**MINCKS TERM 2 2022**

**MATHEMATICS FORM 4**

**PAPER 2**

**MARKING SCHEME**

|  |  |  |
| --- | --- | --- |
| +1) +3(5x-1) =6 8x+4+15x-3=6  23x + 1=6  23x=5  X=5/23 | M1  M1  A1 |  |
| 2a. 1-4(2x) +6(2x)2- 4(2x)3+(2x)4  1-8x+24x2-32x3+16x4  2b. 1-2x =0.96  0.04=2x  0.02=x  1-8(0.02) +24(0.02)2-32(0.02)3+16(0.02)4  1-0.16+0.00096-0.000256+0.00000256  =0.849858556  =0.8499 | B1  M1  A1 |  |
| 3.True value = = 1.2 Approx. value ==1+ =1.22  =1.22-1.2  =0.02  = ×100=1.67% | B1  M1  A1 |  |
| 4. 3log8(x+6)-3log8(x-3) =2 log8(x+6)3-log8(x-3)3=log864  log8[]=log864  log8[]3=log864  3log8()=log864  log8()=log864  log 8()log8641/3  log8 ]= log84  =4  x+6=4x-12  18=3x  x=6 | MI  M1  M1  A1 |  |
| 5. E= E2=  E2y-3E2xp2=p2-3y  E2y+3y =p2+3E2xp2  =p2  P=± | M1  M1  A1 | Squaring  Collecting terms p  If ± sign is missing 0 |
| 6. x ≥ 30 2x+3y ≤ 75  Y ≥ 10 | B1  B1  B1 |  |
| 7. AT × BT = (PT)2 12BT=92  BT=  BT = 6.5  AB=12-6.75  AB=5.25  Radius =2.6cm | M1  M1  A1 |  |
| 8. x2+y2-2x+4y=-1 X2+2x+( )2+y2+4y+( )2=-1+( )2+( )2  (x-1)2+(y+2)2=-1+1+4  (x-1)2+(y+2)2=4  Centre (1,-2) radius 2 | MI  M1  A1 | For completing the square  For centre and radius |
| 9. × =  =4( )  =4 | B1  M1  A1 |  |
| 10a. Graph attached | P1  L1 |  |
| 10 b. g=   Y=x - | B1  B1 |  |
| 11. Kathwana d=8000, a=40000 40000 +(5×8000) =80000    Siakago r=1.2  40000(1.2)5=40000×2.488  =99533  Difference =99533-80000  =9533 | M1  M1  A1 |  |
| 12. 6(1-cos2x)-cosx-5=0 6-6 cos2x- cosx-5=0  6a2+a-1=0  6a2+3a-2a-1=0  3a(2a+1)-1(2a+1)=0  3a=1 2a= -1  a= a=  a= and -  =120and 240  70.53 | M1  M1  A1 |  |
| 13.a  |  |  | | --- | --- | | A | R | | 90 | 75 | | 2 | 3 | | 180 | 225 | | A1 |  |
| 13.b   5  SH. 81 Per Kg  81  = sh.93.00 | M1  M1  A1 |  |
| 14. =2x-1 Y=  Y=x2-x+c  5=12-1+C  C=5  Y=x2-x+5 | M1  M1  A1 |  |
| 15. a | B1  B1 | Locating centre  Completed the circle |
| 15.b A= =× 32  =28.2857 | M1  A1 |  |
| 16. P = – |  |  |
| SECTION II |  |  |
| 17.a =  (x-5) (x-2)2= (x-2)2  X2-3x-10=x2+4x+4  -3x+4x=14  X=14  b. i.  c.  i t3 = ar2  16=a (  A= 16×16  9  256 =28  9 | M1  M1  A1  B1 |  |
| II. a=  r=  sum =  =  (1-(4    =93.53 | M1  M1  A1 |  |
| 18.  B  G  b.i. ( or (    =  ii. +    +  + =  iii. +(    =  iv. +    = | M1  A1  M1  A1  M1  A1  M1  A1 |  |
|  | 10 |  |
| 19.a  i. OP =  = 2.5  PV =  =6.964  ii.  =3  71.56  b.  i. Slant height vm  VM =  =6.325  VN =  =6.185  ii. (3  12+18.98+24.74  =55.72 | M1  M1  A1  M1  A1  M1  A1  A1  M1  A1 | For expression of VM and VN  For VM & VN |
| 20.  a. 71  2130nm  b.71min =284min  =4hrs 44min  1340hrs = 4hrs 44min  =8:16 am  c.  =3948.39km  d.        =90  30 | M1  A1  M1  A1  M1  A1  B1  M1  M1  A1 |  |
|  | 10 |  |
| 21.a  b.  i. median =69.5  ii. Q3 = 77.5  Q1 = 58.5  Quartile deriation =    iii. percentage fail =40  No of student who  Failed =  =20  Pass mark = 65.5 | B1  S1  P1  C1  B1  B1  B1  B1  B1  B1 | For cumulative frequently  Scale  Plotting  Curve smooth  For median  For Q3  For Q1  For 20 |
|  | 10 |  |
| 22.a  i. a=2-t  v=2t-t2 + c  v = 1, t =0  v= 2t- t2+1  ii. v= 32  2(3)-32+1 - 2(2)-22+1  6-9+1- 4-4+1    -2-1  -3m/s  b. i.  S=t2-  S=  ii. S= t=3  S =  9-9+3  =3m  c.  t=2  2  =2  2  =2.414 | M1  A1  M1  A1  M1  A1  M1  A1  M1  A1 |  |
| 23.a   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | x | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | | y | 46 | 25 | 10 | 1 | -2 | 1 | 10 | 25 |   )  = (92+148)  =120 of units  b. x2-2x  =56-(-56)  =112 of units  c.  =3.5712  24.  P` (-1,1), Q` (-4,1) and R` (-5,4)  P`` (-1, -1), Q`` (-4, -1) and R`` (-5, -4)  b. it’s a reflection in the line y=-x or y+x=0  it’s a rotation through +180  about the origin (0,0)  let the matrix be  a+b=-1 4a+b=-4  c+d=-1 4c+d=-1  a+b=-1 c+d=-1  a=-1 c=0  b= 0 d=-1  the matrix is = | B2  M1  A1  M1  M1  A1  M1  M1  A1  B1  B1  B1  B1  M1  M1  A1 | All value collect B1for atlist 5 collet values  For both  For both  For both |
|  | 10 |  |