**2018**

**MATHEMATICS PAPER 1**

**FORM 3**

**MAY SERIES**

**MARKING SCHEME**

1. Numerator

 

  M1

 

 

 Denominator

  M1

 

 

  A1

2. 36 40 48

 2 18 20 24

 2 9 10 12 2 9 5 6

 2 9 5 3 3 3 5 1

 3 1 5 1

 3 1 1 1

 rem = 24 x 32 x 5 minutes=720 M1

 Fastest =  = 20 laps M1

 Slowest = = 18 laps

 χ = 20 – 18 = 2 laps A1

3. (a) Swiss francs

 = 57.6 B1

 (b) Ksh. M1

 57.6 x 48.2 = 2776.32

 = sh.2776 A1

4. 7x – 4 ≤ 9x + 2 ..(i)

9x + 2 < 3x + 14(ii)

Solving (i)

7x – 4 ≤ 9x + 2

-2x ≤ 6

x ≥ -3 M1

Solving equation (ii)

9x + 2 < 3x + 14

6x < 12

x < 2 M1

Combining (i) and (ii)

-3 ≤ x < 2

 M1

 -3 – 2 -1 0 1 2

Integral values are

-3, -2, -1, 0, 1 A1

5.

|  |  |
| --- | --- |
| 8t + 6s = 41604t + 12s = 40004t + 3s = 2080-t + 3s = 10003t = 1080t = 360s = 213$\frac{1}{3}$Trouser = Sh. 360Shirt = Sh. 213.33 | M1 ✓ Simultaneous equations formedM1 ✓Attempt to eliminateA1 For both |

7.

Inter. ∠ = x

Exter. ∠ = y

x + y = 1800

x – y = 1080

2x = 288 B1

 x = 1440

∴ext. ∠360 M1

No. of sides = $\frac{360}{36}$= 10 sides A1

8.

4 – b= -3

 3 – a 2 M1

b + 1= 2

a - 2 3 M1

3a + 2b = 17

-2a + 3b = -7 M1

6a + 4b = 34

-6a + ab = -21

 a = 5, b = 1 A1

9.

Present 4 yrs ago

Daugther ⇒ x x – 4

Mother ⇒ 2.5x 2.5x – 4

$\frac{x-4}{2.5x-4}$ = $\frac{1}{3}$ M1

3x – 12 = 2.5x – 4

 0.5x = 8

 x = 16 A1

Mother = 2.5 x 16

 = 40 years A1

10. 

 2.337 x 10ˉ¹ + (0.2311)² M1

 (2.311 x 10ˉ¹)²

 2.337 x 10ˉ¹ + 5.341 x 10ˉ² M1

 0.2337 + 0.05341

 = 0.28711

 ≈ 0.2871 A1

11.

Log t + 5 = 2

 8 t - 3 3 M1

t + 5 = 82/3 = 4 M1

t - 3

t + 5 = 4t – 12

 t = 17 / 3 = 5 2/3 A1

12.

 M1

13. Volume of cylinder = volume of sphere

 

 

 V = 5.685 A1

 S.A. = 4∏r²

 = 4 x 3.142 x (5.685)² M1

 = 406.2cm² A1

14.

 M1

 

  M1

  A1

15. VSF = 3.375

 LSF =  M1

 ASF = (1.5)²

 Area of larger cylinder

 = 352 x 2.25 M1

 = 792cm² A1

16. 5000 x 72.23 = 361,150 M1

 361,150 – 214500 = 146,650

  M1

 = £1078.55 A1

17. (a) Gross tax = 5512 + 1162 = 6674 M1

 Rate

 1st 9680 10% 968

 2nd 9120 15% 1368 M1

 3rd 9120 20% 1824 M1

 4th 9120 25% 2280 M1

 5th 780 30% 234 M1

 37820 6674

 6674 – 6440 = 234 17.1

 (b) 

 = 780

 Basic salary = 37320 – 15220 M1

 Ksh.22,600 A1

 Net pay M1

 Total deductions= 320 + 200 + 7500 + 5512 = 13,532

 Net pay Gross Deductions

 = 37,820 13,532 M1

 = 24,288 A1

18.

(a) 250 x 14 x 2 x 2 = 14000 M1

 Net profit = 14000 – 6000

 = KSh. 8000 A1

(b) 8000 x 25 = 200,000 B1

 = 190,000

(c) Saving: $\frac{40}{100}$ x 190,000 M1

 = 76000

Remaining profit = $\frac{36}{100}$ x 190,000

 = 68,400 A1

James’ share

$\frac{45,600}{3}$ + $\frac{2}{9}$ x 68,400

 = 30,400 A1

(d) 475,000 x 3 x 100 M1M1

 95

= 1,500,000 A1

19.

a) < PAQ = <PAM + <QAM

 < PAM = sinθ1 =

 Sin -1 (0.4286) = 25.380

 < QAM = <PAM = 25.38

 →<LAP = 25.38x2= 50.76

b) <PBQ = < PBM + <QBM

 < PBM = sin∝1 =

 Sin-1 (0.5357) = 32.390

 < PBM = <QBM = 32.390

 <PBQ = 32.390x 2 = 64.78

c)i)area of segment = area of a section – area of D

Taking (i)

 =

 = 48.84 – 42.69 = 6.15cm2

Taking (ii)

 =

 = 39.89 – 31.92 = 7.97cm2

 = (6.15 + 7.97) cm2 = 14.12cm2

21.

(a) B1 Baseline χy

 B1 left side

 B1 right side

 B1 complete figure

y

C

B

A

D

F

4

60

40

80

60

20

E

5

120

100

6

160

7

60

100

3

2

60

8

120

1

80

χ

 (b) Area 1 =  × 80 × 120 = 4800

 2 = × 60(120 + 100) = 6600 M1 for the first four areas.

 3 = × 200 × (160) = 16000

 4 = × 60 × 60 = 1800

 5 = × 100 × 120 = 6000

 6 =  × 60 (220) = 6600 M1 for the next four areas.

 7 =  × 20(260) = 2600 M1 for addition

 8 = × 220 × 160 =  M1 for addition

  A1 for Total area

 (c) 50,000 × 6.2 B1

 = 496,000

23.

|  |
| --- |
| 1 + 1 = 12 7 5 35 √Rate of emptying per minute313 √Amount left per minute12 - 3 = 156 - 105 = 5135 13 455 455 √Amount in the bath after 2 ½  51 x 5 = 255455 2 910Time taken to fill 910 = 3.57 minutes √ 255 |
| Total cost = (4 x 90) + 3(120) + 5 (60) |
| 360 + 360 + 300= shs. 1020 √Cost of one kg = 1020 = 1020 4+3+5 12Shs. 85.00 per kg √ |
| 5 x 85 = 425= 108 x 425 √ 100= shs. 459.00 √ |