

MOTITHANG HIGHER SECONDARY SCHOOL
MID TERM EXAMINATION - 2017
MATHEMATICS
(Three Hours)

CLASS : IX

TOTAL MARKS:100

(The first 15 minutes of the examination is for reading the paper. This paper contains 3 sections –SECTION A, SECTION B, and SECTION C. You are expected to answer all the questions in SECTION A and SECTION B. Under SECTION C there are 8 questions. Each question has two parts I and II. Attempt either I or II from each question. The use of calculator (fx—82/ fx—100) is allowed without memory.

SECTION—A
ANSWER ALL THE QUESTIONS

QUESTION I

- (i) WHAT is the value of 'n' in the equation

$$7^{10} = (7^2)^n$$

- a) 0 b) 1 c) 5 d) 4
- (ii) Calculate : $0^3 + 3^0$
- a) 0 b) 1 c) 2 d) 3
- (iii) Solve for 'n' : $2^{-n} = (1/2)^3$
- a) 0 b) 3 c) - 3 d) 1
- (iv) Write $(13^4)^9$ as a single power
- a) 13^{32} b) 13^{36} c) 13^{13} d) 13^{27}
- (v) Evaluate: $(7-3s)$ for $s = -3$
- a) 18 b) 14 c) 12 d) 16
- (vi) Calculate: $30^3 - 6^3$
- a) 5^3 b) 3^3 c) 30^3 d) 6^3
- (vii) What is the numerical co-efficient of $2.3xy$.
- a) 0 b) 2 c) 2.3 d) 3

(viii) What is the degree of the polynomial $3t - 3t^2 + 7t^3$

- a) 0 b) 1 c) 2 d) 3

(Ix) Evaluate: $64^{1/3}$

- a) 2 b) 4 c) 3 d) 1

(x) Write in scientific notation:

178 000 000 000 000

- a) 178×10^{12} b) 1.78×10^{14} c) 1.78×10^{-14} d) 178×10^{-12}

SECTION—B

(32 marks)

ANSWER ALL THE QUESTIONS

QUESTION 2

SOLVE : $3a - 5 = 16$ (2 marks)

QUESTION 3

SOLVE : $6 \geq 5x - 4$ (2 marks)

QUESTION 4

(2 marks)

A line has equation $3x + 2y = 6$. Determine the co-ordinates of the Y- intercept.

QUESTION 5:

(2 marks)

WRITE the equation of the line which has slope -3 and Y—intercept 1

QUESTION 6

ADD: $(3x^2 - 2x + 8) + (-5x^2 + 3x - y)$ (3 marks)

QUESTION 7

SUBTRACT : $(3x - 6x^2 + 8x^3) - (-x + x^2 - y^2)$ (3 marks)

QUESTION 8

MULTIPLY : $2y (3 - 4y)$ (3 marks)

QUESTION 9

Model using algebraic tiles and find the product.

$$(2x + 3)(x + 2) \quad (4 \text{ marks})$$

QUESTION 10

DIVIDE $(16x^2 + 6x^3 - 6x) \div (6x - 2)$ (4 marks)

QUESTION 11

EXPAND and simplify : $3(6 - 2c) + 4(8 + c)$ (3 marks)

QUESTION 12

CALCULATE $1/9 + (5/8 - 1/2)^{-1}$ (4 marks)

SECTION - C (48 marks)

EACH QUESTION HAS 2 PARTS I & II. ATTEMPT EITHER I OR II FROM EACH QUESTION

QUESTION 13 I

a) SOLVE : $x - 2 = x + 1$ (3 Marks)

b) SOLVE THE FOLLOWING INEQUALITY : $3y + 1 \leq 7$ (3 marks)

[OR]

QUESTION 13 II

For the given equation in standard form $2x - 3y = 12$

- a) Determine the x—intercept (1 mark)
- b) Determine the y—intercept (1 mark)
- c) Determine the slope (1 mark)
- d) Write the equation in slope and y—intercept form (1 mark)
- e) Sketch the graph (2 marks)

QUESTION 14 I

By how much is the first polynomial greater than the product of binomial multiplication.

i) $3y + 4y - 3$ and $(2y + 4)(-y - 8)$ (3 marks)

ii) $2x - 4xy + 3$ and $(4x - 3)(y + 5)$ (3 marks)

[OR]

QUESTION 14 II

a) DIVIDE: $20 - 11x^2 - 3x^4 \div x^2 + 5$ (3 marks)

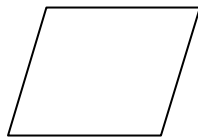
b) For the above question evaluate the numerator and denominator for $x = -1$. Then evaluate the quotient for $x = -1$ (3 marks)

QUESTION 15 I

a) Describe the height of the shape as a polynomial. (3 marks)

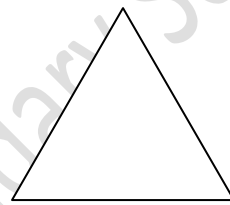
The area and the base length are given

a)



$3x - 1$

b)



$4x + 3$

(3+3)marks

[OR]

QUESTION 15 II

a) MULTIPLY : $(2x + 1)(3x + 2)$ (3 marks)

b) DIVIDE : $(x^4 - x^3 + x - 1) \div (x - 1)$ (3 marks)

QUESTION 16 I

SKETCH THE GRAPH OF: (3 marks)

a) $y = -3x - 4$

b) $y = -2x + 3$ (3 marks)

[OR]

QUESTION 16 II

CREATE A GRAPH TO SOLVE THE GIVEN SYSTEM OF LINEAR EQUATIONS.

$y = \quad + 5$ $y = \quad + 5$ (6 marks)

QUESTION 17 I

Dechen works at two different jobs. One job pays him Nu.600 an hour. The other job pays Nu. 500 an hour. He wants to earn a total of Nu. 4500 and work exactly 8 hours.

- a) Write an equation to describe Dechen's desired income. (2 marks)
- b) Write an equation to describe the hours he would like to work. (2 marks)
- c) Solve the system of equations to determine the hours he would spend on each job to meet his goal. (2 marks)

[OR]

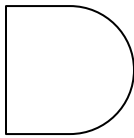
QUESTION 17 II

ORDER THESE FROM LEAST TO GREATEST.

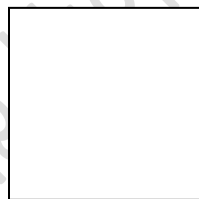
$(2^4)^4$, 8^5 , $(4^3)^3$, $(2^7)^2$, $(-2)^8$, -2^{30} (6 marks)

QUESTION 18 I

- a) CALCULATE the area of the given shape. (3 marks)



- b) A square picture is inserted into a square frame. Write an expression that can be used to find the area of the white space around the picture. (3 marks)



[OR]

QUESTION 18 II

- a) DIVIDE : $(22x - 14 + 12x^2) \div (3x + 7)$ (3 marks)
- b) DIVIDE : $(6x^3 + 4x^2 - 3x - 2) \div (3x + 2)$ (3 marks)

QUESTION 19 I

- a) CALCULATE : $(3.8 - 4.23 \times 4.6)^2$ (2 marks)
- b) CALCULATE : $2.4 \times (4.5 \times 1.3 \times 0.18)^0$ (2 marks)

c) SUBTRACT: $(-4m + 3m^3 - t) - (7t - 2m + 2m^3)$ (2 marks)

[OR]

QUESTION 19 II

a) The population of the world on August 22, 2016 was 8,736,211,689. Convert this number to scientific notation. (2 marks)

b) SOLVE for 'n': $3^5 (n^5) = 30^5$ (2 marks)

c) Which is greater. 5^4 or $30^3 \div 6^3$ (2 marks)

QUESTION 20 I

a) ESTIMATE the number of seconds in one week. (2 marks)

b) The formula to estimate the number of seconds it takes for an object to fall 'h' meters is $0.45 \times h$. About how many seconds will it take for an object to fall from each height. (4 marks)

(i) 100m

(ii) 10000m

(iii) 1000000m

(iv) 50000

[OR]

QUESTION 20 II

CALCULATE:

a) $40.5 - 3(-2)^5 \div [10 + 3(-2.4)]$ (3 marks)

b) MULTIPLY: $(3x - 2)(2x + 4)$ (3 marks)