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| **NATIONAL**  **SENIOR CERTIFICATE** | | | | | |
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|  | | | **GRADE 10** |  | |
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| **NOVEMBER 2019** | | | | | |
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| **MATHEMATICS P2**  **MARKING GUIDELINE (EXEMPLAR)** | | | | | |
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| **MARKS:** | **100** | | | | |
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|  | | This marking guideline consists of 8 pages. | | |  |

**Consistent accuracy (CA) marking, applies in ALL aspects of the marking guideline.**

**QUESTION 1**

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| 48 | 50 | 52 | 59 | 60 | 68 | 73 | 76 | 76 | 76 |
| 78 | 79 | 80 | 81 | 82 | 82 | 84 | 91 | 92 | 98 |

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| 1.1.1 | Median = | ✓ answer  (1) |
| 1.1.2 | Lower quartile =  Upper quartile = | ✓ lower quartile  ✓ upper quartile  (2) |
| 1.1.3 | Interquartile range ( IQR ) = Q3 – Q1  = | ✓ substitution ✓ answer  (2) |
| 1.1.4 | Min = and max = | ✓ min and max  (1) |
| 1.1.5 |  | ✓ min and max  ✓ Q1 and Q3  ✓ Q2  (3) |
| 1.1.6 | Skewed to the left or negatively skewed | ✓ answer  (1) |
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| 1.2 | |  |  |  |  | | --- | --- | --- | --- | | Duration (min) | No of calls (*f*1) | Midpoint (*x*1) | *(f* 1 (*x*1) | | 2 *t* < 5 | 47 | 3,5 | 164,5 | | 5 *t* < 8 | 139 | 6,5 | 903,5 | | 8 *t* < 11 | 211 | 9,5 | 2004,5 | | 11 *t* < 14 | 102 | 12,5 | 1275 | | 14 *t* < 17 | 58 | 15,5 | 899 | | 17 *t* < 20 | 19 | **A** | **B** | |  | 576 |  | 5598 | | |
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| 1.2.1 | **A** = 18,5 and **B** = 351,5 | ✓ answer of A  ✓ answer of B  (2) |
| 1.2.2 | approximate mean =  =  =  minutes | ✓ sum of all  ✓sum of all  ✓ answer  (3) |
| 1.2.3 | 75th percentile lie =  In the interval 11 t < 14 | ✓ 432  ✓ interval  (2) |
| **[17]** | | |

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| **QUESTION 2** | | |
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| 2.1 | A( – 2 ; 6 ) , B( 6 ; 8 ) and C( 4 ; 0 )    dAB **=**  **=**  **=** 2  dBC **=**  **=**  **=** 2  ∴ AB = BC. | ✓ formula  ✓ substitution ✓ distance AB  ✓ substitution  ✓ distance of BC  (5) |
| 2.2 | ABCD is a kite  adjacent sides are equal | ✓ kite  ✓motivation  (2) |
| 2.3 | A( – 2 ; 6 ) , B( 6 ; 8 ) and C( 4 ; 0 )  Midpoint of BC **=**  **=**  **=** G( 2 ; 7 )  Midpoint of AB **=**  **=  =** H( 5 ; 4 ) | ✓ formula  ✓ substitution ✓ coordinates of   G, mdpt of BC  ✓ substitution  ✓ coordinates of   H, mdpt of AB  (5) |
| 2.4 | (opposite ∠’s of a kite are =)  (corresponding ∠’s , EG || DB) but  (diagonals of a kite) ∴ =  ∴∆AEG ||| ∆CDB. (A A A) | ✓ S ✓R  ✓ SR  ✓ 3rd angle or reason  (4) |
|  |  | **[16]** |

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| **QUESTION 3** | |  |
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| 3.1.1 | 28  35 | ✓sub in Pythagoras  ✓*x* = 21  ✓  (3) |
| 3.1.2 |  | ✓  ✓  ✓ 1  (3) |
| 3.2 | If  ∴  = –    – 12  θ  – 35 37 | ✓  =  ✓ 3rd quadrant  ✓ *x* value = – 12  ✓✓ substitution  ✓answer  (6) |
| 3.3.1 | 8cos( *x* + ) = 5  cos( *x* + ) =  *x* +  *x* = | ✓cos( *x* +)  ✓ *x* +  ✓ answer  (3) |

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| 3.3.2 | cosec 2*x* = 2  sin 2*x* =  2*x* = 300  *x* = 150 | ✓ sin 2*x* =  ✓ 2*x* =  ✓ answer  (3) |
| 3.4 | = | ✓  ✓  ✓  ✓  ✓ answer  (5) |
| 3.5.1 | =  *x =*  *=*  **OR**  =  *x =* | ✓ using  ✓ answer  (2)  ✓ using  ✓ answer  (2) |
| 3.5.2 | =  *y =*  *=* 11,46  **OR**  =  *y* = 11,46  **OR**  *y* 2 = 12,292 – 4.42  *y* = 11,48 | ✓ using tan  ✓ answer  (2)  ✓ Pythagoras  ✓ answer  (2) |
|  | | **[27]** |

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| **QUESTION 4** | |  |
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| 4.1 | *f*  *g*  *x*  *y* | ✓ intercepts  ✓ turning pts  ✓ shape  (3) |
| 4.2 | period of g = 3600 | ✓ answer  (1) |
| 4.3 | range of *m(x)* if *m(x)* = – 3*f(x)* + 1  range of – 3 f(x): – 3 *y* 3  range of *m(x)* : – 2 *y* 4 | ✓ notation  ✓✓ endpoints  (3) |
| 4.4 | g decreasing: 900 < *x* < 2700 | ✓ notation  ✓ endpoints  (2) |
| 4.5 |  | ✓ notation  ✓ endpoints  ✓ endpoints  (3) |
|  | | **[12]** |

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| **QUESTION 5** | | |  |
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| 5.1 | (∠s on a straight line)  (supplementary adj ∠s)  (∠s on a straight line)  =   =  (∠s of a quad = )  Answer only: full marks, provided one reason is given | | ✓ SR  ✓SR  ✓SR  ✓ answer  (4) |
| 5.2 | ∴  (∠s of a ∆ =  In ∆ ABC: *x* +  – 2*y* +  – 2*k* = 1800  2*y* + 2*k* =  y + *k* =  +  =  –  (∠s on a straight line) | | ✓ SR  ✓ SR  ✓ S  ✓ SR  (4) |
|  |  | | **[8]** |
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| **QUESTION 6** | | |  |
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| 6.1.1 | | AP = DE and AQ = DF (given)  (given) ∆ APQ ≡ ∆ DEF (SAS) | ✓ given  ✓∆’s similar  ✓ reason  (3) |
| 6.1.2 | | (∆ APQ ≡ ∆ DEF)  But  (given) ∴  ∴ PQ || BC (a pair of corresponding ∠s are =) | ✓ Statement  ✓ Statement  ✓ Reason  (3) |
| 6.1.3 | | (∆ABC ||| ∆DEF)  DF =  = 3,7 | ✓ SR  ✓ substitution  ✓ simplification  ✓ answer  (4) |
| 6.2.1 | | Converse of midpoint theorem | ✓ answer  (1) |

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| 6.2.2 | BD =  ∴ AD =  ∴ EF =  (opp sides of a parallelogram)  ∴ CG = 2 (midpt theorem)    = 8 | ✓ BD = AD  ✓S✓R  ✓ SR  ✓ answer  (5) |
|  |  | **[16]** |
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| **QUESTION 7** | |  |
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| TSA of cone = TSA of hemisphere  =  =  *s* = 2*x (*  but *s*2 = *h*2 + *x*2  ∴ *h*2 + *x*2 = 4*x*2  ∴ *h* =  = | | ✓ equating the TSA  ✓ use of Pythagoras  ✓ substituting  *s* = 2*x*  ✓ h subject of formula  (4) |
|  | | **[4]** |
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| **TOTAL:** | | **100** |