## **TERM 2-2022**

## **MATHEMATICS (MARKING SCHEME)**

## **FORM 4**

## **TIME 2½ HOURS**

PAPER 2

|  |  |  |  |
| --- | --- | --- | --- |
| **NO.** | **WORKING** | **MARKS** | **REMARKS** |
|  |  | M1M1A1 | Factorization by groupingExpansion seen |
|  | **Total**  | **3** |  |
|  |  | M1A1 |  |
|  | **Total** | **2** |  |
|  |  | B1M1A1 | Identifying and in terms of numbersMultiplying by  seen |
|  | **Total**  | **3** |  |
|  |  | M1M1A1 | Write 2 as  |
|  | **Total** | **3** |  |
|  |    | M1M1A1 |  |
|  | **Total** | **3** |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **NO.** | **WORKING** | **MARKS** | **REMARKS** |
|  |    | B1M1A1 |  or equivalent in column form seen10.198 seen |
|  | **Total** | **3** |  |
|  |  | M1A1 |  |
|  | **Total**  | **2** |  |
|  |  | M1M1A1 |  |
|  | **Total** | **3** |  |
|  | CentreRadius = units | B1B1B1 | Equation of the circle in the form Centre seen  seen |
|  | **Total**  | **3** |  |
|  | 1. Binomial co-efficients

  | M1M1A1 |  |
|  | **Total** | **3** |  |

|  |  |  |  |
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| **NO.** | **WORKING** | **MARKS** | **REMARKS** |
|  |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |
|  |  | **1.25** | **1** | **1.25** | 2 | **3.25** | 5 | **7.25** | **10** |

 square units | B1M1A1 | Missing values of all correct |
|  | **Total** | **3** |  |
|  | Change in longitude  | B1M1A1 |  |
|  | **Total** | **3** |  |
|  |  | B1B1B1B1B1 | Bisecting line ABParallel line 2cm away from ABBisecting angle at CArc radius 1.5 cm and centre CR shaded and labeled |
|  | **Total** | **5** |  |
|  |   Shaded Area  (4 significant figures) | B1M1M1A1 |  |
|  | **Total** | **4** |  |
| **NO.** | **WORKING** | **MARKS** | **REMARKS** |
|  |  | B1B1B1B1 |  |
|  | **Total** | **4** |  |
|  |  | M1M1A1 | Work done by and together in 1 dayWork done by and together in 2 days |
|  | **Total** | **3** |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **NO.** | **WORKING** | **MARKS** | **REMARKS** |
|  | 1. drawn

Shear; line invariant, mapped onto 1. ∆ drawn

 and 1. Let the matrix be

  | M1A1B1B1, B1B1B1 |  |
|  | **Total** | **10** |  |



|  |  |  |  |
| --- | --- | --- | --- |
| **NO.** | **WORKING** | **MARKS** | **REMARKS** |
|  | 1. Number of terms
 | B1M1M1, A1M1A1M1M1A1B1 | All first 3 terms correctRatio of 6th to 3rd terms Taking , 3 seenExpression for common ratio Simplification 1.5 seen |
|  | **Total** | **10** |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **NO.** | **WORKING** | **MARKS** | **REMARKS** |
|  | 1. (i) Relationship

Hence (ii) when and 1. A, B, C and D

 and  A decrease of 20% | M1M1A1B1M1A1M1M1M1A1 | Forming 2 equations in and Correct attempt to solve the equations simultaneouslyValues of and Relationship between and Values of and in terms of and Expression for A0 if left as  |
|  | **Total** | **10** |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **NO.** | **WORKING** | **MARKS** | **REMARKS** |
|  | 1. Velocity at
2. Time at

 seconds 1. at
 | M1A1M1M1A1M1A1B1M1A1 | Differentiation SubstitutionEquation to 0Both values of  discriminated Differentiating  |
|  | **Total** | **10** |  |
|  |  (2 decimal places)1. Volume of pyramid
2. Consider ΔVMN where M is the midpoint of AD
3. Consider ΔVDO
 | M1M1A1B1M1M1A1B1M1A1 |  |
|  | **Total** | **10** |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **NO.** | **WORKING** | **MARKS** | **REMARKS** |
|  | 1. Table Values

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | **0.50** | 0.87 | 1 | **0.87** | 0.87 | **0.00** | -0.5 | **-0.87** | -1.00 | -0.87 | **-0.50** | 0.00 | **0.50** |
|  | **1.73** | 1.00 | **0.00** | -1.00 | **-1.73** | -2.00 | **-1.73** | -1.00 | **0.00** | 1.00 | 1.73 | **2.00** | **1.73** |

B2 – all table values correct (B1 for at least 10 table values correct)1. Graphs

S1 – given scales used P1 – plotting C1 – drawing P1 – plotting C1 – drawing  |
|  | 1. and
 | B1B1 |  |
|  | **Total** | **10** |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **NO.** | **WORKING** | **MARKS** | **REMARKS** |
|  | 1. (i)

(ii)  1. (i)

  Also    (ii)   Also 1. and
 | B1B1B1B1B1B1M1M1A1B1 | Comparing coefficients of and Correct attempt to solve the two equationsValue of Value of  |
|  | **Total** | **10** |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **NO.** | **WORKING** | **MARKS** | **REMARKS** |
|  | Frequency Table

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Marks  |  |  |  |  |  |  |  | U.C.B |
| 61 – 65 | 4 | 63 |  |  | 100 | 400 | 4 | 65.5 |
| 66 – 70 | 5 | 68 |  |  | 25 | 125 | 9 | 70.5 |
| 71 – 75 | 9 | 73 |  |  | 0 | 0 | 18 | 75.5 |
| 76 – 80 | 8 | 78 |  |  | 25 | 200 | 26 | 80.5 |
| 81 – 85 | 8 | 83 |  |  | 100 | 800 | 34 | 85.5 |
| 86 – 90  | 6 | 88 |  |  | 225 | 1350 | 40 | 90.5 |
|  | **40** |  |  | **145** |  | **2875** |  |  |

All correct – B1All correct – B11. (i) Mean

– A1(ii) Standard Deviation 1. (i) Ogive

(ii) 25th Student |
|  | **Total** | **10** |  |