

**PAN AFRICA CHRISTIAN UNIVERSITY
END OF SEMESTER EXAMINATION**

PAN AFRICA CHRISTIAN UNIVERSITY

CERTIFICATE IN INFORMATION COMMUNICATION TECHNOLOGY

END OF TERM EXAMINATION

DEPARTMENT: COMPUTING & INFORMATION TECHNOLOGY

COURSE CODE: DICT/CICT0114:

CAMPUS: ROYSAMBU

COURSE TITLE: ELEMENTARY MATHEMATICS

EXAM DATE: TIME:

INSTRUCTIONS

- This exam script has **TWO (2)** sections.
- Read all questions carefully before attempting.
- Answer All questions in Section **A** and any other **three** questions in Section **B**.
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Question 1(Compulsory Question)

(a) Discuss two importance on the relationship between mathematics and ICT
(4marks)

(b) Infotell a research firm collected the following information about particular buying behavior of certain families and gave the following information;

150 families bought food, clothes and luxuries;

250 families bought food and luxuries;

420 families bought food;

200 families bought clothes and food;

60 families bought luxuries and clothes, but not food;

40 families bought luxuries, but neither food nor clothes;

100 families bought none of the three;

180 families bought clothes but not luxuries.

Draw a venn diagram and use it to solve:

(i) The number of families surveyed
(1marks)

(ii) The number of families who bought clothes
(1marks)

(iii) How many families bought luxuries but not clothes?
(1marks)

(c) In a mixture of 45 litres, the ratio of sugar solution to salt solution is 1:2. Calculate the amount of sugar solution to be added if the ratio has to be 2:1
(2marks)

(d) Convert the roman numeral 'MCMXCIX' to decimal numeral system
(1marks)

Question 2

(a) If $x:y = 1:2$, find the value of $(2x + 3y) : (x + 4y)$
(3marks)

(b) A bag contains \$510 in the form of 50 p, 25 p and 20 p coins in the ratio 2 : 3 : 4.
Find the number of coins of each type.
(4marks)

(c) Divide \$370 into three parts such that second part is $\frac{1}{4}$ of the third part and the ratio between the first and the third part is 3 : 5. Compute the value of each part.
(3marks)

Question 3

(a) The sum of two numbers is 27 and their product is 50. Calculate the numbers
(2marks)

(b) The length of a rectangle is 5 cm more than its width and the area is 50cm^2 .
Calculate the length, width and the perimeter.
(3marks)

(c) The three sides of a right-angled triangle are x , $x+1$ and 5. Calculate x and the area, if the longest side is 5.
(5marks)

Question 4

Discuss the difference between three point estimation and PERT
(10marks)

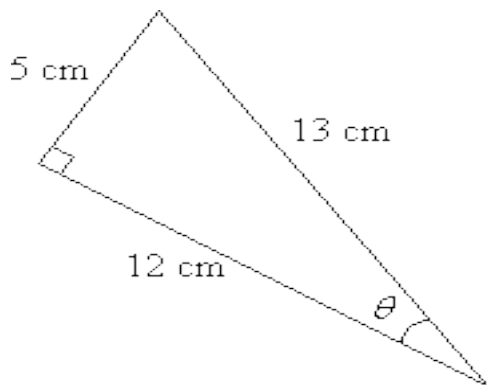
Question 5

(a) There are four candidates for a job. The members of the search committee will rank the four candidates from strongest to weakest. Compute the number of possible outcomes (3marks)

(b) Gomer has a 20 volume set of World Book Encyclopedia. The 20 volumes are arranged in numerical order. His uncle Aristotle has challenged him to write down every possible arrangement of the 20 books. Aristotle will pay Gomer \$10,000 if he can complete the job within 30 days. The only provision is that if Gomer doesn't complete the job within 30 days, he will have to pay Aristotle 1 penny for every permutation that he has failed to list.

If Gomer is going to choose 9 of the 20 books, and arrange them on a shelf, compute the number of arrangements possible (5marks)

(c) Calculate the value of $\sin \theta$ in the following triangle. (3marks)



Question 6

Simplify the given expressions by combining the like terms

(i) $3xy^3 + 9x^2y^3 + 5y^3x$
(3marks)

(ii) $7ab^2c^2 + 2a^3b^2 - 3abc - 5ab^2c^2 - 2b^2a^3 + 2ab$
(4marks)

(iii) $50x^3 - 20x + 8x + 21x^3 - 3x + 15x - 41x^3$
(4marks)