

29.23 COMPUTER STUDIES (451)

29.23.1 Computer Studies Paper 1 (451/1)



MANYAM FRANCHISE  
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SECTION A (40 marks)

Answer all the questions in this section in the spaces provided.

- 1 List **four** activities carried out by a data processing system. (2 marks)
- 2 (a) Define data communication. (1 mark)  
(b) State **two** characteristics of an effective data communication system. (2 marks)
- 3 Explain why an intranet is a more secure way to share files within an organisation compared to the internet. (2 marks)
- 4 Distinguish between a formula and a function as used in spreadsheets. (2 marks)
- 5 State **four** functions which are specific to Network Operating Systems. (4 marks)
- 6 The word race is appearing several times in a long story document composed using a DTP package. How would this word be safely replaced with the word content?. (3 marks)
- 7 Study the pseudocode below and determine its output. (3 marks)
  1. (a) T = 0  
(b) M = 0  
(c) K = 1
  2. (a) M = M + T  
(b) T = T + 5  
(c) K = K + 1
  3. Repeat step 2 while K < 3
  4. Write M, T
  5. Exit
- 8 Give **two** reasons why the use of finger prints and voice input can be used as reliable forms of security in computer systems. (2 marks)
- 9 State the purpose of each of the following memories in a computer system. (2 marks)
  - (a) RAM
  - (b) Hard disk
- 10 Explain why telecommuting is not suitable for a doctor when carrying out an operation on a patient. (2 marks)
- 11 Copyright laws are laws granting authors the exclusive privilege to produce, distribute, perform or display their creative works. It is a legal framework for protecting the works such as book publishing, motion-picture production and recording. State two challenges that are posed to these laws by ICT. (2 marks)
- 12 State **two** reasons why it is necessary to use standard furniture in a computer laboratory. (2 marks)
- 13 Describe the following terms as used in mail merging: (4 marks)
  - (a) main document;

(b) data source.

14 State **three** ways in which ICT can be used in shipping control. (3 marks)

15 A firm operates an order system that coordinates orders, raw materials and inventory across its three factories. Currently the orders are processed manually at each factory and communicated to the others over the phone. The management intends to computerise their operations. State the first two computer professionals who will be required and their roles. (4 marks)

**SECTION B (60 marks)**

*Answer question 16 and any other **three** questions from this section in the spaces provided.*

16 (a) Machine language programs are more difficult to write than high-level language programs. State two reasons for this. (2 marks)

(b) In order to process examination results of students in a school, their names, index numbers and scores in 11 subjects are required. The average score for each student is then determined and a grade assigned. This process is repeated for all 40 students in a class.

Draw a flowchart to:

- Read a student's name, index number and the scores in all the subjects.
- Determine the student's average score.
- Assign a grade to the student depending on the average score as follows:

Score	Grade
$80 \leq \text{score}$	A
$60 \leq \text{score} < 80$	B
$40 \leq \text{score} < 60$	C
$\text{score} < 40$	F

- Display the student's name, index number, average score and the grade.
- Repeat the above steps for all the students in the class. (10 marks)

(c) Below is a list of program segments in different generations of programming languages. Identify the language for each. (3 marks)

(i) LDA 105  
SUB 40  
ADD 20

(ii) 10000110 10111101  
01111000 0001100

(iii) For x: = 1 to 10 do

Write (x);

17 (a) The following are some of the phases in the systems development life cycle (SDLC): system analysis, system design, system implementation, system review and maintenance. State **four** activities that are carried out during the system implementation phase. (4 marks)

(b) Give **three** reasons why system maintenance phase is necessary in SDLC. (3 marks)

- (c) State **two** instances where observation is not a viable method of gathering information during system analysis stage. (2 marks)
- (d) Various considerations should be made during input design and output design. State **two** considerations for each case. (4 marks)
- Input design.
- Output design.
- (e) State **two** reasons why an organisation may use other strategies of software acquisition other than developing their own. (2 marks)

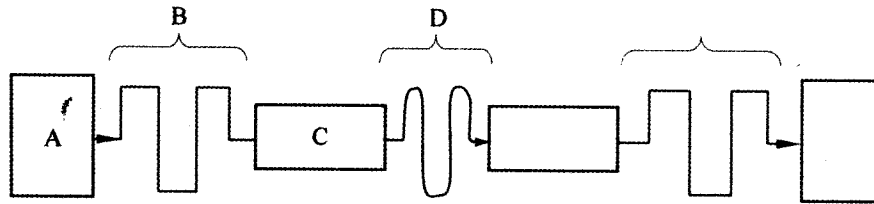
- 18 (a) Using **two** examples, explain the term field properties as used in database design. (2 marks)

(b) Below is an extract from a hospital database table.

Patient No	Name	Date Registered	Amount paid	Remarks
LDK/001	Mathew Olang	04/05/08	2500.00	To go for x-ray
LDK/004	Joy Chelimo	07/06/08	1200.00	Medicine to be ordered
LDK/008	John Kamau	09/08/08	3500.00	To be admitted for further check up
LDK/002	Gerald Wasike	02/04/05	800.00	To come back for review

- (i) State with reasons the most suitable data types for the following fields: (8 marks)
- (I) patient No;
- (II) date registered;
- (III) amount paid;
- (IV) remarks.
- (ii) Which would be the most appropriate primary key field for the above table? (1 mark)
- (iii) What is the purpose of a primary key field in database design? (1 mark)
- (iv) Describe how information about patients who registered after 09/08/06 can be extracted from the database. (3 marks)
- 19 (a) Explain how data in a computer system is secured using: (4 marks)
- (i) password;
- (ii) user access level.
- (b) State **three** characteristics of a suitable password. (3 marks)
- (c) State **two** characteristics of a computer that is infected by computer viruses. (2 marks)

- (d) (i) The figure below shows how data is transmitted through a public telephone line.



Name A, B, C and D. (4 marks)

A ..... B .....

C ..... D .....

- (ii) State **two** advantages of using fibre optic cables over satellite in data communication. (2 marks)

- 20 (a) Using ones complement, convert the decimal number -9 into a 6-bit binary number. (3 marks)

- (b) (i) State **three** standard coding schemes used in data representation. (3 marks)

**29.23.2 Computer Studies Paper 2 (451/2)**

1 Mr Kiprop Onyango owns houses for rent. Table 1 below is a record of his tenants' rent payments.

Tenant ID	Tenant Name	House Number	Month	Amount (Ksh)
2019	Akinyi	A1	January	3,000
2022	Maloi	A2	January	4,000
2038	Nduta	B1	January	4,500
2059	Rop	B2	January	4,500
2070	Mutua	C1	January	4,000
2090	Akinyi	A1	February	3,000
3030	Maloi	A2	February	4,000
3040	Nduta	B1	February	4,500
3025	Mutua	C1	February	4,000
3050	Kagu	C2	February	3,500
3055	Maloi	A2	March	4,000
3090	Kagu	C2	March	3,500

Table 1

- (a) Create a database file that can be used to store the above data. Name the file 'Rent'. (2 marks)
- (b) Create two tables, one to store tenant details and another to store tenant rent payments. Name the tables 'Tenants' and 'Payments' respectively. (9 marks)
- (c) Create a relationship between the two tables. (3 marks)
- (d) Design a form to be used to enter data into each of the two tables. (7 marks)
- (e) Enter the information given into the two tables. (9 marks)
- (f) Create a report showing the amount Mr. Onyango received from each tenant, the total for each month and the total amount he received over the three months. The report should be titled 'Rent Income'. Save the report as 'Income'. (8 marks)
- (g)
  - (i) Create a query named 'Statement' to extract Maloi's records of rent payment. (4 marks)
  - (ii) Create a report named 'Tenant Statement' showing Maloi's rent payment history. The report should be titled 'Tenant Statement'. (4 marks)
- (h) Print the two tables and the two reports. (4 marks)

- 2 Table 2 below shows the admission numbers and names of five students and their scores in six subjects in a mock examination.

ADM No.	NAME	English	Mathematics	Biology	Chemistry	Physics	History
3030	Victor Onyango	77	68	75	35	58	80
3032	Zablon Mutiso	44	77	80	42	60	73
3037	Pauline Chepleting	68	59	91	39	59	75
3040	Naomi Nafula	55	80	89	48	38	66
3044	Jamleck Kiongo	69	82	83	43	44	70

Table 2

- (a) Enter the above data into a worksheet and save the file as 'Mock results 1'. (10 marks)
- (b) Using a formula, calculate the:
- total score for each student;
  - mean score for each student. (4 marks)
- (c) Use a function to obtain the mean for each subject. (3 marks)
- (d) A student is awarded a 'pass' if their mean score is 60% or more. Use a function to determine the number of students who are awarded 'pass'. (2 marks)
- (e) Format the worksheet as follows:
- Borders: single line
  - Subject heading: Align 90°
  - Merge the cells above all the subject headings so that the text 'SUBJECT' is above them.
  - Mean score: one decimal place. (4 marks)
- (f) Using a function, determine the lowest and the highest score for each subject. (4 marks)
- (g) Copy the contents of the worksheet to a blank worksheet and insert a blank column after every subject. Label the new columns as EngG, MathG, BioG, ChemG, PhyG and HistG respectively. On the inserted columns, compute the grades using the IF function based on the following criteria. (13 marks)
- | Mean Score             | Grade |
|------------------------|-------|
| Score $\geq$ 75        | A     |
| $60 \leq$ score $<$ 75 | B     |
| $50 \leq$ score $<$ 60 | C     |
| $45 \leq$ score $<$ 50 | D     |
| Score $<$ 45           | E     |
- (h) Hide all the columns containing score values and save the worksheet as 'Mock results 2'. (1 mark)
- (i) Create a bar chart to compare students' mean scores and label the chart accordingly. (6 marks)
- (j) Print the two worksheets and the bar chart. (3 marks)