**MATHEMATICS PAPER 2**

1. G= {1,2,3,6,9,18}

H= {2,3,5,7 }**B1  for both sets**

a) DIAGRAM **B2**

1, 6,

9, 18

5

7

2

3

H

G

b) G n H= (2, 3) **B1**

1. f(x) =3x2 +2

h(x) = x+1

fh(x) = f(x+1)

=3(x+1)2 +2**M1**

=3(x 2+2x+1) +2

=3x2+6x+3+2

=3x2+6x+5 **A1**

fh(-1)= 3(-1)2 +6x-1+5

=3-6+5 **M1**

=2**A**

1. Log 10X =T.332

Log 10y =2.456

Log 10y

=Log 10y2 +Log 10

=Log 10y2 +Log 10X

=2 Log10y + ½ log 10x **B1**

**=**2(2.2.456) +½ (T.332) **M1**

**=4.912+** ½ (2 +1.332) **M1**

=4.912+ (T+ 0.666)

=4.912 + T.666

=4.578 **A1**

1. H

H=

100= **M1**

60K= 288

K=

K=4.8 A1

H=

H= **M1**

H= 56 **A1**

= M1 (for multiplying by both numerator and denominator)

=

= But =

=M1 (for simplifying)

=

=4+ A1

=Compare with a+b

a= 4 and b=2 a A1

1. n(A) =25, n(A1n B)=10

n(AnB)=n(AuB)1,n( ) = 40

n( ) = 40

25 - x

10

5

x

20

n(A) = 25

x = 5

25- X+X+10+X=40 M1

35+X=40

X= 40-35

X=5 A1

n (A u B) =35 A1

= 32 –(x-y) 2

= [3+(x+y)] [3-(x+y] M1, A1

1. Average speed=

52.5= M1

52.5 = M1

840= 2y +240

2y = 600M1

Y= 300 A1

1. =, =

BC= BA +AC

= -+ M1

= +

BC= A1

BC = M1

=

=5 units A1

1. New value = old value (1-)n

5,078,400 = y (1-)2 M1

5,078,400= y( 1-0.08)2

5,078,400= y( 1-092)2 M1

5,078,400= 0.8464y

Y =M1

Y =6,000,000/=A1

1. Let the cost be c and the height of the wall be H

C=K and C∂ H2  C=RH2

C=K+RH2B1

20,000= K + 100R………..(I) M1

56,000 =K+ 4000R……….(II)M1

( ii)-(i)

36,000= 300RM1

R=120 A1

20,000 = K+12000

K= 8000A1

Equation is

C=8000+ 120H2 A1

1. C=8000+120 X(14)2

C=8000+120X196

C= 31,520

The cost is sh 31,520

b) 24000= 8000+120H2 M1

120H2 =16000

H2 = M1

H2 =133.3333

H= 11.5470 A1

The height of the wall is 11.5470m

1. **(a)**

Y = 3

10 B1

7 B1

x

n(B) = 18

8 - x B1

6 - x B1

11

B1

4 B1

C

A

Y=18- ( 7+8-X+X)

=18-15

=3 **M1**

If 24 do not do chemistry

3+8- X+ 11+ 4 =24 M1

26\_ X =24

X=2 A1

3

10

7

2

B

6

4

11

4

C

A

**b**) i) 3 students do biology only A1

ii) 2 students do all the three subjects A1

c) Number of students doing at least two subjects =7 +6 +4+2+ 19

P=

= A1

B

C

A

8

15

1. (a)

AC =

AC=

AC=17 M1

AO=OC= = 8.5

O

Y

A

8.5

15

12

OX = M1

OX=

OX=

0X= 8.4705 CM A1



M

O

V

8.4705

4

Q

= M1

= 2.1176

=64.7218

=64.70 A1

c) Volume= base area x height B1

= x 8 x 5 x 8.4705 M1

=338.82 cm3 A1

1. SOLUTION

Allowances

Marriages 25,000 M2 *for all correct m1 for 4 or more correct*

Transport 4 x 9000 = 36,000/=

Medical = 40,000

Water and electricity 30 x 1500= 45,000

Lunch 20,000

Childrens’ 2 x 5000+ 12,000= 42,000

Total allowances 208,000/= M1 A1

Taxable income =Gross income – Allowances

=680,000 – 208,000 M1

=472,000/= A1

Income tax

First 80,000→O

Next 50,000→ x 50,000 =5,250

70,000→ x 70,000 = 9,100

90,000 → x 90,000 =16,200

60,000 → x 60,000 = 12,240

120,000 → x 120,000= 33,600

2000 → x 2,000 = 600 M2 for all correct M1 for 4 or more correct

Total income tax =5,250+ 9,100+ 16,200+ 12,240+ 33,600+ 600 M1

= 76,990/= A1

b) x100 %

X 100% M1

=11.3221% A1

M & N are mid points of AB & OB respectively

30z = 20 m, OA= a, ON= b

A

O

B

M

a

b

N

Z

2. AB

AB= AO +OB

AB = -a + 2b M1 A1

OR 2b –a

ii) OM

OM= OA +AM

But AM= AB

(2b –a) B1

OM= a + (2b –a) M1

= (2a+2 b –a)

= (a+2 b) A1

iii) ZB

ZB = ZO+ OB

But 30Z =20M

OZ=⅔ OM

OZ= ⅔ X (a + 2 b)

= (a + 2 b) M1

= ZB - (a + 2 b) + 2b

= (a - 2 b + 6b

=(a - 4 b) A1

iv) AN

AN =ON –OA

= b-a B1

b) AN= b- a

AZ = AO + OZ

=-a + (a + 2 b) M1

=

=( -a2 + 2 b)

AZ = (2b + 2 a) M1

=(b + a)

AZ = AN A1

AN= AZ

Hence K= A1

1. Dist between Kampala and Masaka is 105Km

Time taken by the cyclist =

=4.2 hrs

=4 hrs 12 min B1

Time taken by the motorist, Kampala to Masaka

=

=2.1 hrs

=2 hrs 6 minutes

GRAPH

b) Time of arrive in Masaka for the cyclist is 11.12 a.m B1

For the motorist is 9.06 am B1

Difference is 2 hrs 6 minute B1

c) At 8: 21 a.m, 71 km from Masaka B1 B1

d) at 10: 15 am B1

17,a ) g ( x) =

g (x) is meaningless

When 2x2 +3x-2 =0 M1

2x2 –x+4x-2=0

X( 2x -1) + 2( 2x-1) = 0

(2 x-1) ( x+ 2) =0 M1

Either 2x-1 =0 0r x+ 2= 0 M1

X= OR X= -2

b) f(x) =

let y= M1

y2 = 2x +4

2x =y2 -4

X = ( x2 -4)

f-1 (-8) = [( -82)-4) M1

= (64 - 4)

= x 60

=30 A1

C) F ( X) = 2 X+ 1

G( X)= X2-2

fg ( x) = gf( x)

fg (x) = f( x2 -2)

=2 ( x2 -2) + 1

=2x2- 3 M1

gf( x) = g( 2x+1)

=( 2x +1)2 -2

=4x2 +4x + 1-2

4x2 +4x+1-2 =

4x24x-1=2x2-1 M1

Solving for x

2X2+4X +2 =0 M1

X= or x = A1