



UNIVERSITY EXAMINATIONS

FIRST YEAR EXAMINATIONS FOR THE AWARD OF DEGREE OF BACHELOR OF EDUCATION ARTS AND BACHELOR OF EDUCATION SCIENCE

COSC 103: INTRODUCTION TO COMPUTER APPLICATIONS

STREAMS: BED (ARTS & SCI)

TIME: 2 HOURS

DAY/DATE: THURSDAY 01/04/2021

2.30 P.M. – 4.30 P.M.

**INSTRUCTIONS: Answer Question ONE and any other TWO questions**

**QUESTION ONE (30 MARKS)**

- (a) Explain the following terms: (4 marks)
- (i) Bit
  - (ii) Computer network topology
  - (iii) Computer network
  - (iv) The Internet
- (b) Differentiate between the following; (4 marks)
- (i) Computer software and computer hardware
  - (ii) Systems software and application software
- (c) Discuss the differences in functionalities between RAM and Hard Disk of a computer system. (4 marks)
- (d) Identify three reasons why operating system software is very important in a computer. (3 marks)
- (e) Given data in excel sheet: C1, C2, C3, C4, and C5. Write a formula calculating the average and a function for calculating the sum. (3 marks)
- (f) Perform the following operations (show your working)
- (i) Convert  $349_{10}$  to binary (3 marks)
  - (ii) Convert  $10110.011_2$  to Decimal (3 marks)
- (g) Explain the role of passwords in computing. Suggest two measures of keeping a password secure. (3 marks)
- (h) Identify three security measures to take in online communications. (3 marks)

**QUESTION TWO (20 MARKS)**

- (a) Identify three types of wired communication media. (3 marks)
- (b) With the aid of a diagram, explain the following network topologies. (4 marks)
  - i) Bus topology
  - ii) Star topology
- (c) Discuss three types of computer networks. (6 marks)
- (d) With the aid of a well labeled diagram, explain the basic functional components of a computer system. (7 marks)

**QUESTION THREE (20 MARKS)**

- (a) Fred is the head of a local Network consulting company. His company has won a contract to design and develop a network for a middle level college in Chuka. Explain four benefits the college will gain by implementing the network. (8 marks)
- (b) Discuss four applications of computers in education. (8 marks)
- (c) What is a search engine? Explain the importance of this facility in conducting research. Give relevant examples. (4 marks)

**QUESTION FOUR (20 MARKS)**

- (a) Use the MS Excel sheet shown below to answer the questions that follow:

I18							
	A	B	C	D	E	F	G
1	student Name	Courses			Total Score	Average Score	Average Grade
2		COMP 101	COMP 102	COMP 103			
3	Gladys	65	45	48	158	#DIV/0!	
4	Kimaita	67	69	64		66.66666667	#NAME?
5	Chepkorol	45	70	55		56.66666667	
6	Kionyo	68	35	46		49.66666667	
7	Bob	90	56	89		78.33333333	
8	Gilbert	78	53	43		58	
9	Subject	69	55	#NAME?	#REF?		
9	Average Score						
10							
11		Grading System					
12		70 - 100	A				
13		60 - 69	B				
14		50 - 59	C				
15		40 - 49	D				
16		<40	F				

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- (i) Explain the possible causes of errors in the cells G4, E9, and F3. (6 marks)
  - (ii) Write a function to round the average score in cell F4 to 2 digits. (2 marks)
  - (iii) Using the grading system provided above, explain whether to get the average grade of student you will use a simple IF function or an embedded IF functions. (2 marks)
  - (iv) Write a formula to calculate the total score of Bob. (2 marks)
- (b) Using relevant illustrations, explain any four (4) functions of the operating system software in a computer system. (8 marks)

### QUESTION FIVE (20 MARKS)

- (a) Computers can be classified into various types based on the classification used. State any FOUR types of computers based on size and speed of operation. (4 marks)
  - (b) Explain **five** symptoms of a computer infected by virus. (5 marks)
  - (c) State and explain four factors that you would consider when acquiring business application software. (4 marks)
  - (d) Perform the following number conversions.
    - (i).  $AB0.8_{16}$  to decimal equivalent (3 marks)
    - (ii).  $533.845_{10}$  to its binary equivalent (4 marks)
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