

Name:.....Class:.....Adm No:.....

END TERM 2 EXAM - 2021

FORM 1

MATHEMATICS.

TIME:

**Instructions.**

Answer all questions in the spaces provided.

1. Express the following numbers in words. (2mks)

a) 14633001

*Fourteen million six hundred and thirty three thousand and one.*

b) 30000010

*Thirty million and ten.*

2. A matatu charges sh. 120 as fare from town A to town B. It has a capacity of 18 passengers. How much money does it make in one day covering 10 trips with full capacity. (3mks)

$$120 \times 18 = 2160$$

$$1 \text{ trip} = 2160$$

$$10 \text{ trips} = 2160 \times 10$$

$$= \text{shs. } 21,600$$

3. Use the divisibility test of 11 to check whether the following numbers are divisible by 11. (2mks)

a) 1048564

$$(1 + 4 + 5 + 4) - (0 + 8 + 6)$$

$$14 - 14 = 0$$

*Divisible.*

b) 1120043

$$(1 + 2 + 0 + 4) - (1 + 0 + 4)$$

$$7 - 5 = 2$$

*Not divisible*

4. Use Bodmas to evaluate. (3mks)

$$\frac{\frac{1}{2} \left[ \frac{3}{5} + \frac{1}{4} \left( \frac{7}{3} - \frac{3}{7} \right) \text{ of } 1 \frac{1}{2} \div 5 \right]}{3 \frac{5}{7}}$$

$$\frac{1}{2} \left( \frac{3}{5} + \frac{40}{21} \right) \text{ of } 1 \frac{1}{2} \div 5$$

$$\frac{1}{2} \left( \frac{3}{5} + \frac{10}{21} \times \frac{3}{2} \times \frac{1}{5} \right)$$

$$\frac{1}{2} \left( \frac{3}{5} + \frac{1}{7} \right)$$

$$\frac{1}{2} \left( \frac{26}{35} \right) = \frac{13}{35}$$

$$\frac{13}{35} \div 3 \frac{5}{7}$$

$$\frac{13}{35} \times \frac{7}{26}$$

$$= \frac{1}{10}$$

5. Victoria spent  $\frac{1}{4}$  of his net January salary on school fees. She spent  $\frac{1}{4}$  of the remainder on electricity and water bills. She then spent  $\frac{1}{9}$  of what was left on transport. If she finally had sh. 3400. What was her net January salary. (3mks)

**School fees =  $\frac{1}{4}$**

**Electricity =  $\frac{1}{4} \times \frac{3}{4} = \frac{3}{16}$**

**Transport =  $\frac{1}{9} \times \frac{9}{16} = \frac{1}{16}$**

**Total =  $\frac{1}{2}$**

**$\frac{1}{2} = 3400$**

**Total salary = shs. 6800**

6. Using mathematical tables evaluate. (1mk)
- a)  $7340^2$

$$7.340 \times 10^3$$

$$53.88 \times 10^6$$

$$5.388 \times 10^7$$

- b)  $14.5^2 + 0.714^2$  (2mks)

$$7.14 \times 10^{-10} = 50.98 \times 10^{-2}$$

$$210.3 + 0.5098$$

$$= 210.8098$$

7. Given that  $a:b = 1:2$  and  $b:c = 3:4$ . Find  $a:b:c$  (1mk)

$a:b:c$	$(1 \times 3)$	$(2 \times 3)$	$(2 \times 4)$
$1:2$	$a:$	$b:$	$c$
$3:4$	$3$	$6$	$8$

8. Three bells ring at intervals 30mins, 35mins and 50 mins. If they ring together at 11:25 p.m on Monday at what time and day will they next ring together. (3mks)

2	30	35	50
5	15	35	25
3	3	7	5
5	1	7	5
7	1	7	1

$$2 \times 5 \times 3 \times 5 \times 3 = 450 \text{ mins}$$

$7hr$	$30mins$
$2325$	$6:50 a.m$
$730$	
$2050$	$Tuesday$

9. The length of minute hand of a clock is 3.5cm. Find the angle it turns through if it sweeps an area of  $4.8cm^2$ . (take  $\pi = \frac{22}{7}$ ) (3mks)

$$A = \frac{\theta}{360} \times \pi r^2$$

$$4.8 = \frac{\theta}{360} \times \frac{22}{7} \times 3.5^2$$

$$\theta = 44.88^\circ$$

10. Express the following as a single fraction.

a)  $\frac{x-1}{2} + \frac{x+2}{4} + \frac{x}{5}$  (3mks)

$$\frac{10(x-1) + 5(x+2) + 4(x)}{20}$$

$$\frac{10x - 10 + 5x + 10 + 4x}{20}$$

$$19/20x$$

b)  $\frac{ax - ay + bx - by}{a+b}$  (2mks)

$$\frac{a(x-y) + b(x-y)}{a+b}$$

$$\frac{(a+b)(x-y)}{a+b} = x-y$$

11. Fifteen tractors each working eight hours a day takes eight days to plough a piece of land. How long would it take 24 tractors each working 10 hours a day to plough the same piece of land. (3mks)

Tractors	hours	Days
15	8	8
24	10	?

$$\frac{15 \times 8 \times 8}{24 \times 10}$$

$$= 4 \text{ days}$$

12. Use factor tree to decompose 256 into prime factors. (2mks)

$256 = 2 \times 128$	$2 \times 8$
$2 \times 64$	$2 \times 4$
$2 \times 32$	$2 \times 2$
$2 \times 16$	$2 \times 2 \times 2 \times 2 \times 2 \times 2$
	$= 2^7$

13. Juma, Ali and Hassan share the profit of their business in the ratios 3:7:9 respectively. If Juma receives sh. 6000. How much profit did the business yield. (3mks)

$$\frac{3=6000}{19=?}$$

$$= 19 \times 6000$$

$$3$$

**= shs 38000**

14. Use bodmas to evaluate: (4mks)

$$\frac{5 \times 6 - 76 \div 4 + 27 \div 3}{4 - 2 \times 4 + 36 \div 4}$$

$$\frac{30 - 19 + 9}{20} \qquad \frac{4 - 8 + 9}{5}$$

$$= \frac{20}{5}$$

$$= 4$$

15. A Kenyan bank buys and sells foreign currency as shown in the table below.

	<b>Buying (ksh)</b>	<b>Selling (ksh)</b>
1 us dollar	95.34	95.87
1 uk pound	124.65	125.13

A tourist arrived in Kenya with 15000 pounds which he converted in kshs.

a. How much kshs did he receive? (2mks)

**15000 x 124.65**  
**= 1869750**

b. He later spend sh. 125340 while in Kenya. He converted the remainder in dollars. How many dollars did he receive? (3mks)

**1869750**  
**-125340**  
**1,744,410**  
**= 1744410**  
**125.13**  
**= 13940.78 dollars**

16. A metallic cuboid measuring 16cm by 8cm by 4cm was melted. The material was used to make a cube. What is the length of the cube? (3mks)

**V = L x W x h**  
**= 16 x 8 x 4**  
**= 512**  
**Volume cube = L x L x L**  
**= 512cm<sup>3</sup>**

$$\begin{aligned} \text{Length} &= 3\sqrt{512} \\ &= 8 \text{ cm} \end{aligned}$$

17. Find a if  $a^2 = b^2 + c^2$  given that  $b=2$   $c=3.5$ . (2mks)

$$\begin{aligned} a^2 &= 2^2 + 3.5^2 \\ a^2 &= 16.25 \\ a &= 4.031 \end{aligned}$$

18. Below is a travel timetable for a vehicle operating between towns A and D 70 km apart.

Town	Arrival	Departure
A		10.10 am
B	10.30am	10.40 am
C	11.00 am	11.05 am
D	11.20am	

- a. At what time does the vehicle depart from town A? (1mk)

**10.10 am**

- b. How long does it take to travel from town A to town B? (1mk)

**20 mins**

- c. For how long does it stay in town B? (1mk)

**10 mins**

- d. At what time does it arrive in town D? (1mk)

**11:20 a.m**

- e. What is the average speed of the whole journey? (1mk)

$$\begin{aligned} S &= \frac{D}{T} = \frac{70}{1 \frac{1}{6}} \\ &= 60 \text{ km/hr} \end{aligned}$$

- f. A football match lasts 90 minutes with a break of 15 minutes at half time. If a referee allows five minutes extra for injuries and stoppages, what time does a match which kicks off at 4:30 pm end? (3mks)

$$90 + 15 + 5 = 1 \text{ hr } 50 \text{ mins}$$

**16:30**

**1:50**

**14:40 hrs**

**2:40p.m**

19. A rectangular plot measures 100m by 200m. Determine:

- a. Its perimeter in km. (2mks)

$$= \frac{2(100+200)}{1000}$$
$$= 0.6 \text{ km}$$

- b. Its area in  $\text{m}^2$ . (2mks)

$$= 100 \times 200$$
$$= 20,000\text{m}^2$$

- c. Its area in ha. (2mks)

$$\frac{20000}{10000} = 2\text{ha}$$

- d. Square tiles of 100cm by 100cm are use to cover the floor. How many tiles are used? (2mks)

$$= \frac{10000 \times 20000}{100 \times 100}$$
$$= 100 \times 200$$
$$= 20,000 \text{ tiles}$$

- e. If the cost of 1 tile is sh. 25. How much money will be spent on tiles. (2mks)

$$20,000 \times 25$$
$$= 500,000$$