**SCHOOL BASED EXAMINATION 2019**

**MATHEMATICS PAPER 1 (121/1)**

**JULY/AUGUST FORM FOUR**

**MARKING SCHEME**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** |  | |  |  |
| **1.** |  | | M1  M1 |  |
| **02** |
| **2.** | No. Log  34.33 1.5357 1.5357  5.25 0.7292  0.042 2.6232  .3434 .3434 = 2 + 1.3434  2 2  .6717  7.311 x 101 1.86.40  = 73.11 | | M1  M1  M1  A1 | 🗸 all log correct |
|  |  | | **04** |  |
| **3.** |  | | M1  M1  A1  **03** |  |
| **4.** | 90 - a  2  Sin (90 – a) = ½  Cos a = ½ | | B1  B1 | ✓  ✓ |
|  |  | | **02** |  |
| **5.** | 3 – 2x < x – 3 and  3x < -6  x > 2  x – 3 < 4  x < 7  2< x < 7  Integers {3,4,5,6,7} | | B1  B1  B1 | 🗸  🗸 |
|  |  | | **03** |  |
| **6.** | 27 = 33  }  30 = 2 x 3 x 5  45 = 32 x 5  L.C.M = 2 x 33 x 5  = 270  The smallest value of n is 273 | | M1  M1  A1 | 🗸  🗸 |
|  |  | | **03** |  |
| **7.** | Exterior angle = 1800 – 1350 = 450  Number of sides = 360  45  n = 8 sides | | M1  M1  A1 |  |
|  |  | | **03** |  |
| **8.** |  | | M1  M1  A1 | (Numerator factorized)  (Denominator factorized) |
|  |
|  |
|  |  | | **03** |  |
| **9.** |  | | M1  M1  A1 |  |
|  |  | | **03** |  |
| **10.** | a)    b) | | M1  M1  A1  M1  A1 |  |
|  |  | | **04** |  |
| **11.** |  | | M1  M1  A1 | (accept 3.8) |
|  |  | | **03** |  |
| **12.** | a)    b) | | M1  A1  M1  A1 |  |
|  |  | | **04** |  |
| **13.** |  | | M1  M1  A1 |  |
| **03** |
| **14.** |  | | B1  M1  M1  A1 |  |
|  |  | | **04** |  |
| **15.** |  |  | M1  M1  A1 |  |
|  | |
|  |  | | **03** |  |
| **16.** | C:\Documents and Settings\Maina\Local Settings\Temporary Internet Files\Content.Word\scan0059.jpg | | B1  B1  B1 | Ares to be seen  Divisions of AB  Point P correctly indicated |
|  |  | | **03** |  |
| **17.** | (a)    (b)    (c) | | M1  A1  M1  A1  M1  A1  M1  M1 |  |
| M1  A1  **10** |
| **18.** | a) | | M1  M1  A1  M1  M1  M1  M1  A1  **10** |  |
| **19.** | ~ ~ ~  ~ ~  ~  ~  ~  ~ ~  ~ ~ ~  ~ ~  ~ ~  ~ ~  ~ ~    ~  ~ ~ ~ ~  ~ ~  ~ ~ ~ ~ | | B1  B1  M1  M1  A1  M1  M1  M1  B1  B1 |  |
|  |  | | **10** |  |
| **20.** | N  N  N  400  800km  600  600  P  N  θ  400  J  Using cosine Rule  (PJ)2 = (800)2 + (1200)2 – 2(800) (1200) cos1000  = 640000 + 1440000 – 1920000 cos1000  PJ = 1553.51 km  ii) From Sine Rule    b) | | B1  M1  A1  A1  M1  M1  A1  M1  M1  A1 |  |
|  |  | | 10 |  |
| **21.** |  | | B1  B1  B1  B1  M1  M1  A1  M1  M1  A1 | For both |
|  |  | | **10** |  |
| **22.** | a) <ACD = <DAT = 480  (Angles in alternate segment)  b) <ABD  <ABD = <ACD = 480  (Angles substended by the same chord)  <OBD = 180 – 116 = 320  2  (base <s of isosless ΔBOD)  Thus <ABO = 48 – 32 = 160  c) <ADO  <ADT = 180 – (48 + 26) = 1060  (Sum of angles of ΔADT.  <ADO = 180 – (32 + 106) = 420  (Angles in a straight line)  d) <ACB  <ADB = <ADO + <ODB  = 420 + 320 = 740  <ACB = <ADB = 740  (Angles substended by chord AB)  e) Angle ATD = 1800 = 1060  = 260  = Sum of angles in a triangle. | | B1  B1  B1  B1  B1  B1  B1  B1  B1  B1  B1  B1 |  |
| 23. | (a) C:\Documents and Settings\Maina\Local Settings\Temporary Internet Files\Content.Word\scan0070.jpg  b) Mid-ordinates at   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | x | 0.5 | 1.5 | 2.5 | 3.5 | 4.5 | 5.5 | | y | 2.1 | 5.1 | 9.1 | 14.1 | 20.1 | 27.1 |   Areas = (2.1 + 5.1 + 9.1 + 14.1 + 20.1 + 27.1) x 1  = 77.6cm2  ii) | | 10  B1  B1  B1  B1  B2  B1  M1 | Allow B1 for 4 ordinates |
| M1  M1  A1 |
| 24. | a) at x = 2  y = (2)3 – 3(2) + 2  = 8 – 6 + 2  = 4  b) Gradient dy = 3x2 – 3  dx  at x = 3  gradient = 3(3)2-3  = 27 – 3  = 24  c) dy = 3x2 – 3  dx  3x2 – 3 = 0  x2 – 1 = 10  (x + 1) (x – 1) = 0  x = 1 or x = -1  y = (1)3 -(1) + 2 y = (-1)3 – 3(-1) + 2  (1,0) = 4  (-1, 4)  x 0.5 1 1.5 x -1.5 -1 -.05  dy/dx -2.25 0 3.75 dy/dx 3.75 0 -2.25  Sign Sign  (1,0) minimum point  (1,4) maximum point | | M1  A1  B1  M1  A1  M1  A1  B1  M1  A1 | For both  Evidence of investigation |
|  |  | | 10 |  |