**MATHEMATICS PAPER 2**

**MARKING SCHEME**

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| 1. | 5 X 49 X 39 X ~~1000~~ X 10000 X 100  1000 10000 10 ~~325~~ ~~6~~  5 2  = = 7  10 | | B1  M1  M1  A1 |
| 2. | (3*x*2)° ( )6 + (3x2)1 (5 + (3x2)2 ()4 + (3x2)3 )3 + (3x2)4 (2 + (3x2)5 ()1 + (3x2)6 ()°  9x4 x x 15 = | | B1  M1  A1 |
| 3. | 2 - = 2 - 2  2 3  5 + = 5 + 5  - + 2  2 - 2 - 5 + 5  3 2  = 4 - 4 - 15 - 15  6 | | M1  M1  A1 |
| 4. | Tan 45 - cos 30   * - Sin 30 + (- cos 60)  1. -   2 = 2 - 2 | | B1  M1  A1 |
| 5. | | (a – b)2 = ()2  a2 – 2ab + b2 = b2 + c2  c2 = a2 - 2ab  c = + | M1  M1  A1 |
| 6. | | AB = K 4 1 2 = 12 + K 2K + 16  3 2 3 4 9 14    14(12 + K) - 9 (2K + 16) = 4  A’ B’ C’  5 0 2 3 3 = 10 15 15  0 1 0 2 4 0 2 4 | M1  M1  A1 |
| 7.a.  b.  8. | | x2 + y2 + 2x - 3y = 13  x2 + 2x + 12 + y2 - 3y + ( )2 = 13 + 1 +  Centre = ( -1 , )  )2 = 1.8028  ( -1, ) (3, 2)    (-1 - 3)2 + ( - 2)2 = 16 + = 4.031 x 2    = 8.062    x + y + 2 = 9  y = ½ (x + z)  x = ½ z  ½ z + ¼ z + ½ z + z = 9  z = 4  x = 2, y = 3  The number is 234 | M1  A1  M1  A1  M1  M1  A1 |
| 9. | | Y = β 12 = β β = 12 x 2n  xn  3 = β β = 3 x 4n  4n  12 x 2n = 3 x 4n 4 x 2n = 4n n = 2  β = 12 x 4 = 48 | M1  M1 A1  A1 |
| 10.  11. | | x(9 – x2) = 0 x = 0, -3 or 3  1  -3 3  4 0  (9x – x3) dx = x2 -  -3  = -20  4 3  x2 -  0  = 20  Area = 20 + 20  = 40    182 + v2 = (12 + r)2  180 = 24r  R = 7.5cm | B1  M1  M1  A1  M1  M1  A1 |
| 12. | | VX = 402 - 112 = 38.46  V  38.46    O 15 X  Cos θ = = 0.3900  θ = 67.04 | B1  M1  A1 |
| 13. | | 2 3 - 3 2 = 0  -2 -4 8  3 -3 15    = 17 units | M1  M1  A1 |
| 14. | | + 2 x    = + 2 (10x) (3)  = + 45 x | M1  A1 |
| 15. | | 5.42 = 8.82 + 9.22 - 2(8.8) (9.2) cos A  Should use cosine rule to find any angle  A = 34.83°  5.4 = 2r  Sin 34.84  r = 4.72 = 5cm | B1  M1  A1 |
| 16. | | 1. < ABC = 66° 2. < BCA = 33° | A1  A1 |
|  | | **SECTION II** |  |
| 17. | | Tax p.a = 28, 800  720  + 7,920  Sh 37,440  4512 x 2 = 9024  4512 x 3 = 13536  4*x* = 14880  *x* = 3720    (4512) x 2 + 3720 = K£ 12744 p.a  115 x (*x*) - 366 = 12744  100  *x* = K£ 11400 basic salary  11400 x 20 = Sh 19,000 p.m.  12    Net salary per month  19000 – (1200 + 2400 + 1500) = sh.13900 | M1  A1  M1  M1  A1  M1  M1  M1  M1  A1 |

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| 18.  19.  a.  b.i.  ii. | < 60  ABC  Bisect AB  Shading  Arc CQ  Shading  Bisecting <C  Shading  0.5  Area = 36 x 22 x ~~3.5~~ x 3.5  360 7  = 3.85cm2  45 x 2 x 22 x 0.7 = 0.55 m  360 7    B  Cos 30 = AB  30°  0.7  0.7m  AB = 0.7 cos θ  AB = 0.6062M  A  120 + 110 = 230°  230 x 22 x (0.7 cos 60)2  360 7  = 0.246M2 | B1  B1  B1  B1  B1  B1  B1  B1  M1  A1  M1M1  A1  M1  M1  A1  B1  M1  M1  A1 |
| 20. | 1. both = x ; HBP = 15 – x : cholesterol = 25 – x   15 – x + 25 – x + x = 30  x = 10  = 15 – 10 = 5    P(HBP) = =   1. P(CHOL ) = 25 – 10 = = 2. P(BOTH) = = 3. P(EITHER HBP or CHOL) = + + = | B1  M1  M1  A1  M1  A1  M1  A1  M1  A1 |
| 21.a.  b.  c.  d. | 3 4 4 - 2x   1. 2x   3 2x 2x - 2x - 1  3 2x + 1  4x - 2x = 1 2x = 5 x =    (32 )5/7 = 35  81 = 1  243 3  729 ( 1 - 10  1 -    729 (0.9999) = 1093.5    For the AP  a = 9 d = 8 n = 20  18 - 8 x 19  10 ( - 134) = - 1340 | M1  A1  M1  A1  M1  M1  A1  B1  M1  A1 |
| 22.  b.  23.  i.  ii.  iii.  iv.  v.  24.a.  b.  c. | Log (y – x) = blox + log A   |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | X | 1 | 1.5 | 2 | 2.5 | 3 | 3.5 | 4 | | Y | 7.54 | 9.33 | 11.00 | 12.59 | 14.12 | 19.90 | 27.23 | | y-x | 6.54 | 7.83 | 9.00 | 10.09 | 11.12 | 16.40 | 23.23 | | Log (y-x) | 0.82 | 0.89 | 0.95 | 1.00 | 1.05 | 1.21 | 1.37 | | Log (x) | 0 | 0.18 | 0.30 | 0.40 | 0.48 | 0.54 | 0.60 |   Graph P1  Log a = 0.8  A = 6.310   * 1. - 0.8   0.48 – 0  = 0.5208  y = *x* + 6.310*x* 0.5208   |  |  |  | | --- | --- | --- | | marks | f | c.f | | 0 - 9 | 6 | 6 | | 10 – 19 | 8 | 14 | | 20 – 29 | 12 | 26 | | 30 – 39 | 9 | 35 | | 40 – 49 | 7 | 42 | | 50 – 59 | 5 | 47 | | 60 - 69 | 3 | 50 |   Curve  Median  ½ x 50 = 25 28  Q3; ¾ x 50 = 37.5 42  Q; ¼ x 50 = 12.5 17  42 – 17 = 12.5  2  20 x 100 = 40%  50  35 x 50 = 17.5 22  100  65 x 50 = 32.5 36  100  36 - 22 = 14  5x + 8y > 800  x + y ≤ 250  x ≤ 200  x ≤ 50  y ≤ 2x  Graph  Each correct drawing + correct shading for each  85 seats y = 165 seats | B1  B1  B1  L1  S1  M1  A1  A1  B1  B1  B2  B1  B1  A1  M1A1  M1  A1  B1  B1  B1  B1  B4  B1B1 |