**121/2**

**MATHS**

**PAPER 2**

**MARKING SCHEME .**

|  |  |  |  |
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| **1.** | **(**x- y) ( x+y)( 3282 – 3272) ( 3282 + 3272) 65540 | **M1****M1****A1** |  |
|  |  | **3** |  |
| **2.** | Tan x = is positive 3rd quadrantThen sin x = -3 5 Hypotense  3 h 4h = √ 42 + 32 = √ 25 = 5  Sin x = -3 5  Cos x – sin x = -4 - -3 = -3 5 5 5 = -1 5 | **B1****M1****A1** | **Identification the hypotenuse****Cao** **accept (-0.2)** |
|  |  | **3** |  |
| **3.** | 16 + 6(- ½ x ) + 15(- ½ x )2 + 20(- ½ x )3 = 1 – 3x + 15x2  - 5 x3 4 X = -0.041-3 ( -0.04) + 15 (-0.04)25 ( -0.04) 3 4 4= 1 + 0.12 + 0.006 + 0.000616= 1.12616= 1.1262 | **M1****M1****M1****A1** | **For✓ simplification****For✓ substitution of x** |
|  |  | **4** |  |
| **4.** |  a + ar3 = 140 264 + 64 r3 = 140 264 + 64 r3  = 280 64 r3  = 280 – 64 64 r3  = 216 r = √216  64  r = 3 2 | **M1****M1****A1** |  |
|  |  | **3** |  |

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| **5.** | a2 = b2d2 b2 –d a2b2 - a2d = b2d2 a2b2  - b2d2  = a2d b2(a2 - d2) = a2db2 = a2 d a2 - d2 = a2 d a2 d2  | **M1****M1****A1** | **✓ sq on both sides****CAO** |
|  |  | **3** |  |
| **6** |  P = aQ + √ Q P = 16a + 4b( 500 = 16a + 4b)(800 = 25a + 5b)2500 = 80a + 20b3200 = 100a + 20b-700 = -20a35 = aThen b = -15Equation connecting P and Qp = 35Q – 15 √Q | **M1****M1****M1****A1** | **For ✓ equation****For ✓ formation of simultaneous equations****For ✓ values of both a and b**  |
|  |  | **4** |  |
| **7.** |  | **M1****A1** |  |
|  |  | **2** |  |
| **8** | 4.562 x 0.38 = 1.733564 √1.73356 = 1.14745 ÷0.82  = 1.3993 = 1.4 | **M1****M1****A1** |  |
|  |  | **3** |  |
| **9.** | 18 x 64 x 5 24 x 806 x 64 8x 16 3 days | **M1****M1****A1** | **For✓ simplification** |
|  |  | **3** |  |
| **10.** | True value = √1 + n = 1.44 = 1.2Approx. value 1 + n = 1 + 44 = 1.22 2 2= 1.22 – 1.2  = 0.02* 1. x 100 =

1.2= 1.67 % | **M1****M1****A1** |  |
|  |  | **3** |  |
| **11.** |  3 0 a b = 3 + a b 0 4 0 c 0 4 + c 3a + 0 = 3 + a 3b + 0 = b3a = 3 + a a = 3 23b + 0 = b2b = 0B = 00 + 4c = 4 + c3c = 4C= 4 3 | **M1****M1****A1** | **For matrix equation****For✓ forming of simultaneous equation****For values of a, b and c ( correct)** |
| **12.** | 2x2 – 2x + x -1( x + 1 ( x – 1)2x ( x – 1 ) + 1 ( x- 1) ( x + 1 ) (n- 1 )= ( 2x + 1)  ( x + 1 ) = 2x + 1 x + 1 | **M1****M1****A1** |  |
|  |  | **3** |  |
| **13** | 1. cm = 25000cm
2. 1cm = 250m
3. 1cm = 0.25

1cm2 = 0.062520cm2  = 20 x 0.0625 = 1.25/ cm2 | **M1****M1****A1** |  |
|  |  | **3** |  |
| **14.** | AB . BC = DC -2 5: BC = 36 BC = 36 5  = 7.2 cm | **M1****M1****A1** |  |
|  |  | **3** |  |
| **15.** | Log108 + Log10750  - Log106Log10 Log10( 8 x 750) 6 = Log101000 = 3  | **M1****M1****A1** |  |
|  |  | **3** |  |
| **16.** | P (R )= ½ x 4 12P (R )= ½ x 3 18 = 1 + 3 1. 20

 = 20 + 18 120= 38 191. = 60
 | **M1****M1****M1****A1** |  |
|  |  | **4** |  |

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| **17** | Taxable income 115 x 8570 = 9855.50 100 9855.50x 12 p.a  20 5913.30  **Tax**1 – 1500 1501501 – 3000 2253001 – 4500 3754501 – 5913.30 494.30 1244.30 - 90.00 K £ 1154.30 pa . orKsh 1923.83 per monthTotal Decuctions 2 x 9855.5100 197.11 ( wcps) + 20.00 246.00 +Tax per month 1923.83 2386.94Net salary9855.50 – 2386.94Ksh 7468.65 | **M1****A1****M1****M1****M1****A1****M1****A1****M1****A1** |  |
|  |  | **10** |  |
| **18.** | i) θ ( 2πR cos θ) 360= 60 x 2 x 22 x 6370 cos 60 360 7= 1/3 x 22 x 910 x 0.5= 3336 7ii) Time ( 4 x 60) hrs 60 4 hrs.Local time 1200 + 4 = 1600hrsb) θ x 2πR = 800360 = θ x 2 x πx 6370 = 800 360 * = 800 x 360

 2 x π x 6370= 7.196° ∠ (60 – 7.196) = 52.80°( 52.8° N 45°E) | **M1****A1****B1****M1****M1****A1****B1** |  |
| **19** |  | **10** |  |
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|  |  | **10** |  |

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| **20.** |

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| X | 30 | 60 | 120 | 180 | 240 | 270 |
| Sin x  | 0.5 | 0.87 | 0.87 | 0 | -0.87 | -1.0 |
| 2 cos x  | 1.73 | 1.0 | -1.0 | -2 | -1.0 | 0 |
|  |  |  |  |  |  |  |
| Y | 2.23 | 1.87 | -0.13 | -2 | -1.87 | -1.0 |

mso56BC9c) x = 114 ± 3° and  x = 294 ± 3° line thro y = -1.5 d) | **B2****S1****P1****C1****B2****L1****B2** | **For all 6 values of y✓** **B1 for at least 4 ✓****Appropriate scale use****✓ plotting****✓ curve****Points identified and stated****B1 only stated****✓ line****Points identified and stated****B1 only stated** |
|  |  | **10** |  |
| **21** |  R 2/11 5/11 W 4/11 B R R 3/11  3/12 4/11  W 5/12  w   4/11 B 4/12 B R 3/11 5/11 W 3/11 B | **B2** | **🗸 🗸 prob, tree** |
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|  | a) P ( RR) = 3/12 x 2/11  1/22 b) P(IR) = RW or RB or WR or BR15/132  + 12/132 + 15/132 + 12/132 9/22 1. p( At least white Ball ) =

P(RW) + P(WR) + P(WW) + P ( WB) + P(B)15/132 + 9/132 + 20/132 + 20/132 + 20/132 = 84/132 or 7/11 1. P(RR or WW or BB)

 = 6/ 132 + 20/132 + 12/132  = 19/66   | **M1****A1****M1****A1****M1****A1****M1****A1** | **Or equivalent 0.04545****Or equivalent 0.4091****Or equivalent 0.6364****Or equivalent 0.2424** |

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| **22** |

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| X | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |
| Y | 0 | 6 | 10 | 12 | 12 | 10 | 6 | 0 |

msoD4847½ ( 6 + 10 ) + ½ ( 12 + 12) + ½ ( 12 + 10 ) + ½ ( 10 + 6)= 8 + 11 + 12 + 11 + 8 = 50cm2 u -x2 + 3x + 10 = - 64 + 24 + 10 - 1/3 + 3/2x –10 = 511/5cm 3= -1 = % error 511/2 – 50 = 1 ½ x 100 = 2 % 511/2 | **B2****S1****P1****C1****M1****A1****M1****M1****M1****A1** | **8 values ✓****B1 at least 6✓****Appropriate scale use****✓ plotting****✓ curve** |
|  |  | **10** |  |

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| **23.** | a) i) AC2 = 82 + 62 = 100 AC = 10cm ii) AF2  = 102 + 52 = 125 AF = 11.18cm b) Tan x = 5/11 = 0.5 x = 26.52**°**1. Tan x = 5/6 = 0.8333

x = 39.7° | **M1****A1****M1****A1****B1****M1****A1****B1****M1****A1** | **Sketch****Sketch** |
|  |  | **10** |  |

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| **24** | mso48F15 | Inequalitiesx ≥Oy ≤O4x + 3y ≤ 364x + 3y = 24 y = nFor ✓ shading of x ≥o and y≥ o2x + 3y ≤ 36y ≤ nP profit function object we function P = 4x + 3yMax profit at point (6,4) P = 4(6) + 4,88)(4)= 56Hence he should here 6 medium of type A and 4 machine of type B  | **B1****B1****B1****B1****B1**✓shadingand line**B1**shadingand linedrawn**B1-for** ✓shadingand linedrawn**B1****B1****B1** |
|  |  |  | **10** |