**3KNT FRATERNITY EXAM 2017**

**TERM II FORM 4**

**MATHEMATICS PAPER II MARKING SCHEME**

All logs M1

+/- M1

X/÷ M1

C.A.O M1

1. No log

60.31 1.7804

5.251 0.7203

0.06594 2.8192

1.5395 ÷ 2

2 + 1.5395

2

1.7698

102.4 2.0106

2. v3 = ax2h M1

b – h

v3b – v3h = ax2h

x2 = v3b – v3h M1

ah

x = ± v3b – v3h

ah A1

3. 80,000 (1 - ) 2x2  M1

80,000(0.91)4

80,000 x 0.86857 M1

54859.97 A1

4. log (15 – 5x) – log 10 = log(3x – 2)

Log (15 – 5x) = log (3x – 2) M1

10

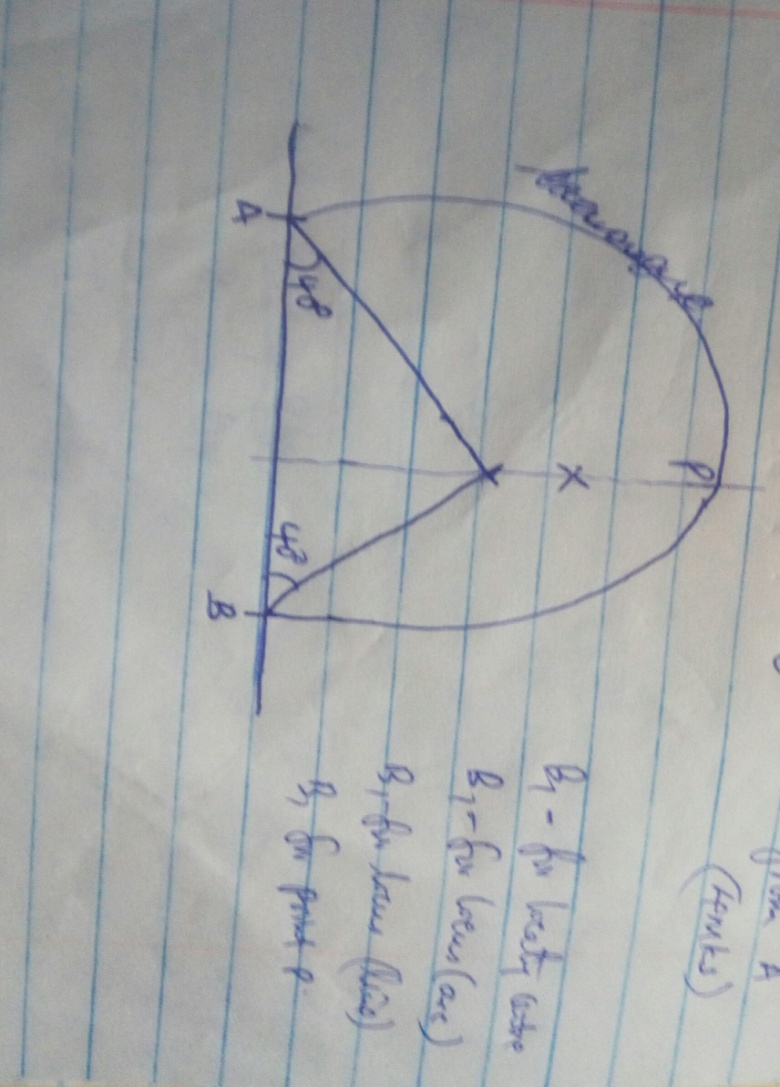
15 – 5x = 3x – 2 M1

10

15 – 5x = 30x – 20

x = 1 A1

5.



6. tan(2Ø + 45) = 0.7321

= 600 or -1200 B1

2 Ø + 45 = 600, -1200 B1

2 Ø = 150, -1650

Ø = 7.50, -82.50 B1

7. 3( - ) - 2 ( + )

M1

M1

A1

( + ) ( - )

3

2 – 5

- 5

-3

= - +

8.a) 64 - 384 + 960 - 1280 + … A1

X x2  x3

b) x = 8

= 64 – 384 + 960 – 1280 M1

8 64 512

= 28.5 A1

9.a) dy = 15x2 – 14 x +3

dx

At x = 1

= 15 (1)2  - 14(1) + 3 M1

= 4 A1

b) M1M2 = -1

M2 = - M1

y – 3 = -

x – 1

y = x + 3 A1

10. x2 – 3x + y2 + 9y = M1

(x - )2 + (y + )2 = + + M1

Centre (, -) A1 (For both centre and radius)

Radius =

= 5.099 units

11. PQ = -9i + 3j B1

PN = PQ B1

PN = (-9i + 3j)

= - 15i + 5j B1

12. P = KQ

T

Pc = K0.8Q x T = 0.64 M1

Po 1.25T KQ

%c = (1 – 0.64) 100 M1

= 36% A1

13. (7.55 X 5.25) – (7.45 x 5.15) x 100 M1

2 x 7.5 x 5.2x M1

= 1.628 A1

14.i) MQ

MQ x 4 = 8 x 6

MQ = 12 B1

ii) XT2 = 26 X 10 M1

XT =

XT = 16.12 A1

15. R = 3800 X 100 = 1.9% M1

40,000 X 5

3420 = P x 1.9 x 7.5

100 M1

P = 3420 X 100

1.9 X 7.5

= 24000 A1

16. ʃ (x2 – x – 6) dx = ʃ (x2 – x – 6)dx M1

x

x3 – x2 – 6x + c A1

3 2

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| X0 | 60 | 120 | 150 | 210 | 240 | 270 | 300 | 330 |
| 2sin (x + 30)0 |  |  | 0 |  | -2 |  | -1 |  |
| 1 – 2 cos (2x)0 | 2 | 2 |  | 0 |  | 3 |  | 0 |

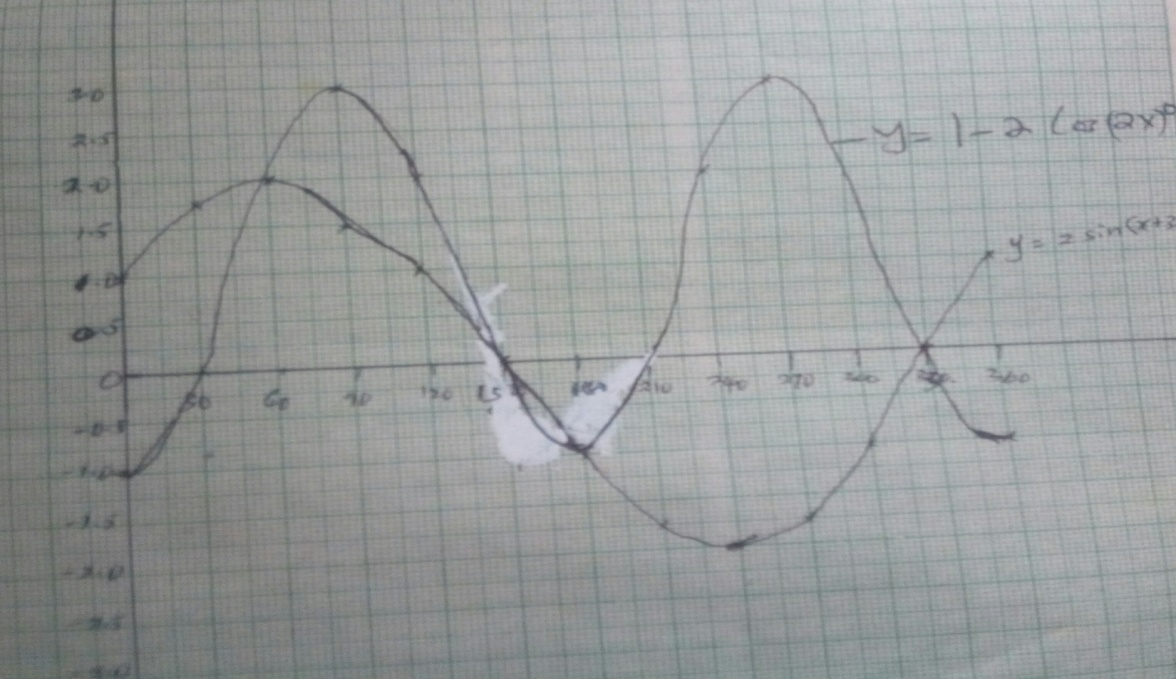
17.

B1

B1

c)i) 600, 1500, 1800 and 3300 (BI for each 2 values correct)

ii) 1950 and 2850 ( B1 for the two values correct)



S1

C2

P2

18.a) Gross tax = PAYE + Relief

= (5400 + 1093)12 M1

= Ksh.77916 PA A1

b) Income Rate Tax

5208 5208 x 10 x 20 10416

100

4536 4536 x 15 x 20 13608 M1

100

4548 4548 x 20 x 20 18192

100

4558 4558 x 20 x 25 22740

100

X X x 30 x 20 12960

100

77916 M1

60 x = 12960

100

x = 2160 M1

Gross income = 18840 x 2160 = K 21000 Pa

Gross income in Shs. Pm = 21000 x 20 M1

12

= Shs.35000Pm

B. Salary = 35000 –

9000 M1

26000 A1

c) Net Pay = 35000 – (2000 + 2500 + 5400) M1

= Ksh.25100 A1

19.

OA = a OC = b

AP: PC = 4: 3

OP: PB = 3: 2

ai) AC = AO + OC

= -**a** + **b B1**

ii) OP = OA +AP

a + AC B1

a + (-a + b) BI

7a – 4a + 4b B1

7 7

= 3a + 4b BI

7 7

iii) OB = OP: PB = 3: 2

OP = (OB) B1

OB (a + b) B1

= a + b B1

b) CB = ha + rb B1

h = r = B1

20.a)i) = 30cm A1

ii) x = 8 x = 30 x 8

30 24 24

= 10cm A1

b) h = 262 – 102 = 24cm M1 A1

c)i) Tan 24

20

= Tan -1 24

20 M1

= 50.190 A1

ii) Tan = 24

10

= Tan-1 24

10 M1

= 67.38 A1

iii) FG = 8, FG = 18 x 8 = 6cm

18 24 24

Cos Ø = M1

= 62.51 A1

G = x B2 Drawing the tree diagram and

B1 probabilities correctly

B1

21. G Y B1 Correct multiplication

B1 Correct answer

R B1

G B1

Y Y = x B1

R 10

G

Y

R

R = x

b)i) x + x + x

+ +

=

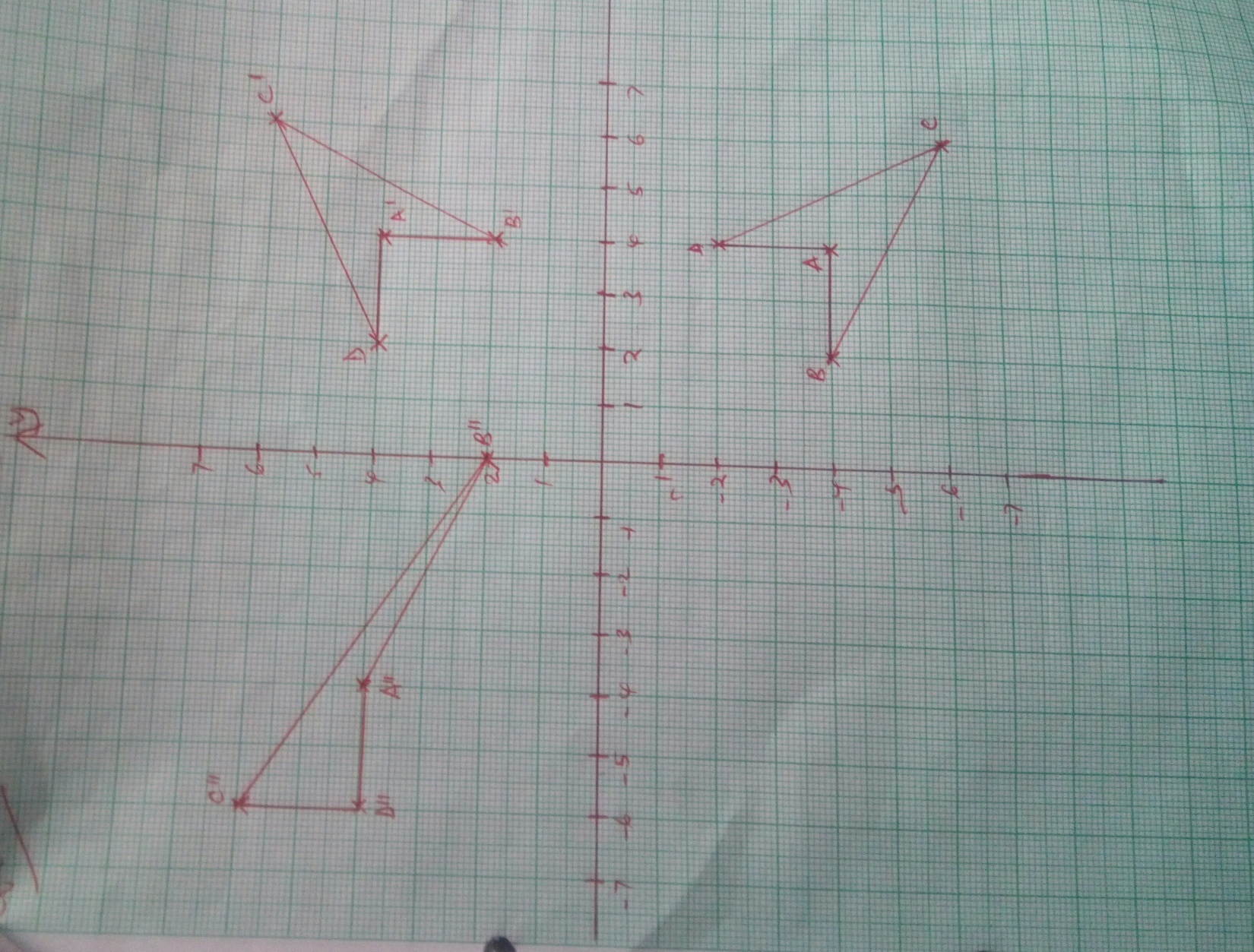
ii) x =

I - x + x + x + x

I - + + +

I - = =

22.a)



B1

B1

B1

A B C D A1 B1 C1 D1 B1 B1

b) 0 -1 4 2 6 4 4 4 6 2

1 0 -4 -4 -6 -2 4 2 6 4

Positive quarter turn about the origin B1

AI BI CI DI AII BII CII DII

c)i) 0 -2 4 4 6 2 -4 0 -6 -6 B1

0 1 4 2 6 4 4 2 6 4

AII (-4, 4) BII(0, 2) CII (-6, 6) and DII(-6, 4) B1

ii) See the graph

A B C D AII BII CII DII M1

d) a b 4 2 6 4 -4 0 -6 -6

c d -4 -4 -6 -2 4 2 6 4

4a – 4b = -4 4c – 4d = 4

2a – 4b = 0 2c – 4d = 2

A = -2, b = -1, c = 1, d = 0

Matrix -2 -1

1 0 A1

23.a)i) Angle OSR = 90 – 50 =400 B1

Angle ORS = 400 B1

ii) Angle RTS = 300 and Angle RPS = 500

angle USP = 300 + 500 = 800 B1

iii) Angle PQR = 1800 – 500 B1

= 1300 B1

b)i) PT x TR = TS2

(7 x X) (7) = 92 M1

7X = 81 – 49 = 32

X = 32 = 4.57 A1

7

ii) Angle ORP = 400

cos 400 = ½ x 4.57 M1

r

r = ½ x 4.57 = 2.98 M1A1

Cos 40

24.a) 3rd = a + 2d

9th = a + 8d B1 (For all three)

25th = a + 24d

b) 7th term = a + 6d

6th term = a +5d

a + 6d + 2 (a + 5d) = 78

3a + 16d = 78 M1

a + 8d = a + 24d M1

a + 2d a + 8d

16d2 = 10ad

a = d M1

3 x d + 16 d = 78 M1

d + 16d = 78

d = 3.75 A1

a = 6 A1

c) (2 x 6) + (8 x 3.75) M1

(12 + 30)

x 42 M1

= 189 A1