**ASUMBI GIRLS HIGH SCHOOL**

**TERM 2 – DECEMBER 2021**

**FORM 4 - MATHEMATICS PAPER 1**

**MARKING SCHEME**

|  |  |  |  |
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| NO. | WORKING | MARKS | COMMENTS |
| 1 | 5 x6 +(-76) 4 +27  -15x (-4)  = 30 + (-19) + 9  -5 x-4  = = 1 | M1  M1  A1  **3** | For numerator  For denominator |
| 2 | 2268= 22 x 34 x 7  X = 22 x34 x 72 = 7  22 x34 x7 | B1  M1 A1  **3** |  |
| 3 | Amt in Ksh = 5000 x 114.2  = 571000  Remainder = 571000-276100  = 303900  Amt in Euros = 303900  101.30  = 3000 Euros | M1  M1  A1  **3** |  |
| 4 | 2x2 + 3x -2 = (2x -1)( x+ 2)  X3-4x x( x2 -4)  *= (2x -1)( x+ 2)*  *x( x -2)( x + 2)*  = 2x - 1  X( x- 2) | M1  M1  A1  **3** | Factorizing numerator  Factorizing denominator  Simplified expression |
| 5 | 179 - 3 = 176  234 – 3 = 231  176 = 24 x 11  234 = 3 x 7 x 11  GCD = 11  Number of pieces = +  = 16 + 21  = 37 | B1  M1  A1  **3** | For GCD |
| 6 | 1. - n =   n  = 1 -  =  n = 5    n =5 | M1  M1  A1  **3** |  |
| 7 | -  3(4-y) – 4(9-2y) =6  12-3y -36 +8y = 6  5y =30  Y=6 | M1  M1  A1 **3** | For removal of denom.   * Opening of brackets   c.a.o. |
| 8 |  | B1  B1  B1  B1 **4** | For locus (i)  For locus (ii)  For locus (iii)  For the region |
| 9 | =  = 0.3077  = 3.077  = 0.5  = 1.5385  = 1.5 | B1  M1  A1 **3** | For reciprocal with evidence of working |
| 10 | External area = 20.1 × 2.2 = 44.22  Internal area = 19.1 × 1.2 = 22.92  Area of path = 44.22 – 22.92  = 21.3 | M1  A1  **2** | 0.5  0.5 |
| 11 | +60 = 180  2X = 120˚  X = 60˚  Exterior =60  No. of sides =  = 6 sides | M1  M1  A1 **3** |  |
| 12 |  | B1  B1  B1  **3** | Sides  Broken lines  Shape of solid |
| 13 | Total = 42×24 = 1008  Total with abs = 1008-65  = 943  Average = =41 | M1  M1 A1  **3** |  |
| 14 | = +  Gradient =  =  2(-2) = -3(x+3)  2 – 4 = -3x – 9  3x + 2 = -5 | B1  M1  A1 **3** |  |
| 15 | B = +  = +  = +  = | B1  M1 M1  A1  **4** | For  - Squaring A  - Addition |
| 16 | 1. AC = 7.2km 2. Bearing 273˚ | B1  B1  B1  B1  **4** | For B  For C |
| 17a    b      c    d | X = 100-78  = 22  Modal class 35-44   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | x |  |  |  |  | | 15-24 | 19.5 | 6 | 6 | -40 | -240 | | 25-34 | 29.5 | 14 | 20 | -30 | -420 | | 35-44 | 39.5 | 24 | 44 | -20 | -480 | | 45-54 | 49.5 | 14 | 58 | -10 | -140 | | 55-64 | 59.5 | 22 | 80 | 0 | 0 | | 65-74 | 69.5 | 10 | 90 | 10 | 100 | | 75-84 | 79.5 | 6 | 96 | 20 | 120 | | 85-94 | 89.5 | 4 | 100 | 30 | 120 | |  |  | 100 |  |  | -940 |   Median = 44.5 + × 10  = 44.5 + × 10  = 44.5 + 4.29  = 48.79  Mean = + A  = 59.5 -  = 50.1 | M1  A1  B1  B1  B1  B1  M1  A1  M1  A1  **10** | For vcf  For  For = -940 |
| 18a    b  c | AC =  = 30cm  AO = × 30 = 15  H =  =  = 32.73  V = ( × 24 × 18 × 32.73) – ( × 8 × 6 × )  = 4713.12 – 174.56  = 790.68  =790.7  =  =  = 33.94  S.A = × 24 × 33.94 × 4 + 24×16  = 2061 | M1  M1  A1  M1  M1 M1  A1  M1 M1  A1 **10** | -For volume of big pyramid  -For volume of small pyramid  -For difference  -Area of  -Sum of areas |
| 19a  b  c | FH =  = = 14.14  HM =  = = 15 cm  ˂ between HM & ABCD  = ˂ between HM & EFGH  =  = 19.47˚  =  = 19.47˚  between HM & MC  = 2 × 19.47  = 38.94˚ | M1  A1  M1  A1  M1  A1  M1  A1  M1  A1 **10** |  |
| 20a    b  c  d  e | |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | x | 1.0 | 1.5 | 2.0 | 2.5 | 3.0 | 3.5 | 4.0 | | 4.5 | 5.0 | 5.5 | 6.0 | | y | 13 | 18.75 | 26 | 34.75 | 45 | 56.75 | 70 | 84.75 | | 101 | 118.75 | 138 |   Area = × 1 ×  = 317.5 sq. units  Area = 1  = 313.75 sq. units  Exact area =  =  = 315 sq. units  % error = × 100  = 0.7935% | B1  M1  A1  M1  A1  M1  A1  M1  A1  **10** | B1 for any 5 correct |
| 21a  b    c | =  =  = 27000-24000=3000  =  =  =  Cost of 1 bag of beans sh. 2000  Cost of 1 bag of rice sh. 1500  Cost of 1 bag of beans =2000 ×  = 1600  Cost of 1 bag of rice = 1500 ×  = 1800  He 2  1600 × 20 + 1800 × 30  = sh. 86000 | B1  M1  B1 M1  M1  A1  B1  M1  M1  A1 **10** |  |
| 22a  b  c  d | Distance travelled = 48 ×  = 12km  B to C =70-12  = 58 km  Time taken between C and D =  = hrs  = 40mins  Total time =  = 2Hrs  Distance between C and D = 58Km  Time = + 7mins  = 1hr 12mins  Speed = 48 Km/h  Time = × 1  = 1hrs | M1  A1  M1  A1  M1  M1  M1  A1  M1  A1 **10** |  |
| 23a    b  c | **i) PQ** = **q – p**  **ii) PM = PO + OM**  **= -P + Q**  **iii) ON = OP + PN**  **= P + PQ**  **= P +**  **= P + q - p**  **= p + q**  **i) OX =** m **ON**  **=** m **P +** m **q**  **ii) OX = OP + PX**  **= p + n PM**  **= p + n(-P + q)**  **mP + mq = (1-n)p + nq**  **m = 1-n**  **m = n . n = m**  **m = 1 - m**  **m = 1**  **m =**  **n = .**  **=**  **Ratio : 1 = 3:5** | B1  B1  B1  B1  B1  M1  M1  A1  B1  B1 **10** |  |
| 24a  b | =  Area = =  = 18  28 – - + 1 – 18 = 0  - - + 11 = 0  + 28 - 11 = 0  - 11 + 28 = 0  - 7 - 4 + 28 = 0  - 4 = 0  = 0  = 7 or = 4  Length = 7m  Area not previously covered = 28 – 18  = 10  Cost = 10 ×  = 10 × 350  = sh. 3500 | B1  B1  M1 M1  M1  M1  A1  M1  M1  A1 **10** | For 28  For  For and area  Accept alt |
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