**JULY/AUGUST EXAM 2018**

MARKING SCHEME

MATHEMATICS PAPER 2

121/2

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| NO | WORKING | MARK | REMARKS |
| 1 | |  |  | | --- | --- | | No | log | | 723.9  Tan 81.23 | 2.8597  + | |  | 2.8341 | | 3423 | 3.5345 - | |  |  | |  |  | | 6.6819 x 10-1 |  |   = 0.66819 | M1  M1  M1  A1  **04** | All logs  + and –  ÷ |
| 2 | Upper limits 9.75 , 3.75  Lower limits 9.65 , 3.65  Maximum quotient 9.75÷3.65=2.67  Minimum quotient 9.65÷3.75=2.57  Actual quotient 9.7÷3.7=2.62  (2.67-2.57)÷2= 0.05  (0.05÷2.62)×100= 1.908% | M1  M1  A1  **03** | for both limits correct  for AE allow for max-actual or Actual-min  CAO |
| 3 | 2sinӨ=sinӨ  cosӨ  cosӨ= sinӨ = 1  2sinӨ 2  Ө=600, 3000 | M1  A1  B1  **03** |  |
| 4 |  | M1  M1  A1 | Rationalisation  Correct simplification |
| 5 | -15 – 8 = -23 | B1  B1 | CAO |

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|  |  | M1  A1  **03** |  |
| 6 | Maize -x and Millet - y  44x + 56y = 54x +54y  -10x = -2y  Therefore x:y = 1:5 | M1  M1  A1  **03** | Attempt to solve |
| 7 | Centre (- 1.5,2) ,radius 3 | M1  M1  A1  **03** |  |
| 8 |  | M1  A1  B1  **03** | For correct evaluation |
| 9 | 3200 x 12 = 38400  30,000 - 10,000 = 20,000  38,400 = 20,000 (1 + R/100)12  1.92 = (1 + R/100)12  1.05586510 = 1 + R/100  0.05586510 = R/100  R = 5.587% | M1  M1  A1  **03** |  |
| 10 | = (1)3-3x(1)2+3x(1)  =1-3+3  =1 | M1  M1  A1  **03** | Allow correct substitution |
| 11 |  | M1  M1  A1  **03** | √ removal of cube  Collection of terms in h |

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| 12 |  | M1  M1  A1  **03** |  |
| 13 | 27+27r3 = 370  r3 =  r = | M1  M1  A1  **03** |  |
| 14 | = 4 | M1  M1  A1  **03** | Dividing by 3 |
| 15 | = -6.696 | B1  B1  M1  A1  **04** | Allow for all the expansion  Correct value of x  CAO |
| 16 | 102 + (r - 4)2 = r2  100 + r2 - 8r + 16 = r2  116 = 8r  r = 14.5 | M1  M1  A1  **03** | Correct use of pythegorus  CAO |

**SECTION B**

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| NO | WORKING | MARK | REMARKS |
| 17 | |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Class | x | T= (x -45.5) | f | ft | ft2 | cf | | 21-30  31-40  41-50  51-60  61-70  71-80 | 25.5  35.5  45.5  55.5  65.5  75.5 | -20  -10  0  10  20  30 | 15  11  17  4  2  1 | -300  -110  0  40  40  30 | 6000  1100  0  400  800  900 | 15  26  43  47  49  50 | |  |  |  | 50 | -300 | 9200 |  |  1. 31-40 | B1  B1  M1  A1  B1  M1  A1  B1  M1  A1  **10** | For ft colum  Also allow 40 years  For ✓ft2 column  For ✓ c.f column |
| 18 | |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 2sin(2x+30)o |  | **1.00** |  | **-1.00** | **-1.73** | **-1.00** |  | | 4cos2x | **-3.46** |  | **-3.46** | **-4.00** |  |  | **3.46** |      |  |  |  | | --- | --- | --- | | 18 | i) Amplitude of  ii) Period 1800 i.e.   1. Solve   X = 300, 1200 |  | | B2  B1  S1  P1  C1  P1  C1  B1  B1  B1  **10** | For all √  At least 6 √ |

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| 19 | 1. **PQ** = 2. **OY** = 3. **QX** =         c) OT : TY = 9 : 4 | B1  B1  B1  M1  M1  M1  M1  A1  A1  B1  **10** |  |

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| 20  Locus | (e) 3.9 ± 0.1 cm  Locus  Locus | B1  B1  B1  B1  B1  B1  B1  B1  B1  B1 | for PR  for 600  ∆PQR  Bisectors  Circle  Bisector <PQR  for S  Arc  Correct shaded / labelled region |
| 21 | x  C  B  P  M  P  X  2.828  4 cm  V  G  17.14  5  N | B1  M1  A1  M1  M1  A1  M1  A1 |  |

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| 21 |  | M1  A1 |  |
| 22 | D:\TORO\2222.png  Rotation of -900 about (0,0)   1. A” (-5,-1), B” (-1,-1), C” (-3, -4) | M1  A1  B1  B1  L1  B1  B1  M1  B1  B1  **10** | for √ ∆ABC  for √ ∆A’B’C’  line y = -x  for perpendicular lines seen.  for √ ∆A’’B’’C’’  Centre, Direction and angle of rotation  correct coordinates given |

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| 23 | or 0.13  or 0.52  or 0.14  or 0.52 | B1  B1  M1  A1  M1  A1  M1  A1  M1  A1  **10** | Allow decimals |

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| 24 |  | M1  M1  A1  B1  B1  M1  M1  A1  M1  A1  B1 | For equating  Or equivalent  For both values  For both  Accept if c is missing  Accept 32.33  or equivalent |