UGANDA INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
END OF SEMESTER TWO EXAMINATIONS

ACADEMIC YEAR 2024/2025

DEPARTMENT: MANAGEMENT

SEMESTER: ONE

PROGRAMME(S): HIGHER EDUCATION CERTIFICATE-MANAGEMENT

YEAR OF STUDY: ONE

COURSE: FOUNDATIONAL MATHEMATICS

COURSE CODE : HECPM 123

DATE: SATURDAY 21ST JUNE 2025

TIME: 9AM- 12PM

DURATION: 3 HOURS

INSTRUCTIONS:

(i) This paper contains two Sections: A (40 marks) & B (60 marks).

(ii) Attempt ALL questions in Section A, and ONLY THREE questions in Section B.

(iii) All questions in Section B carry equal marks.

(iv) Credit will be given for use of relevant examples and illustrations.

(v) Begin each number in Section B on a new page of the answer sheet.

(vi) DO NOT write on this question paper

SECTION A

Question one

(a) Evaluate the following

(i) $\frac{1}{3}+\frac{1}{2}$ (03marks)

(ii) $7\frac{1}{8}-5\frac{3}{7}$ (05marks)

(b) A certain course in UICT has 375 students of which 120 are girls. Express the number of girls as a fraction in its simplest form. (03marks)

(c) Express the following numbers as percentages

(i) $\frac{3}{4}$ (03marks)

(ii) 0.37 (03marks)

(d) If 9 litres of milk cost Ush 18,000. Calculate the cost of 24 litres of the same milk (04marks)

(e) If y is inversely proportional to x and y=15.3 when x=0.6, determine

(i) Coefficient of proportionality (03marks)

(ii) Value of y when x=1.5 (02marks)

(iii) Value of x when y=27.2 (02marks)

(f) Simplify the following

(i) $5\mathrm{x}+3\mathrm{y}+\mathrm{z}-3\mathrm{x}-4\mathrm{y}$ (03marks)

(ii) $3xy-7x+4xy+2x$ (03marks)

(g) Expand the following

(i) $(\mathrm{x}+2)(\mathrm{x}+3)$ (03marks)

(ii) $(2x-3)(2x+3)$ (03marks)

SECTION B

Question two

(a) Evaluate the following

(i) $7 + 20 \div (9 - 5)$ (03marks)

(ii) $1\frac{1}{3} x\, 2\frac{1}{5} \div \frac{2}{5}$ (04marks)

(b) Simplify

(i) $\frac{3}{4} - \frac{7}{15}$ (03marks)

(ii) $1\frac{5}{8} - 2\frac{1}{3} + 3\frac{5}{6}$ (04marks)

(c) The surface area of a sphere is given by $A = 4\pi r^2$. Find the surface area of a circle of radius $r = 2.45m$, correct to 2 decimal places. (03marks)

(d) A metal rode, 150cm long, is heated and its length expands by 12cm. calculate the percentage increase in length (03marks)

Question three

(a) Simplify and evaluate each of the following

(i) $\frac{a^5 b\, c^3}{a^2 b^3\, c^2}$ when $a = \frac{3}{2}, b = \frac{1}{2}$ and $c = \frac{2}{3}$ (05marks)

(ii) $\left(a^{\frac{3}{2}} b\, c^{-3}\right)\left(a^{\frac{1}{2}} b^{-\frac{1}{2}} c\right)$ when $a = 3, b = 4$ and $c = 2$ (05marks)

(b) Evaluate $3\mathrm{pq}r^3 - 2p^2qr + pq$ when $p = \frac{1}{2}, q = -2$ and $r = 1$ (04marks)

(c) If x is inversely proportional to y and x=12 when y=0.4, determine

(i) The value of x when y=3 (03marks)

(ii) Value of y when x=2 (03marks)

Question four

(a) Solve the following equations

(i) $5(t-2)-3(4-t)=2(t+3)-40$ (03marks)

(ii) $\frac{3}{2x+1}=\frac{1}{4x-3}$ (04marks)

(b) Solve the equations the following

$$3x-2y=12$$
$$x+3y=30$$

(05marks)

(c) Solve the following quadratic equations

(i) $x^2+x-6=0$ (04marks)

(ii) $3x^2-110x-4=0$ (04marks)

Question five

(a) Write the following as the logarithm of a single number

(i) $3\log 2+2\log 5-\frac{1}{2}\log 16$ (05marks)

(ii) $3\log 3+\frac{1}{4}\log 16-\frac{1}{2}\log 27$ (05marks)

(b) Solve the following equations

(i) $\log(x+1)+\log(x-1)=\log 3$ (05marks)

(ii) $\log(x^2-5)-\log x=\log 4$ (05marks)

Question six

(a) Determine the gradient of the straight line passing through $(2,7)$ and (-3,4) (04marks)

(b) Determine the gradient and intercept on the y-axis for each of the following equations

(i) $y=4x-2$ (04marks)

(ii) $2y-1=4x$ (04marks)

(c) Find the value of $\frac{dy}{dx}$ for the curve $y=x^{\,2}+x-4$ at the point $(1,-2)$ (04marks)

(d) E valuate $\int_1^3(\mathbf{x^2}-4x+3)dx$ (04marks)

END