**MATHEMATICS**

**OPENER EXAMINATION TERM 3, 2022**

**PAPER II MARKING SCHEME**

|  |  |  |
| --- | --- | --- |
| No | WORKINGS | Comments |
| 1 |  | M1  M1  A1 |
| 2 |  | M1  M1  A1 |
| 3 |  | M1  A1 |
| 4 |  | M1  M1  A1 |
| 5 |  | M1  M1  M1 A1 |
| 6 | C:\Users\user\Desktop\ML EXAMS\IMG_20220827_124934.jpg | B1 – rectangle  B1 – L1  B1 --L2  B1 --L3 |
| 7 |  | M1  M1  A1 |
| 8 |  | B1  M1  A1 |
| 9 |  | M1 A1  M1 A1 |
| 10 | Cosine is negative in 2nd and 3rd quadrants | M1  A1 |
| 11 | Time difference =  Latitude difference =  Rome  Distance = | M1  M1  A1 |
| 12 | 1. P(B) = 2. P(G) or P(R) = | B1  M1 A1 |
| 13 | Coordinates of Q are | M1  A1  B1 |
| 14 | ASF  Area of triangle PQR = | M1  M1 A1 |
| 15 | |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  | 3 | 3.25 | 4 | 5.25 | 7 | 9.25 | 12 | 15.25 | 19 | 23.25 | 28 | 33.25 | 39 | | B1 – all values  M1  A1 |
| 16 |  | M1  M1  M1  A1 |
| 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 | B1  B1  B1  B1  B1  B1  B1  B1  B1  B1 |
| 18 | 1. Buying price per Kg =   Profit per Kg =   1. (i)   Cost price =  (ii) | M1  M1  A1  M1  M1  M1 A1  M1  M1 A1 |
| 19 | 1. Taxable income K£ 32 340 2. Gross tax   1st band  2nd band =  3rd band =  4th band =754  Total tax due =  Net tax =   1. (i) Total deduction =     (ii) | M1 A1  M1  M1  M1  M1 A1  M1  M1  A1 |
| 20 | 1. On the diagram 2. Transformation I   Transformation II  Transformation III   1. Area of object = | B1  B1  B1  B1  B1  B1  B1  M1 A1  B1 |
| 21 | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 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 table  M1  A1  M1  A1 |
|  | C:\Users\user\Desktop\ML EXAMS\IMG_20220827_124139.jpg |  |
|  | 1. (i)   (ii) marks | B1  B1 |
| 22 | |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  | |  |  |  |  |  |  |  | |  | 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 = | B1  B1 |
|  | 1. On a graph |  |
|  |  | B1 |
| 23 | At   1. Acceleration is minimum when | M1  M1 A1  M1  A1  M1  A1  M1  M1  A1 |
| 24 | |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  | |  | 32 | 18 | 8 | 2 | 0 | 2 | 8 | 18 | |  |  |  |  |  | 0 | 3 | 6 | 9 | |  |  |  |  |  |  |  |  |  | |  | 9 |  |  |  |  |  | 3 | 16 | | B1 B1 |
|  | 1. On a graph |  |
|  | |  |  |  |  | | --- | --- | --- | --- | |  |  |  |  | |  |  | 1 | 7 | | B1 |
|  | 1. (i)   Values of *x*  are or  (ii)  Values of *x*  are  (iii)  Values of *x*  are | B1  B1  B1 |



