KASSU JOINT EXAMINATION

Kenya Certificate of Secondary Education

451/1 - COMPUTER STUDIES – Paper 1

FORM 4 (THEORY)

September. 2021 – 2½hrs

Name……………………………………………………… Index Number……………………

Admission Number……………………………Class………..…………Date………………………

Instruction to candidates

a) *Write your name and index number in the space provided above.*
b) *Sign and write the date of examination in the spaces provided above.*
c) *This paper consists of **two** sections **A** and **B**.*
d) *Answer **all** the questions in section **A**.*
e) *Answer question **16** and any other **three** questions from section **B**.*
f) *All answers should be written in the space provided in the question paper.*
g) *This paper consists of 12 printed pages.*
h) *Do not remove any page from this booklet.*
i) *Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.*
j) *Candidates should answer the questions in English.*

For Examiner's Use Only

Section	Question Number	Candidate's Score
A	1-15	
B	16	
	17	
	18	
	19	
	20	
	Total Score	

Answer all questions in this section

1. Today, many companies are re-engineering their products to implement the USB connection to the computer. State any two reasons for the drift. (2 Marks)

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2. Bochongo high school managed to construct a computer laboratory but did not have funds for equipping it with computers. A British company offered to donate some computers to the school
   a. After an assessment, it was identified that the supplied computers were the third generation of computers, state any two characteristics of third-generation computers. (1 Mark)

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3. (a) It was noted that after every lesson, the students complained of itchy eyes and mild headache. State any two reasons for this problem. (2 Marks)

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   (b) State any one solution of the problem mentioned in (2b) above. (1 Mark)

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4. State any two methods of input available for the operation of a smartphone. (2 Marks)

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5. Define the term relationship as used in database management systems. (1 Mark)

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6. State any two importance of referential integrity with reference to database tables. (2 Marks)

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7. State the function of an append query. (1 Mark)

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8. Computers are known to create employment for many people in different computing fields. List any two duties of the IT professionals listed below. (4 Marks)

a. System analyst.

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b. Network engineer.

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9. Interfaces enable computer users to interact with the operating system.

a. State four advantages for using a graphical user interface in loading programs and files. (4 Marks)

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b. A vehicle assembly company has introduced robots to replace the human workforce. State two effects this would have on the work force. (2 Marks)

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10. A system analyst is employing a programmer to write a software for a new computer-based system. State the benefits of this method of obtaining appropriate software. (3 Marks)

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11. Give any two advantages of OLED monitors over the LED monitors. (2 Marks)

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12. Distinguish between margins and borders as used in word processing. (2 Marks)

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13. In recent times, computer scientists and engineers have managed to come up with smarter computers, which can almost simulate human thinking and learning often referred to as artificial intelligence (AI), instead of relying on conventional program instructions. List any **two** application areas of artificial intelligence. (2 Marks)

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14. DTP is known to be sophisticated software well suited for desktop publishing.
    (a) Explain the following terms as used in desktop publishing. (2 Marks)
    • Pasteboard

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    • Text overflow

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(b)   The figure below shows a formatting tool used in DTP. Identify its name.   (1 Mark)

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15. Spreadsheet is the dream software for accountants due to their ability to handle numeric oriented data

(a) Identify the type of cell referencing used in the expressions below: (2 Marks)

=RANK($C$3:$A$10, 0)

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=SUM(A$3:A12)

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(b) State the importance of forms in a spreadsheet during data entry.   (1 Mark)

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(c) Differentiate between sorting and filtering as used in worksheet data management.   (2 Marks)

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16. When writing a computer program using a high-level programming language, it needs to be translated into object code for it to be understood and executed by the computer.

   a. State any two advantages of an interpreter. (2 Marks)

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   b. State any three characteristics of the third-generation programming languages. (3 Marks)

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The psedocode below was written by a learner. Use it to answer the questions that follows

Start
Sum=0
For count=0 - 4 do
Print "enter a number (N)"
Input N
If P>10 then
Number out of range
Else
Sum=sum + N
Print sum
End if
End for
Stop

   c. Identify the errors in the above pseudocode and re-write it correctly. (3 Marks)

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d. State the function of the above pseudocode (1 Mark)

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e. Draw a flow chart for the corrected pseudocode (6 Marks)

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17. a) State one application of computing where real-time processing is more appropriate than batch processing and give a reason why (2 Marks)

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 (b) i) State three reasons why hospitals have changed from a manual system to a computer-based system for storing patient records (3 Marks)

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ii) State any three data access methods that can be used to retrieve a patients record in a computerized system. (3 Marks)

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iii) Other than storing patient records, state any other three ways the computers can be used in a hospital. (3 Marks)

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c) Data protection rules give legal rights to individuals and state that personal data stored on computer systems must be kept secure.

i) Give one legal right for personal data. (1 Mark)

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ii) Give three software methods of protecting data. (3 Marks)

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18. Information systems are known to be the driving force for any organization. The success of an organization depends on the design and implementation of its information system.

    a. Define any four components of an information system. (4 Marks)

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    b. State the stage in systems development when the activities listed below are performed. (2 Marks)

        i.   The system analyst presents a report recommending for a change in the system.

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        ii.   The system analyst creates a logical design of the system.

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        iii.   The project stakeholders invite users to have a feel of the system before implementation.

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        iv.   The system analyst monitors and evaluates the system performance.

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    c. Distinguish between the direct and phased changeover strategies. (2 Marks)

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    d. Describe the system characteristics listed below. (4 Marks)

        i.   Systems have a life cycle.

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ii.   The interdependency between subsystems.

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e. State any three reasons that may lead to information system change in an organization.

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19. After data is processed, it is important to keep it somewhere either permanently or semi -permanently for future use.

a. Briefly describe how data is stored/ represented on a solid-state storage device.   (2 Marks)

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b. State any two advantages of solid-state storage devices.   (2 marks)

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c. Distinguish between BCD and EBCDIC coding schemes.   (2 Marks)

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d. Using 8 bits and twos complement subtract 43_{10} from 30_{10}, giving your answer in decimal notation (5 Marks)

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e. Convert 11011011111.1111_2 to its equivalent Hexadecimal number (1 Mark)

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f. Determine the value of x in the equation; $1001101_2 - X_{10} = 11010_2$ (3 Marks)

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20. Networking is said to be important in facilitation of data transfer.

(a) Dr. Jabari, a networking expert trained his students on various data communication aspects. After a lesson, he asked them to state and explain **three** modes of data transmission. As a student, what answers would you provide? (3 Marks)

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(b) Differentiate between LAN and WAN as used in computer networks. (2 Marks)

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(c) State **two** advantages of fiber-optic transmission media. (2 Marks)

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(d) In a computer network, a server computer must be installed with a network operating system in order to operationalize a number of network functions. State **three** functions performed by a network operating system (NOS). (3 Marks)

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(e)   (i) Define the following terms as used in the internet.

- Browser (1 Mark)

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- Spam (1 Mark)

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(ii) Many organizations own and manage websites for various uses. One use of website by a business is conducting their business activities through e-commerce. Mention **three** advantages of e-commerce. (3 Marks)

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