



TECHNICAL UNIVERSITY OF MOMBASA

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**Faculty of Engineering and Technology**

DEPARTMENT OF ELECTRICAL & ELECTRONIC ENGINEERING  
UNIVERSITY EXAMINATIONS FOR DIPLOMA IN TECHNOLOGY (ELECTRICAL & ELECTRONIC ENGINEERING)

EEE 2307

ENGINEERING SOFTWARE DEVELOPMENT AND APPLICATIONS II

SPECIAL/SUPPLEMENTARY EXAMINATION

**SERIES: SEPTEMBER 2018**

**TIME: 2 HOURS**

**Instructions to Candidates**

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **five** Questions

Attempt any **THREE** Questions.

**Do not write on the question paper.**

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QUESTION ONE

- (a) Explain the following C statements:
- (i) Passes += 1
  - (ii) X == 1 && y != 0
  - (iii) Printf("The sum is %d", sum);
  - (iv) Int main(void) (4 marks)
- (b) State and explain the requirements for a counter controlled repetition (4 marks)
- (c) Write C statements for each of the following C controls:
- (i) *while*
  - (ii) *do-while*
  - (iii) *for* (6 marks)
- (d) Counting numbers 1 to 20 are to be displayed in the screen. Write the required C program using the *for* repetition statement. (6 marks)

QUESTION TWO

- (a) Explain the use of the following C statements:
- (i) *if*
  - (ii) *if-else*
  - (iii) *switch* (6 marks)

- (b) Write C statements to declare the following:
- (i) A fractional variable named y assigned to 0.5
  - (ii) An integer variable named sum.
  - (iii) An integer array named x of size 10 (6 marks)
- (c) Write a C program to add integer numbers 1 to 10 using the *do-while* repetition statement (8 marks)

### QUESTION THREE

- (a) State and explain TWO types of search algorithms and give ONE advantage for each algorithm. (6 marks)
- (b) A program is required to perform the following:  
 If the student mark is greater than 70 display grade A, if the mark is greater than 60 display B, if the mark is greater than 50 display C, if the mark is greater than 40 display D and if the mark is less than 40 display E and advise the student to repeat.  
 Using the nested if-else selection statement write the program (10 marks)
- (c) Explain the following functions used in C:
- (i) fabs (x)
  - (ii) cbrt (y)
  - (iii) fmod (x, y)
  - (iv) tan (x) (4 marks)

### QUESTION FOUR

- (a) (i) Outline FOUR rules for naming variables  
 (ii) Explain the term 'counter'  
 (iii) Explain the statement int countPtr, y (8 marks)
- (b) Use a *while* statement to write the C program that displays the array of figure 1 where power = voltage x current: (12 marks)

Voltage	Current	Power
1.0	0.25	0.250
2.5	0.45	1.125
4.0	0.65	2.600
5.5	0.85	4.675
7.0	1.05	7.350
8.5	1.25	10.625
10.0	1.45	14.500

### QUESTION FIVE

- (a) Explain the following terms used in the C:
- (i) int getchar (void);
  - (ii) int slower (int y);
  - (iii) int isxdigit (int x); (6 marks)
- (b) use a diagram to describe the FOUR layers of the TCP/IP (8 marks)
- (c) Write C statements to initialize a port as output (6 marks)