**MATHEMATICS**

**OPENER EXAMINATION TERM 3, 2022**

**PAPER II MARKING SCHEME**

|  |  |  |
| --- | --- | --- |
| No | WORKINGS | Comments  |
| 1 |  | M1M1A1 |
| 2 |  | M1M1A1 |
| 3 |  | M1A1 |
| 4 |  | M1M1A1 |
| 5 |  | M1M1M1 A1 |
| 6 | C:\Users\user\Desktop\ML EXAMS\IMG_20220827_124934.jpg | B1 – rectangleB1 – L1B1 --L2B1 --L3 |
| 7 |  | M1M1A1 |
| 8 |  | B1M1A1 |
| 9 | 1.
2.
 | M1 A1M1 A1 |
| 10 | Cosine is negative in 2nd and 3rd quadrants | M1A1 |
| 11 | Time difference = Latitude difference = Rome Distance =   | M1M1A1 |
| 12 | 1. P(B) =
2. P(G) or P(R) =
 | B1M1 A1 |
| 13 |  Coordinates of Q are  | M1A1B1 |
| 14 | ASF Area of triangle PQR =  | M1M1 A1 |
| 15 | 1.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 3 | 3.25 | 4 | 5.25 | 7 | 9.25 | 12 | 15.25 | 19 | 23.25 | 28 | 33.25 | 39 |

   | B1 – all valuesM1A1 |
| 16 |  | M1M1M1A1 |
| 17 | Angles subtended by the same chord Angle subtended by the diameter EF Base angles of an isoceless triangle Angles subtended by the same chord BH Opposite angles of cyclic quadrilateral BEFH | B1B1B1B1B1B1B1B1B1B1 |
| 18 | 1. Buying price per Kg =

Profit per Kg = 1. (i)

Cost price = (ii)  | M1M1A1M1M1M1 A1M1M1 A1 |
| 19 | 1. Taxable income K£ 32 340
2. Gross tax

1st band 2nd band = 3rd band = 4th band =754Total tax due = Net tax = 1. (i) Total deduction =

  (ii)   | M1 A1M1M1M1M1 A1M1M1A1 |
| 20 | 1. On the diagram
2. Transformation I

Transformation IITransformation III1. Area of object =
 | B1B1B1B1B1B1B1M1 A1B1 |
| 21 | 1.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Marks  | Mid point |  |  |  |  |
|  | 14.5 |  | 2 |  | 2 |
|  | 24.5 |  | 4 |  | 6 |
|  | 34.5 |  | 5 |  | 11 |
|  | 44.5 |  | 7 |  | 18 |
|  | 54.5 |  | 10 |  | 28 |
|  | 64.5 |  | 6 |  | 34 |
|  | 74.5 |  | 3 |  | 37 |
|  | 84.5 |  | 2 |  | 39 |
|  | 94.5 |  | 1 |  | 40 |
|  |  |  |  |  |  |

    | B1 for tableM1A1M1A1 |
|  | 1.

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|  | 1. (i)

(ii) marks | B1B1 |
| 22 | 1.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |   |   |   |  |  |  |  |  |  |
|  | 1.00  |  0.5 |  | -1.00  |   | 0.50  |  **1** |  **0.5** |  -**0.5** |   |
| )  | 1.73  |  **0** |   |  | 0.00  |  1.73 |  **1.73** |  **0** |  |  |

 | B1 – for B1 – for  |
|  | 1. (i) Period =

(ii) Phase angle =  | B1B1 |
|  | 1. On a graph
 |  |
|  |  | B1 |
| 23 | 1.

At 1. Acceleration is minimum when

   | M1M1 A1M1A1M1A1M1M1A1 |
| 24 |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |
|  | 32 | 18 | 8 | 2 | 0 | 2 | 8 | 18 |
|  |  |  |  |  | 0 | 3 | 6 | 9 |
|  |  |  |  |  |  |  |  |  |
|  | 9 |  |  |  |  |  | 3 | 16 |

  | B1 B1 |
|  | 1. On a graph
 |  |
|  | 1.

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
|  |  | 1 | 7 |

 | B1 |
|  | 1. (i)

Values of *x*  are or (ii)Values of *x*  are (iii)Values of *x*  are  | B1B1B1 |



