3KNT FRATERNITY FORM FOUR

MATHEMATICS

121/1

PAPER 1

TERM TWO 2017

MARKING SCHEME.

1.-8+(-4)+8÷(-2)

 -6+(-2)+(-1)

-8+(-4)(-4)

 -6-2-1 M1

-12-4 M1

 9

-16=16 =1$\frac{7}{9}$ A1

 9 9

2.Numerator (2x+3y)(2x-3y) M1

Denominator 2$x^{2}$-2xy-3xy+3$y^{2}$

 2x(x-y)-3y(x-y)

 =(2x+3y)2x-3y) m1

 (2x-3y)(x-y)

 = 2x+3y

 x-y A1

B1 –line PQ

B1 – 4 subdivisions of PQ

B1 – location of M

3.

 P M Q

4.Gradient AB =6-4 =$\frac{1}{2}$ M1

 5-1

Gradient PQ :$M\_{2}$x$\frac{1}{2}$ =-1

$m\_{2}$=-2 Q(x,y) M1

y-2=-2

x-3 1

y-2=-2x+6

y=-2x+8

 or

y+2x=8 A1

5. Vol=1.05x1000=125$cm^{2}$ M1

 8.4

Length=125=25cm A1

 0.5

6.105$=110jy

 ?= 3850000

3850000x1=35000 us $ M1

 110

1 us $ = 90 ksh

35000=? =90x35000=3,150,000 M1

Duty paid =3150000x20

 100

 = Ksh 630000 A1

7. <CDE=180-64=$116^{0}$ B1

<CBE= $116^{0}$ (AH<) B1

$∴$<ABE=64

<BE A=180$°$(76$°$+64)=400 B1

8. Tan 23.61=$^{l}/\_{x}$

H= x tan 23.61 M1

Tan 35=$^{h}/\_{x-2} ≈$h=(x+6) Tan 35

xTan 23.61=(x-6)tan 35 M1

x tan 23.61=x tan 35-6 tan 35

O 2631x=-4.210

X=16 M1

H=16 tan 23.61=6.994

$≅$7.0 cm A 1

9. X=$√13^{2}$-$√5^{2}$

 =$\sqrt{13}-5$

 =$\sqrt{8} M 1$

Tan A=$√8$ /$\sqrt{5}$ $»\sqrt{8 }\left(\sqrt{5}\right)=\sqrt{40}$

 $\sqrt{5} $ $√5)$ 5

 2$\sqrt{10}$

 5 A1

10.$(2$ (6-4)90=720 (sum of interior angles) M1

2X+$\frac{1}{2}$x+x+40$°$+110+130+160=720 M1

3$\frac{1}{2}$X=720-440=280

X=280x2=80

 7

$\frac{1}{2}$X=40$°$(smallest) A1

11.(1)+(x)=-(1) M1

 (2) (y)=(2)

1+ x=-1

X=-2≥

2+y=2

Y=0 M1 (for values of x and y)

(a)+(2)=(-3) M1

 (b) (0) (-3)

a-2=3;a=-1

b=-3

therefore the coordinates of B are

(-1,-3) A1

12. X≤0 B1

Y≥2 B2

Y≤-x+2 B1

13.

 D C

A B

14). 4.5 litres= 4.5x1000$cm^{3}$

9$m^{3}$=9x1000l=9000x1000$cm^{3}$

VSF=4.5X1000=$\frac{1}{2000}$

 9X1000000

LSF=$\frac{1}{12.599}$

Height=90X12.6=1134cm.

15.Total hours 24x3+12=84 hrs B1

In 1 hr =15 sec(cat)

84 hrs=?

=1260 sec

=21 min B1

1745

 21

1806 hrs

 6.06 pm B1

16.

|  |  |  |
| --- | --- | --- |
| X | 4 | 8 |
| Y | 26 | 138 |

B1

W=10=2 units

 5

$\frac{2}{2}$ (240+2(6+26+70+138) M1

240+480

=720 A1

17.a

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| X | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |
| Y | -14 | -6 | 0 | -4 | 6 | 6 | 4 | 0 | -6 | -14 |

B2

Check the graph

Scale B1

Plotting B1

Curve B1

B(i)

|  |  |  |
| --- | --- | --- |
| X | 0 | 1 |
| Y | 2 | 0 |

Check the line B1

(ii) (-1,4) and (4,-6) B1 for both

SECTION II

18.After 2 hrs

Boat P 750x2=150 km

Boat Q 900x2=1800km

Scale 1cm rep 300km

1500=5cm 1800=6cm

 2 300

QP=10.6±0.1 M1

10.6x300=3180km A1

Bearing of Q from p=225$°$

Bearing of P from Q=45$°$

19. a$\%$profit for taxes and insurance

40 x75

100 100 M1

Amount showed=100-(25+30)x225000

 100

 45x225000=101250 M1

100

Amount Cherop received more than Asha;

Ratio of contribution 60000:8500:1050000

 =12:17:21 M1

21.12 x101250=18225 A1

 50

(b)Profit during 2nd year

2250000x$\frac{10}{9}$=2500000 M1

Nangilas new ratio

 $\frac{110000}{275000}=\frac{2}{5} $ M1

Nangilas new share of profit.

$\frac{2 }{5}$x112500=45000 A1

20.(a) L=$18^{2}+6^{2}$=

A=3.142 x6x18.97+3.142x6x6 M1

=35.7.62244+113.112 M1

=470.7344

=470.73 A1

(b)V=$\frac{1}{3}$AH=$\frac{1}{3}$x113.112x18 M1

 =678.672

(c)$\frac{11}{18}=\frac{X}{6}»X\frac{11}{18}$x6=3.667 M1

V=$\frac{1}{3}$ii(7)($6^{2}$=6(3.667)+3.667) M1

$\frac{7}{3}$ii(71.448889) M1

=523.82 A1

21.



3a+4b=-4 3c+4d=-3

A+3b=-3 c+3d=-1

3a+4b=-4 3c+4d=-3

3a+9b=-9 3c+9c=-3

 5b=-5 5d=0

B=-1 d=0

A+3=-3 c=-1

Reflection in the line

Y=-x

22. (a)Max speed (the length)

$\frac{1}{2}$ x(350+850)h=1500 M1

H=15000x2=25m/s M1

 1200

In km/h=$\frac{25}{100}$x3600=90km/h A1

(b)Accelelator=$\frac{change in relation }{time}$

 =$\frac{25-0}{200}$=$\frac{1}{8}$m/s

(c) Distance =speed x time

$\frac{\begin{array}{c}\\300\end{array}}{ 150}=\frac{25}{x}$ M1

X=150x25

 300

=125m/sec

Distance =$\frac{1}{2}$x150x125=937.5 A1

(d)Distance=7500m

1st part ½ x200x25=2500m

2nd part tx25=25t

2500m+25t=7500m M1

25t= 7500-2500

T=$\frac{500}{25}$ =200sec M1

Total time=200+200

 =400sec A1

23.class frequency cf

40-43 5 5

44-47 4 9

48-51 5 14

52-55 3 17

56-59 6 23

60-63 2 25

(b)median=25/2 =12.5

47.5+4/5 x4=50.7 kg

(c) Axes well labeled

Bars draws with uniform width

Class line used as boundaries.

24. sin$Q\_{1}$=$\frac{4}{12.1}$=0.3200

$Q\_{1}$ =18.66

ThereforeP$o\_{1 }$Q=2x18.66=37.33$°$ B1

sin$Q\_{2}$=$\frac{4}{10}$=0.400

$Q\_{2 }$ 25.58

Therefore P$O\_{2}$Q=2x25.58=47.16 B1

Area of sector $O\_{1}$py Q=37.33 x3.142x12.52

 360

 =50.19$cm^{2}$

 Area of O1 PQ=1/2 x12.5cm x 12.5cm sin 37.33$°$

 =47.38$cm^{2}$ M1

Area of segment PY QP=50.91-47.38

 =3.53$cm^{2}$ M1

Area of sector OPxQ=47.16x3.142x$10^{2}$

 360

 =41.16 M1

Area of D =1/2 x$10^{2}$xsin 47.16=36.66

Area of segment=41.16-36.66

 =4.5 M1

Shaded area=3.53+4.5

 =8.03$cm^{2}$ A1

Area of sector=41.16-8.0=33.13$cm^{2}$ A1.