**SAMIA SUB – COUNTY JOINT EVALUATION TEST – 2021**

***Kenya Certificate of Secondary Education (K.C.S.E****)*

MARKING SCHEME

121/1

MATHEMATICS

PAPER 1

MATHEMATICS

|  |  |  |  |
| --- | --- | --- | --- |
|  | 4 of (-4 -3) + 3 – 2  -12 + 3 + 54 of (- 7 – 3 – 2) - 4 48-4 = - 12  | M1M1 A1 | For numerator For denominator  |
|  |  | 03 |  |
|  | Nume (3x + 1) (3x - 1)Den (3x – 1) ( x + 1) ( 3x +1)(3x – 1) (3x – 1) (x + 1) 3x + 1 x + 1 | M1M1 A1  |  |
|  |  | 03 |  |
|  |  4 x 1411 2010 ÷ 11 3 10= 4 x 7 x 33 7 10 100= 21 250 | M1 A1 | V removal of bracketsSimplified fraction  |
|  |  | 02 |  |
|  | No . of hens = 20t, number of ducks = 3t 4Total No = t + 20t + ¾ t = 21 ¾ t ¾ t = 72 t = 96Hens = 1920 96 + 72 x 100= 1920= 8.75% | B1M1A1  | Turkey and hens |
|  |  | 03 |  |
|  |  5 + 120.1396 0.59365(7,161) + 12(1.686)35.805 + 20.232=56.037 | M1 M1A1 |  |
|  |  | 03 |  |
|  | M = -2 + 4 , 6 + 2 2 2 =(1,4) g1= - 2 3g2 = 3 2y – 4 = 3x – 1 22y = 3x + 5 | M1 A1M1A1 |  |
|  |  | 04 |  |
|  |   12S.A = πrl 1 = √52 + 1212 =13cmS.A = 3.142 x 5 - x 13 = 204.23 | B1 M1 A1  | 2x |
|  |  | 03 |  |
|  | Let t and p be the cost of a text book and a pen respectively.3t + 5p = 970 ………………(i)2t + 8p = 880 ………………(ii)Multiply (i) by 8 and (ii) by 524t + 40p = 776010t + 40p = 4400104t = 3360 t = 240 | B1M1 A1  | For both V attempt to solve for t |
|  |  | 03 |  |
|  | <BOA = 80 x 2 = 1600Obtuse < BOA = 2000Therefore < OAC + 800 + 2000 + 100 = 3600<OAC = 3600 - 2900 = 700<CAB = 70 + (180 - 160) 2 = 800 | B1 B1B1 |  |
|  |  | 03 |  |
| 1. (a)

 (b)  |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Speed  | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 |
| Freq  | 1 | 4 | 9 | 14 | 38 | 47 | 51 | 32 | 4 |
| Fx  | 30 | 160 | 450 | 840 | 2660 | 3760 | 4590 | 3200 | 440 |

Σfx = 200Σfx = 16,130 Σfx = 16130 Σf 200  = 80.65 90km/h | B1M1A1B1 |  |
|  |  | 04 |  |
|  |  33 x+7 = 22 -3x 23 32   3 3(x+7) 3 6x 2 2 3(x + 7) = 6x3x + 21 = 6x3x = 21x = 7 | M1 M1A1 |  |
|  |  | 03 |  |
|  |  1 + T = - 1  2 2  T = -1 - 1 2 2  = -2 0  x + - 2 = -3 y 0 -3  x = -3 - -2 y -3 0  = -1 -3  R(-1, -3) | B1M1 A1 |  |
|  |  | 03 |  |
| 1. (a)

(b) | = ½ + 4 x 80 + 80 x 16 + ½ x 4 x 80 = 160 + 1280 + 160 = 1600ma = - 80  4 = 20m/s2 | M1A1M1A1 |  |
|  |  | 04 |  |
|  | L.C.M of 50 and 80 =400Number of poles = 400 + 400 50 8 = 13 | B1M1A1 |  |
|  |  | 03 |  |
|  | Ext + Interior = 18001x + x = 18034x = 1803x = 180 x 3 4 Exterior = 1 x 135 = 4500 3No. of sides = 360 45 = 8 sides  | B1 M1A1 |  |
|  |  | 03 |  |
|  | 12 – 2x >18x – 8 > 28 – 2x12 + 8> 18x +2xx< 118x + 2x > - 28 + 8x > -1- 1 < x <1Intergral values are 0 and -1 | B1B1A1 |  |
|  |  | 03 |  |
|  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| x  | -3 | -4 | 1 | 4 |
| -2x2 | -18 | -2 | -2 | -32 |
| 2x | -6 | -2 | 2 | 8 |
| y  | -17 | 3 | 7 | -17 |

(b) (i) (ii) x = -15 or 2.5(c) (i) 7+2x – 2x = 9 + 5x – 2x2 y = - 3x – 2  x = - 1.2 or 3.7 (ii) (0.5, 7.5) | B1B1S1P1C1L1B1M1B1B1 | Correct line drawn |
|  |  | 10 |  |
|  | 48000-20000 =28000 x = 28000×  = sh. 350, 000Sales = 350 000+100 000 = 450 000(i) Sales for feb  =531 000- 100 000 = 431 000 ×  =34, 480(ii) = =sh. 398 250Commission = 298250 ×  = 23, 860 sh 23860 + 20 000 = 43 860 | M1M1M1A1M1M1A1M1M1A1 |  |
|  |  | 10 |  |
|  | V.S.F = 512000: 100000 512: 1000 64: 125 43: 53L.S.F Height os small tank = 4x 300 5 = 240cmA.S.F = 16: 25S.A of the large tank = 25 x 768 16 = 1200m2Mass of smaller tank = 125 x 800 64 = 1562 | M1M1M1B1B1M1A1M1A1 |  |
|  |  | 10 |  |
| 20 |  |  |  |
|  |  |  |  |
| 21(a) (b)(c) | Cos Ө = 2502 + 3202 - 440 2x250 x 320 = 100.330A = ½ x 250 x 320 sin 100.330 = 39351.65 10000 = 3.9352ha 2R = 440 Sin100.33 R = 223.6 A = 22 x 223.62 - 39351.65 7 =117781.7m2 | M1A1M1M1A1M1B1M1M1A1  | Area of circle diff. |
|  |  | 10 |  |
| 22(a)(b)(c)(d) | Time the arrives in NBI = 400 120 = 3hrs 20 minTime = 8.20am + 3.20min = 11.50amDistance covered by the bus in 30min = ½ x 80 = 40kmTime taken to meet = Distance  R.S  = 360 200 = 1hr 48minDistance = 40 + 9 x 80 5 = 40 + 144 = 184kmDistance = 80 x 23 6 = 360 2 km 3 | M1A1B1B1M1A1M1A1M1A1 |  |
|  |  | 10 |  |
| 23(a) | 1. Bearing of B from D = 212 + 11
2. Bearing of A from C = 269 + 10
3. Distance of A from C = 8.4cm + 0.1cm

 = 168km + 2 1. B from D = 4.8cm + 0.1cm

 = 96km + 2 | B1B1B1B1B1B1 |  |
|  |  | 10 |  |
| 24(a)(b)(c)(d) | S = 53 - 5(5)2 + 3(5) + 4S = 19V = ds = 3t2 – 10t + 3 dt = 3(5)2 - 10(5) + 3 = 28m/sMoment at rest V = 03t2 – 10t + 3 = 0(3t – 1) (t – 3) = 0t = ⅓ or 3secAcceleration when t = 2a = dv /dt = 6t – 10  = 2m/s2 | M1A1M1M1A1M1M1A1M1A1 |  |
|  |  | 10 |  |