**CEKENA JOINT EVALUATION TEST-2021**

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

121/1

**MATHEMATICS**

PAPER1

**MARKING SCHEME**

|  |  |  |  |
| --- | --- | --- | --- |
| 1. |  | M1  M1  A1 |  |
|  |  | 03 |  |
| 2. |  | M1  M1  A1 | Factorization of numerator  factorization of deno. |
|  |  | 03 |  |
| 3. | 500× 135 .50  =677500-214000  ==6379.9 | M1  M1  A1 |  |
|  |  | 03 |  |
| 4. | 6log2  6log2 22 +10log 33  =12+10=22 | M1  M1  A1 |  |
|  |  | 03 |  |
| 5. |  | M1  M1  A1 | Numerator  Denominator |
|  |  | 03 |  |
| 6. | Diagonal =  Height =  Volume = 96×72×144  =331776cm3 | M1  M1  A1 | for height |
|  |  | 03 |  |
| 7. | 2a3t=1750×2  3a+2t=1500× 3  4a+6t=3500  4a+6t=4500  -5a= -1000  Shirt = sh 200  Trouser = Sh 450 | M1  M1  A1 | both equations  Eliminating one variable  both |
|  |  | 03 |  |
| 8. | Total volume = 15litres = 15000cm3  Total mass = 300g + (12000× 0.8g)  =3000+ 9600=12600g  Density = | M1  M1  A1 |  |
|  |  | 03 |  |
| 9. | 2x+21>15-2x  4x>-6  x>-1½  15-2xx+6  -3x-9  x3  Values -1,0,1,2,3 | M1  M1  A1 |  |
|  |  | 03 |  |
| 10 | BC=3km | B1  B1  B1 | locating B  Locating C  For BC |
|  |  | 03 |  |
| 11. | Goats = x  Sheep = x+4    3x+2x+8=768  5x=760  Goats = 152  Sheep = 6  Total animals = 308 | M1  M1  A1  B1 |  |
|  |  | 04 |  |
| 12. | L2 – 52 –  L =  Tan (90-x) = | M1  A1 |  |
|  |  | 02 |  |
| 13. |  | M1  M1  A1 |  |
|  |  | 03 |  |
| 14. |  | M1  M1  M1  A1 | different eqtn to -5  linear eqt.s  Removal of one unknown  both |
|  |  | 04 |  |
| 15.(a)  (b) | Let n be number of sides    Octagon | M1  M1  A1  B1 |  |
|  |  | 04 |  |
| 16. | 1hr =120km | M1  M1  A1 |  |
|  |  | 03 |  |
| 17.(b)(i)  18.(a)  (b)(i)    (ii) | Median = 5.5 + | B1  M1  A1  B1  B1  B1  M1  A1M1  A1  10  B1  B1  B1  S1  B1  B1  B1  B1  A1M1 | for fx  for cf  f/density  scale  for the fisrt 2 bars  for the next two bars  for the left bar |
|  |  | 10 |  |
| 19.(a)(i)  (ii)  (b)  (c) | 84x+8x=24x  84=16x  x=5.25  height = 15.75cm    Slant height of frustum =19.143  Surface area  =3.142× 19.143 (8+24)+3.142×82+3.1422×242  =39.35.6cm2  × 3.142 × 10.5(82 +8× 24+242)  =9149.5cm3 | M1  A1  M1  A1  M1  M1M1  A1  M1M1  A1 |  |
|  |  | 10 |  |
| 20. (a)  (b)  (c) | Area =  x= 7sin 600  =6.062  y= 7cos 600  =3.5  Ab= 14-7=7cm  Trapezium area (XABY)  =¼(7+14)6.062  =63.651cm2  Shaded region area  (63.621)2 –(51.33)2  =127.302-102.66  =24642cm2 | M1A1  M1  A1  B1  M1  A1  M1  M1  A1 |  |
|  |  | 10 |  |
| 21. (i)  (ii)  (iii)  (iv) | t= 3  v=32 +3×3+2 = 2m/s    t2 -3t+2=0  t2-2t-t+2=0  t(t-2)-(t-2)=0  (t-1)(t-2)=0  t= 1 or 2 seconds | M1  A1  M1  A1  B1  M1  A1  M1  M1  A1 |  |
|  |  | 10 |  |
| 22.(a)  (b) | The speed of the car is (x+20)km./h  Time taken by lorry =280/xhrs  Time taken by the car = 280/xhrs    7x2 +140x=33600  x2 -6x+80x-4800=0  (x-60)(x+80)=0  x=-80  x=60  Time taken by lorry = 12.15=4hrs  Distance covered by lorry = 60× 4 =240km  Time taken by the car =  Time left town M = 12.15-2hrs 24 mins=9.51a.m | B1  M1  M1  M1  A1  A1  M1  M1  M1  A1 |  |
|  |  | 10 |  |
| 23.(a)  (b)  (c)  (d) | BC2 =122 +162 -2×12× 16 Cos 500  BC = 12.4cm    ½ × 14 × 12 sin23.5  =33.5cm2 | M1  A1  M1  A1  M1M1  A1  M1  A1 |  |
|  |  | 10 |  |
| 24.(a) | (x+1)(x+5)-2(x-2)(x+1)= 3(x-2)(x+5)  x2 +6x+5-2(x2 –x-2)= 3 (x2 +3x-10)  x2 +6x+5-2x2 +2x+4=3x2 +9x-30  4x2 +x-39=0  4x2 +13x-12x-39=0  x(4x+13)-3(4x+13)=0  (x-3)(4x+13)=0  x=3 or -3¼    240(m+2) = 294m+6m(m+2)  240m+480=294m+6m2+12m  6m2 +66m-480=0  m2 +11m-80=0  m2 +16m-5m-80=0  m(m-16)-5(m+16)=0  m=5  Total tests done = 7 | M1  A1  M1  A1  M1  M1  M1  M1  A1  B1 |  |
|  |  | 10 |  |
|  |  |  |  |