



MACHAKOS UNIVERSITY

University Examinations for 2021/2022

DIRECTORATE OF TVET

SECOND YEAR FIRST SEMESTER EXAMINATION FOR

DIPLOMA OF INFORMATION COMMUNICATION TECHNOLOGY

CODE 2920/205: VISUAL PROGRAMMING

DATE: 22/7/2022

TIME: 8:30-10:30 AM

INSTRUCTIONS:

Answer any **FIVE** questions

Don't write on this question paper

QUESTION ONE

- a) State the function of each of the following controls in a Visual Basic program.
- pointer;
 - frame ;
 - ole;
 - combo box. (4 marks)
- b) With the aid of an example, distinguish between the *Name property* and the *Caption property* as used in a Visual Basic program. (4 marks)
- c) Table 1 shows a list of colors that should be displayed on a form when a user enters a specified capital letter corresponding to the color. Use it to answer the question that follows.

LETTER	BACKGROUND COLOUR
R	RED
G	GREEN
B	BLUE
Y	YELLOW
ANY OTHER LETTER	NOT VALID COLOUR

Table 1

- Write a Visual Basic program that would accept the letter and change the background colour of the form to the corresponding colour when a user clicks on a command button. Use an *If statement* and attach the code to a command button. (6 marks)
- d) Write a Visual Basic program that accepts a text through a *text box*. The program should then display the following on a *picture box*:
- Number of characters of the text;
 - First three characters of the text;
 - Extract three characters starting from second character.
- Attach the code to a *command button*. (6 marks)

QUESTION TWO

- a) With the aid of an example in each case, distinguish between string and *Boolean* data type in Visual Basic programs. (4 marks)
- b) Write a Visual Basic program that would generate the following numbers as an output on a form. Use *the for....next* statement. (4 marks)
- 1
12
1 2 3
1 2 3 4
1 2 3 4 5
- c) Outline **two** reasons for using Visual Basic programming language when developing a Hospital Management System. (2 marks)
- d) Anita would like to **use procedures** to develop an application in Visual Basic. Outline **four** benefits she would achieve from this. (4 marks)
- e) Write a Visual Basic program that would accept a number through a text box. The program should then compute the square and the square root of the number and display the output in a label with the following description:
"The square of "number" is "square" and its square root is "square root".
Where the **number, square** and **square root** are values derived from the code. Attach the code to a command button. (6 marks)

QUESTION THREE

- a) State the purpose of each of the following properties of a timer control in Visual Basic programming language.
- i. Interval;
- ii. Enabled. (2 marks)
- b) Explain giving a reason why it is important to set *AutoSize* property of a picture box to true when designing programs in Visual Basic. (2 marks)
- c) Distinguish between *module level variable* and *local variable* as used in a Visual Basic. (4 marks)
- d) Rewrite the following mathematical expression to its Visual Basic equivalent
- $$P = \frac{\sqrt{x} / e^{3x}}{\cos(2x)}$$
- (2 marks)

- e) Identify **two** errors in the following Visual Basic program giving a reason in each case.

```
Private Sub cmddisplay_Click()  
Dim x, y, n, i, sum As Integer  
X = 0  
y = 1  
Print x  
Print y  
For i = 3 To n  
sum = x + y  
Print sum  
x = y  
y = sum  
End Sub
```

(4 marks)

- e) Describe **three** examples of *if conditional* control structures in Visual Basic giving the syntax in each case. (6 marks)

QUESTION FOUR

- a) Explain the function of each of the following tools Visual Basic programming language tools

i. menu bar;

ii. tool box;

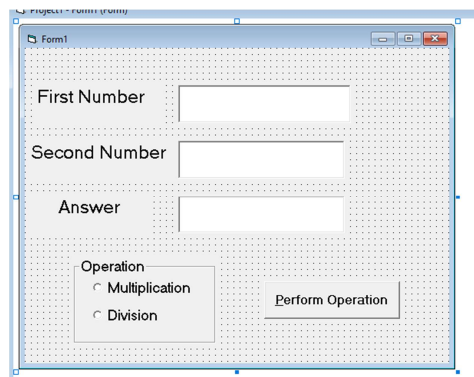
iii. Context menu.

(6 marks)

- b) Outline the steps taken when building a Visual Basic application. (4 marks)

- c) Figure 1 shows a Visual Basic application used to compute multiplication and division of numbers.

Write a Visual Basic program that uses a function for each computation. The program should display the phrase “illegal division operation” on a message box when the denominator is zero. (6 marks)



- d) State **two** differences between *sub procedures* and *event procedures* as used in Visual Programming. (4 marks)

QUESTION FIVE

- a) Table 1 shows the points and their corresponding grades that can be attained in an examination.

POINTS	GRADES
Less than or equals 0	Invalid value
1,2	Distinction
3,4	Credit
5,6	Pass
7,8	Fail
Greater than 8	Invalid value

Write a Visual Basic program that allows a user to enter an integer value point through the use of a text box. The program should then display appropriate grade on a label. Use *select case* control structure and attach the code to a command button. (8 marks)

- b) A prime number is a positive integer which is divisible by 1 and itself For example 11 is a prime number since it has non zero remainder when divided by 6 or 5 or 4 or 3 or 2.

Write a Visual Basic program that prompts a user to enter an integer value through use of an input box function. The program should test if the number entered is a prime number or not. If not, the program displays an appropriate message. Use the *for...next* loop and *mod* operator. Attach the code to a command button. (8 marks)

- c) When Anne attempted to install Visual Basic 6.0 in her computer she got an error message and the process aborted. Explain two possible reasons for this occurrence. (4 marks)

QUESTION SIX

- a) A programmer designed a Visual Basic interface that would capture details of a student as follows:

Registration Number and Name through the use text boxes.

Age group in years (15 -17, 18- 20, 21- 23) through the use of option buttons

Gender (Male or Female) through the use of option buttons

When the fields are entered and a command button is clicked, the program displays the Registration Number, Name, Gender and the statement "You are under age" if the age group is 15 -17 otherwise "You are Mature" through the use of a message box.

- i. Sketch the interface; (4 marks)
- ii. Write a Visual Basic program to implement the interface. (6 marks)

- b) Study the following Visual Basic program code and then answer the question that follows:

```
Private Sub cmdAdd_Click()  
Dim Num As Single  
Num = InputBox("Enter an Integer")  
Num = Num + 1  
Num = (Num + 4) mod 4  
picbox. Print Num  
End Sub
```

Interpret the program given that the input value is 22. (4 marks)

- c) A soda wholesaler sells a 300ml bottle of soda for Kshs 25 when a customer purchases less than 200 bottles and Kshs 23 per bottle when a customer purchase 200 or more.

Write a Visual Basic program that prompts the user for the total number of bottles purchased through the use of a textbox. The program should then compute the total cost and display the results on a picture box. (6 marks)

QUESTION SEVEN

- a) Write a program in Visual Basic with a Label and a textbox named label1 and Text1 respectively that uses a procedure to perform the following sequence of events when the command button is clicked. Use with statements

- Textbox1 is disabled;
- The background color of Textbox1 becomes yellow;
- Label1 becomes visible;
- Text on the label to have a blue color;
- The font of the label to be bold. (5 marks)

- b) The segment of code below is a declaration of a user defined data type in Visual Basic programming.

```
Private Type Customer  
CustomerName As String  
AccNo As Integer  
Balance As Currency  
End Type
```

Write a segment code to declare a variable of Customer type. The program should then assign the values in the table below to the variables and display the values of the record on a picturebox. (4 marks)

Variable	Value
CustomerName	Alex
AccNo	2005
Balance	20000

- c) A company computes tax from employee's salary as follows:

SALARY	TAX	MESSAGE
Less than 1 0000	No tax	No tax
10000 and 20000	10%	Lowest tax
21000 and 35000	15%	Middle tax
Above 35000	20%	Highest tax

Write a Visual Basic program that would accept salary of an_employee through the use of a textbox. The program should then calculate the salary less tax to be paid and the results to be displayed on a label. Use an *If...Then...Else statement*. Attach the code to a command button. (8 marks)

- d) Assuming a visual basic environment, evaluate the expression

$$\text{Num} = a - b * \text{sqr}(c)/d \quad \text{given that } a = 2, b = 3, c = 25, d = 5 \quad (3 \text{ marks})$$

QUESTION EIGHT

- a) Sketch the output produced when the following visual basic statement is executed.

Marks = InputBox("enter a student mark", "student mark", 0) (2 marks)

- b) Assuming a visual basic environment, evaluate the expression.

$$\text{MyVal} = x \wedge y * a \bmod b \setminus c \quad \text{given that } x=5, y=3, a=2, b=15, c=5 \quad (2 \text{ marks})$$

- c) Write a visual basic program that would prompt the user to enter admission number, name and marks scored by a student in three subjects. The program should then compute the students average mark and output the admission number, name, total marks and average marks each separated by 5 tabs on a form. Attach the code to a command click event.

(6 marks)

- d) Distinguish between Fix() and Int() functions as used in visual basic programming language. (2 marks)

- e) During a visual basic Programming lesson, students were required to write a program that could accept registration number, age, and sex of a student through the use of text boxes. The program would then check the age entered and then output either "You are Mature" or "You are under age" on a label when the age is greater than or equal to 21 or otherwise respectively. The program is attached to a command click event.

i. Sketch a possible design of the user interface of the program. (2 marks)

ii. Draw a flowchart to represent the program logic. (2 marks)

iii. Write a visual basic program to implement the interface. (4 marks)