**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 | M1M1A1  |  |
| 2a. 1-4(2x) +6(2x)2- 4(2x)3+(2x)4 1-8x+24x2-32x3+16x42b. 1-2x =0.96 0.04=2x 0.02=x1-8(0.02) +24(0.02)2-32(0.02)3+16(0.02)41-0.16+0.00096-0.000256+0.00000256=0.849858556=0.8499 | B1M1A1 |  |
| 3.True value = = 1.2 Approx. value ==1+ =1.22 =1.22-1.2 =0.02 = ×100=1.67% | B1M1A1 |  |
| 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()log8641/3log8 ]= log84 =4 x+6=4x-12 18=3x x=6 | MIM1M1A1 |  |
| 5. E= E2= E2y-3E2xp2=p2-3y E2y+3y =p2+3E2xp2 =p2P=±  | M1M1A1  | SquaringCollecting terms pIf ± sign is missing 0 |
| 6. x ≥ 30 2x+3y ≤ 75 Y ≥ 10  | B1B1B1 |  |
| 7. AT × BT = (PT)2 12BT=92BT= BT = 6.5 AB=12-6.75 AB=5.25 Radius =2.6cm | M1M1A1 |  |
| 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  | MIM1A1 | For completing the square For centre and radius  |
| 9. ×  =  =4( ) =4 |  B1M1A1 |  |
| 10a. Graph attached  | P1L1 |  |
| 10 b. g=   Y=x - | B1B1 |  |
| 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 | M1M1A1 |  |
| 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  | M1M1A1 |  |
| 13.a

|  |  |
| --- | --- |
| A | R |
| 90 | 75 |
| 2 | 3 |
| 180 | 225 |

 | A1  |  |
| 13.b   5 SH. 81 Per Kg 81 = sh.93.00 | M1 M1A1 |  |
| 14. =2x-1 Y=  Y=x2-x+c 5=12-1+C  C=5 Y=x2-x+5 | M1M1A1 |  |
| 15. a    | B1B1 | Locating centreCompleted the circle  |
| 15.b A= =× 32 =28.2857  | M1A1 |  |
| 16. P = –   |  |  |
|  SECTION II |  |  |
| 17.a =  (x-5) (x-2)2= (x-2)2X2-3x-10=x2+4x+4 -3x+4x=14 X=14b. i.c. i t3 = ar216=a ( A= 16×16 9 256 =28 9  | M1M1A1B1 |  |
| II. a=  r= sum =  = (1-(4  =93.53 | M1M1A1 |  |
| 18.  B Gb.i. ( or (  =ii. +   +  + = iii. +(   =iv. +  = | M1A1M1A1M1A1M1A1 |  |
|  | 10 |  |
| 19.a  i. OP = = 2.5 PV =  =6.964ii.  =3 71.56b. i. Slant height vm VM = =6.325 VN =  =6.185ii. (3 12+18.98+24.74 =55.72  |  M1M1A1M1A1M1 A1A1M1 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.  =3948.39kmd.    =90 30 | M1A1M1A1M1A1B1M1M1A1 |  |
|  | 10 |  |
| 21.a b. i. median =69.5ii. Q3 = 77.5 Q1 = 58.5 Quartile deriation =  iii. percentage fail =40No of student who Failed =  =20Pass mark = 65.5 | B1S1P1C1B1B1B1B1B1B1 | For cumulative frequentlyScale Plotting Curve smoothFor median For Q3For Q1 For 20  |
|   | 10 |  |
| 22.a i. a=2-t v=2t-t2 + c v = 1, t =0  v= 2t- t2+1ii. v= 322(3)-32+1 - 2(2)-22+16-9+1- 4-4+1-2-1 -3m/s b. i. S=t2- S= ii. S= t=3 S = 9-9+3 =3mc.  t=2 2 =2 2 =2.414 | M1A1M1A1M1A1M1A1M1A1 |  |
| 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.  =3.571224. 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=0it’s a rotation through +180about the origin (0,0) let the matrix be a+b=-1 4a+b=-4c+d=-1 4c+d=-1a+b=-1 c+d=-1a=-1 c=0b= 0 d=-1 the matrix is = | B2M1A1M1M1A1M1M1A1B1B1B1B1M1M1A1 | All value collect B1for atlist 5 collet values For both For both For both  |
|  | 10 |  |