MARKING SCHEME

**121/1**

**MATHEMATICS**

**PAPER 1**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **CALCULATIONS** | **MARKS** | **REMARKS** |
|  | 133X0.51X1000000  0.19X0.0017X1000000  133X51X100  19X17  2100 | **M1**  **M1**  **A1** | **Multiplying**  **Correct …..**  **CAO** |
|  |  | **03** |  |
| 2. | |  |  |  |  | | --- | --- | --- | --- | | 2 | 48 | 72 | 100 | | 2 | 24 | 36 | 50 | | 2 | 12 | 18 | 25 | | 2 | 6 | 9 | 25 | | 3 | 3 | 9 | 25 | | 3 | 1 | 3 | 25 | | 5 | 1 | 1 | 25 | | 5 | 1 | 1 | 5 | |  | 1 | 1 | 1 |   L.C.M = 243252  = 3600  Number =3600 + 3  = 3603 | **M1**  **M1**  **A1** | **Correct lcm**  **Adding 3**  **CAO** |
|  |  | **03** |  |
| 3. | No. log  849.6 2.9292  2.41 0.3820  3.3112  3941 3.5956  .7156  3  /3 + 2.7156  3  0.08039 .9052 | **M1**  **M1**  **M1**  **M1**  **A1** | **All logs correct**  **Dividing by 3 correctly**  **CAO** |
|  |  | **04** |  |
| 4. | Volume = 22/7 x (76- 62)2 x3  100  = 0.1848  Density = 890  0.1848  = 4.816.0 | **M1**  **M1**  **A1** | **Process of getting volume**  **Process of density .**  **Correct to 1 d.p**  **Follow through for other 11 used.** |
|  |  | **03** |  |
| 5. | 34(x+1) +34x = 246  34x+4 +34x = 246  34x(34+1)=246  34x=246  81  34x=31  4x= 1  X=1/4 | **M1**  **M1**  **A1** | **Accept the alternative.**  **Factorizing 34x**  **Equating powers**  **Accept 0.25** |
|  |  | **03** |  |
| 6. | Num  4x2 – 9  (2x +3) (2x-3)  Den  2x2 +2x+3x+3  (x+1) (2x+3)  (2x+3)(2x-3)  (x+1) (2x +3)  2x-3  X+1 | **M1**  **M1**  **A1** | **Factorizing numerator.**  **Factorizing denominator.**  **Must be extracted.** |
|  |  | **03** |  |
| 7. | **F:\photos\EXAM TEMPLT\177.png** | **B1**  **B1**  **B1** | **All angles correct**  **All lengths correct**  **Correct labelling**  **Measurement must be correct** |
|  |  | **03** |  |
| 8. | G+c=45  4g+2c= 100  G=45-c  4(45 – c) + 2c=100  180 – 4c +2c=100  C=40  g=5 | **M1**  **M1**  **A1** | **Forming the two equation.**  **Attempt to eliminate one variable.**  **For both** |
| 9. | a) boys = 900 – 600= 300  ratio 3000:600  1:2  B) 300/900 x 100  331/3% | **M1**  **A1**  **B1** | **Getting the number of boys.**  **Should be simplified.** |
|  |  | **03** |  |
| 10. | 4(t-1) – 3(4+t)=0  4t-3t – 4 – 12=0  t- 16 = 0  t= 16 | **M1**  **M1**  **A1** | **Attempting to remove fractions.**  **Removing brackets correctly.** |
|  |  | **03** |  |
| 11. | 90 (2n -4) = 1980  180n = 1980- 360  N = 1620  180  N=9  Name nonagon | **M1**  **A1**  **B1** | **A1 Must be got to get B1** |
|  |  | **03** |  |
| 12. | Coordinates: 0,2.5,6.0,10.5,16.0,22.5,30  A= ½ x1 (6+30) +2(2.5+6.0+10.5+16.0+22.5)  = 72.5 | **B1**  **M1**  **A1** | **All correct ordinates.** |
|  |  | **03** |  |
| 13. | Gradient of Q= -1/2  y-y= -1/2  x+2  2y – 14= -x-2  2y=-x+12 | **B1**  **M1**  **A1** | **Accept 2y+x=12** |
|  |  | **03** |  |
| 14. | a)r2 = 7.62 + 4.82 – 2x7.6 x 4.8 cos 80  = 57.76 + 23.04 – 12.67  = 68.13  R= 68.13  = 8.3 cm.  b) sin b = sin 80  4.8 8.254  Sin B = 0.5727  B= SIN -10.5727  = 34.90 | **M1**  **A1**  **M1**  **A1** | **Substituting in the rule.**  **Substituting correctly.** |
|  |  | **04** |  |
| 15. | 93 x 450 000  100  418 500  418500 x 100  113  370,353.98  = 370, 354 | **M1**  **M1**  **A1** |  |
|  |  | **03** |  |
| 16. | a)  b) F:\my documents\OPENER\MATH PP1 16B.jpg | **B1**  **B1**  **B1** | **For correct image drawn**  **For centre (4,-2)**  **For -900** |
|  |  | **03** |  |
| 17. | a) i) v=3.142 x 32 x 12+12+2/3 x 3.142 x 33  =339. 336 + 56.556  = 395.892  = 395.9  ii) v= 15 x 6 x6 – 395.892  = 144.108  144.1  b) i) S.A = 3.142 x 32 +2 x3.142 x 3 x 12 + 2 x 3.14 2 x 32  = 28 .278 +226.224+56.556  311.058  = 311.1  ii) Cost = 311.058 x 900  8x1000  = ksh. 34.99  = 35.0 | **M1**  **M1**  **A1**  **A1**  **M1**  **M1**  **A1**  **M1**  **A1** |  |
| 18. | F:\my documents\OPENER\MATHS PP1 Q18.jpg | | |
|  |  | **10** |  |
| 19. | a) 2c +9g = 98200  3c + 4g= 96000  b) (2 9)c = (98200)  3 4 9 96000  2 9 =1( 4 -9)  3 4 19 -3 2  -1 (4 -9) (2 9) (c)=-1 (4 -9)(98200)  19 -3 2 3 4 19 -3 2 96000  (c = -1 (-471200)  G 19 -102600)  (c=(24800)  G 54000)  Cows = Ksh 24800  Goats = Ksh. 5400  c) i) Selling price = 2 x 24800 x 1.3 + 9 x 5400 x 1.4  = 132 520  ii) 132520 – 98200 x 100%  98200  34.95% | **B1**  **B1**  **M1**  **B1**  **M1**  **A1**  **M1**  **A1**  **M1**  **A1** | **For matrix equation formed**  **Inverse.**  **Must be seen.**  **Deny if any other method is used.** |
|  |  | **10** |  |
| 20 | 1. i) Distance travelled by kimathi in 1/2h= 40 x ½   = 20km  Relatively speed = 40+60  =100km/h  Time taken to meet= 60/100  = 3/5h.  ii) distance from Meru = 20 +3/5 x 40  = 20 +24  = 44km.  iii) 10h 30min  36min  11h: 06 min   1. time = 40/75 x 60   F:\my documents\OPENER\maths pp1.20b.jpg | **M1**  **M1**  **A1**  **M1**  **A1**  **M1**  **A1**  **B1** |  |
|  |  | **10** |  |
| 21. | i) AN= 2/3B – A  ii) BM= 2/5 a – b  iii) AB = B-A   1. i) OX = OB+BX   = B+K (2A-B)  = 2/5 KA +(i-k) b  OX = OA + AX  = (i-h)a+2/3 hb  ii) 2/5 ka +(1-k)b)= (1-h)a +2/3 b  2/5k=1-h……..(i)  1-k=2/3h……..(2)  From (1)h=1-2/5k  1-k=2/3(1-2/5k)  K=5/11  h= 1- 2/11  = 9/11  OX=2/5 X 5/11a+b (1-5/11)  =2/11a+6/11b | **B1**  **B1**  **B1**  **B1**  **B1**  **M1**  **M1**  **M1** | **Equating the two expressions.**  **Extracting the two equation**  **Attempting to eliminate one value.**  **For both k and h correct.**  **Correct expression.** |
|  |  | **10** |  |
| 22. | a) i) V= ds = ts – 7t +6  dt  ii) t2 – 7t +6=0  (t-1)(t-6)0  T=1 or t=6  b) v= 32- 7(3)+6  = - 6m5-1  c) i)a=dv=2t-7  dt  ii) when t=2  a)=2(2)-7  =-3m52  When t= 6  A=2(6)-7  =5m5-2 | **B1**  **M1**  **M1**  **A1**  **B1**  **B1**  **B1**  **B1**  **B1**  **B1** | **Equating to zero.** |
|  |  | **10** |  |
| 23. | F:\my documents\OPENER\maths pp1 q23 a.jpg  **ii) Radius = 3.5 ± 0.1**  **iii) height construction**  **height = 3.4±0.1**  **b) area of circle outside triangle**  **= 22/7 x 3.5 – ½ x 3.4 x 5**  **= 29.98** | **B1**  **B1**  **B1**  **B1**  **B1**  **B1**  **B1**  **M1**  **A1** | **Construction of 300.**  **Construction of 1050**  **Completion of 3ABC.**  **1 bisectors.**  **circle**  **height constructed** |
|  |  | **10** |  |
| 24. | a) i) 100  x  ii) 100 +1  x-5  b) 100 – 100 = 1  x-5 x  100x – 100(x-5)=1  X(x-5)  100x – 100x +500=1  X2 – 5x  X2 – 5x – 500=0  (x – 25) (x+20)=0  X=25 or x = -20 (impossible)  X=25  c) (y+3) (y-2)=24  X2+x-30=0  (x-5)(x+6)=0  (x-5)(x+6)=0  X=5 or x =-6 | **B1**  **B1**  **B1**  **M1**  **M1**  **A1**  **M1**  **M1**  **A1**  **10** | **Forming the equation**  **-20 must be discriminated if not AO.**  **Forming & equating to xero.**  **For both values of x correct.** |