKS)

- a) Define an algorithm (2 marks)
- b) List six characteristics of a good algorithm (6 marks)
- c) Write an algorithm to find out if a number is odd or even. (4 marks)
- d) Using suitable symbols create a flow chart for the algorithm (C) above (4 marks)
- e) Create a program in C to implement the algorithm (C) above (4 marks)

QUESTION THREE (20 MARKS)

- a) Explain the four stages of compiling and running a C program (8 marks)
- b) Discuss four key words used in C programming (4 marks)
- c) Create a C program that outputs the following (8 marks)

Addition of a, b is : 60

Subtraction of a, b is : 20

Multiplication of a, b is : 800

Division of a, b is : 2

Modulus of a, b is : 0

QUESTION FOUR (20 MARKS)

- a) Write a C program that gives the output 1 2 3 4 5 6 7 8 9 (6 marks)
- b) Explain the meaning of the following operators (5 marks)
 - i. ()
 - ii. []
 - iii. .
 - iv. ->
 - v. ++ --
- c) Given the expression $x = 9 - ((12 / 3) + 3 * 2) - 1$ analyse the steps and passes involved in evaluating it (5 marks)
- d) Discuss four areas where C programming language is applied today (4 marks)

QUESTION FIVE (20 MARKS)

- a) The pass mark for unit taken by students in a certain course is 40%. Draw a flow chart to determine if a student has passed or failed. (5 marks)
- b) Using switch statement, create a C program to implement the flow chart (a) above. (5 marks)
- c) Define an array (1 mark)
- d) Discuss three types of array and illustrate how each is applied. (9 marks)