



SCHOOL OF HOSPITALITY AND ENGINEERING

**ARTISAN IN FOOD PRODUCTION, PLUMBING AND ELECTRICAL
INSTALLATION**

SEPT 2019 INTAKE

END OF SEMESTER EXAMINATIONS

JAN- APRIL 2020

MATHEMATICS

0402/215, 0202/215

TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES

1. *This paper has **SEVEN** questions.*
2. *Answer any **FIVE** questions in this paper.*
3. *Any examination **IRREGULARITY** will lead to **DISQUALIFICATION**.*
4. *Indicate your **FULL ADMISSION NUMBER** in each Answer Sheet used.*
5. *Cell phones are **NOT** allowed in the examination room.*

QUESTION ONE

(a) Using elimination method, solve the following simultaneous equations

(i) $5x + 3y = 35$

$$3x - 2y = 2$$

(ii) $3a + 2b = 12$

$$4a - b = 5$$

(iii) $2x + y = 12$

$$x - y = 3$$

(18mks)

(b) Solve; $-x + 4 = -6$

(2mks)

QUESTION TWO

(a) Determine the value of x in the linear equations below

(i) $4(x-2) + 4 = 3(2x-3)$

(ii) $3(1-x) + 4(x+3) = 30$

(iii) $2(x+3) - 3(x-5) = 20$

(iv) $x/2 + x/5 = 1$

(12mks)

(c) Solve for the unknowns

(i) $y/4 - 1/4 < 5$

(ii) $x - 3/4 > x/2 + 5/2$

(8mks)

QUESTION THREE

(a) Using elimination method only, solve the following set of simultaneous linear equations

(i) $2x + 3y = 8$

$$3x + 2y = 7$$

(ii) $2x + 3y = 600$

$$x + 2y = 350$$

(10mks)

(b). By use of graphical method, solve the following pair of simultaneous equations

$$2y + x = 8$$

$$1 + y = 2x$$

(10mks)

QUESTION FOUR

(a) Solve by factorizing:

(i) $3x^2 - 8x + 4 = 0$

(ii) $5x^2 - 13x - 6 = 0$

(iii) $2x^2 + 7x - 15 = 0$

(iv) $x^2 - 12x + 36$

(20mks)

QUESTION FOUR

(a) Using elimination method, solve the following set of simultaneous equations.

$$3x + 2y = 5$$

$$2x + 3y = 4$$

(8mks)

2

(b). Solve using quadratic formula method

$$x^2 + 6x = 4$$

(6mks)

(C). Evaluate;

(i) $-3(x-2) = 5x$

(ii) $2y(1+2) = 8$ (6mks)

QUESTION FIVE

(a) Solve the following quadratic equations using factorization method

(i) $12x^2 - 24x + 9 = 0$

(ii) $12x^2 + 2x - 2 = 0$

(iii) $9x^2 - 8x - 1 = 0$ (12mks)

(b) Solve the simultaneous equation below

$$x^2 + y = 4$$

$$y - x = 2$$
 (8mks)

QUESTION SIX

(a) Simplify, giving the results in index form.

(i) $7^5 \times 7 \times 7^2$

(ii) $(2^8)^3$

(iii) $r^6 \times r^2 \times r^9$ (6mks)

(b) Express the following as positive indices.

(i) $2^{-6}a$

(ii) $2^{-3}a^{-5}$

(iii) $3a^{-4}$

(iv) $(a^2b^{-3})^{-1}$

(8mks)

(c) Solve for a in:

(i) $2^a = \frac{1}{64}$

(ii) $3 \times 2^{a+5} = 768$ (6mks)

QUESTION SEVEN

(a) The 4th and the 10th terms of an arithmetic sequence are 8 and 50 respectively. Find the 1st term and the common difference.

(5mks)

(b) Solve the following linear equation

$$4(x + 5) - 6(2x + 3) = 3(x + 14) - 2(5 - x) + 9$$

(3mks)

(c) Variable y is inversely proportional to x^2 , and $y = 5$ when $x = 2$. Calculate:

(i) y when $x = 5$

(ii) x when $y = 8$ (6mks)

(a) T varies inversely as \sqrt{S} . If $T=15$ when $S=36$, calculate:

(i) T when $S=49$

(ii) S when $T=10$ (6mks)