**FORM FOUR END OF TERM TWO 2018 EXAMINITION**

**121 /1**

**MATHEMATICS MARKING SCHEME**

**PAPER 1**

|  |  |  |  |
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| 1. | =  =  = 1 ½ | M1  M1  A1 | numerator  denominator  C .A.O |
|  |  | 3 |  |
| 2. | Grad AB = M1 =  =  M2  =  Mid point M  = (1 0)    -5x + 5 = 2y  2y + 5x – 5 = 0 | B1🗸  B1🗸  B1 | Both M1,&& M2  Mid point |
|  |  | 3 |  |
| 3. | =  = 0.1783+ 3 ( 0.1373x 10-1)  = 0.1783 + 3 ( 0.01373)  = 0.1783 + 0.04119  = 0.21949  = 0.2195 | M1🗸  M1🗸  M1🗸  A1 | Use square root tables  Use square tables  Use rec. tables |
|  |  | 4 |  |

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| 4. | -6  = -9  = -3  14-3x>2  -3x>-12  x<4 | B1  B1  B1 |  |
|  |  | 3 |  |
| 5. | Fraction of water emptied per hour.  For A=  B=  C=  All working for 1 hour    =  All working for 30 minutes    Remaining fraction    B & C working for one hour    =  1h  ?    = | B1  M1  A1 |  |

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| 6. | =  =4+8×23  =12×8  =96 | M1  M1  A1 | Numerator  Denominator |
|  |  | 3 |  |
| 7. | PQ = 564.22 – 270.12  = 294.10m | M1  M1  A1  3 | For tan 48º =  For tan  Correct distance PQ |
|  |  | 3 |  |
| 8. | Distance =72+78  =150M  Relative speed =72+108  =180km/h  t=  =8.333×10-4  =2.999  3 seconds | B1  B1  M1  A1 |  |
|  |  | 4 |  |
| 9. | <DBC= 510 Alternate angles  <EAD= 510 Alternate segment  (51+51)  = 780 | B1  M1  A1 |  |
|  |  | 3 |  |

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| 10. | A.S.F. =  L.S.F.=  =  V.S.F =  =  8cm3  ?  =  = 373.248  =373.2 cm3 | B1  B1  B1 |  |
|  |  | 3 |  |
| 11. | 32χ x 3y = 3³  2χ - y x 2χ = 35  2χ + y = 3    χ = 2  2(2) + y = 3  y = -1 | M1  M1  B1  B1 | For correct eqn’s  Both.  For adding correct for correct answer.  For correct answer. |
|  |  | 4 |  |
| 12. | Let x = 1.05050505      =1  a= 5, b= 99 | M1  A1  B1✓ | a and b |
|  |  | 3 |  |

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| 13. | 5000×86.25=ksh431250  Spend =  Remaining =  100 Japanese yen=67.26  ?=141400  Japanese yens | B1  M1  A1 |  |
|  |  | 3 |  |
| 14. | (a) 11, 13, 17 and 19  Number = 19,1 71, 311   1. hundreds total value= 3×100   = 300 | B1  B1 |  |
|  |  | 2 |  |
| 15. | log 36 =log (4x9) = log4 + log9  = log 22 + log 32  = 2log2 + 2log3  = 2(0.30103 + 0.47712)  = 1.556 | M1  M1  A1 |  |
|  |  | 3 |  |

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| 16. | c) Height = 3.7cm 0.1cm | B2  B1 |  |
|  |  | 3 |  |
| 17. | (a) ∠PAQ = 2PAM/2QAM    θ = 25.38  x 2  ∠PAQ = 50.76° | M1  A1 | Each A plotted  NB: there are four triangles drawn  A1B1C1 coordinates |
|  | (b) PBQ = 2PBM/2QBM    χ = 32.39  x 2  PBQ = 64.78° | M1  A1 |  |

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| (c) Segment 1  A = A sec1 - AD1    6.162  Segment 2    39.9045 – 31.9171  7.9874  Total shaded = 6.162 + 7.9874  = 14.1494cm² | M1  A1  M1  A1  M1  A1 |  |
|  | 10 |  |

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| 18. | b) i) bearing of B from D  2120 10  Bearing of A from C  2690  10  ii)Distance AC and BD  AC= 8.4cm 0.1 cm  = 168  2  BD = 4.8cm 0.1cm  =96 2 | B1  B1  B1  B1  B1  B1  B1  B1  B1  B1  **B1**  **B1** |  |
|  |  | 10 |  |

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| 19. | (a) let group members no.=x  Each original =  Contribution  After 40 withdrawn  Each contribution=      2000000x-80000000=2000000x-2500x2 +100000x  25x2 -1000x -800000= 0  x2 -40x-32000=0    =  =  =  =  =200 or -160  Original number.of members=x=200  (b) Fund from CDF =  = 900000  Remaining to be contributed.= 2000000- 900000  = 1,100000  Each remaining  membersn contribution=  =  = 6875 | B1  M1  M1✓  A1  B1  B1  B1  B1  M1  A1 | Btw  Simpl. |

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|  | 1. total amount   contribution by members=  =836,000 |  |  |
|  |  | 10 |  |
| 20. | (a) (i) relative speed = 81+72  = 153km/h  After 40 minutes distance covered =  =54km  Distance left = 360-54  = 306 km  t=  =2 hrs  (ii) after meeting relative speed=153km/h  = 102km  **ALTERNATIVE:**    =48+54  =102  (b) (i) Relative speed =90-81  = 9km/h  20 min, distance covered=  t=  =3  =3 hrs 20min  9.50  3.20  13.10  1.10 p.m.   1. 13.10   9.30  4. 40  =4  = | M1  M1  A1  M1  A1  B1  M1  A1  M1  A1 |  |

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|  | D =360 –  =360-108  = 252km | M1  A1 |  |
|  |  | 10 |  |
| 21. |  | B1  B1  B1  B1  B1  BI  BI | Constructing ∠75º  Complete triangle  Dropping the perpendicular  Complete parallelogram  Centre of the circle  – Dropping ⊥ from centre of circle to BC.  – For described circle. |

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|  | (iv) h = 3.2cm ± 0.1  ②  = 19.2cm²  (v) R = 1.6cm ± 0.1 | - M1  - A1  - A1 |  |
|  |  | 10 |  |
| 22. | (a) | B4  M1  M1  M1  M1  A1  B1 | For each area✓ |

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|  | (b) Area =          =0.5775 ha |  |  |
|  |  | 10 |  |
| 23. | (a) (i) 88%  100%    =5454.55  (ii)  100%    =3310.35  (b)%profit=  =64.77%  (c) 100%  87.5%    =2896.55 | M1  M1  A1  M1  A1  M1  M1  A1  M1  A1 |  |
|  |  | 10 |  |

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| 24. | (a) s=t3-6t2+9t+5    at t=0.5,  = 0.75-6+9  =3.75m/s   1. 3t2-12t+9=0   t2-4t+3=0  t2-t-3t+3=0  t(t-1)-3(t-1)=0  (t-3)(t-1)=0  t-3=0 or t-1=0  t=3 or t=1  when t=3  s =t3-6t2+9t+5  =(3)3-6(3)2+9(3)+5  =27-54+27+5  =59-54  =5m  When t =1  S =13-6(1)2+9(1)+5  =1-6+9+5  =9m   1. s=t3-6t2 + 9t + 5   turning points (3, 5)and (1, 9)   |  |  |  |  | | --- | --- | --- | --- | | x | 2 | 3 | 4 | |  | -3 | 0 | 9 | |  |  |  |  |      |  |  |  |  | | --- | --- | --- | --- | | x | 0 | 1 | 2 | | M1  M1  A1  M1  A1  B1  B1  B1 |  |

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|  | |  |  |  |  | | --- | --- | --- | --- | |  | 9 | 0 | -3 | |  |  |  |  |   Sketch | B3✓ | For sketch |
|  |  | 10 |  |