**MATHEMATICS**

**PAPER 2**

**MARKING SCHEME**

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|  | **MAIN SCHEME** | **MARKS** | **COMMENTS** |
| 1 | Perimeter = 2(l + w)Absolute error for both length and width = 0.5Max perimeter = 2(80.5 + 60.5)= 282Actual perimeter = 2(80 + 60)= 280Percentage error = x 100= 0.714 0.7 | B1M1A1 | For either max, actual or min perimeter |
|  |  | 03 |  |
| 2 | Det (Δ) = (4 x -2) – (3 x 5)  = -8 – 15 = -23= =  x = 3, y = 2 | B1B1M1A1 |  |
|  |  | 04 |  |
| 3 | 5(5x)2 – 15(5x) + 10 = 0 Let 5x be A5A2 – 15A + 10 = 0(A – 2) (A – 1) = 0A = 2 **or**  15x = 2 **or** 5x = 1x = **or** x = 0 | M1M1A1B1 | For ✓quad equation formedOr subst in quadration formulaFor both |
|  |  | 04 |  |
| 4 | x + 3x – 30o = 90o12304x = 120x = 30tan 30o =  | B1B1B1 |  |
|  |  | 03 |  |

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| 5 | ∠WXZ = 180 – 60o= 120o∠ZWX = 180 – (50 + 120)= 10o∠YZW = 10o alternate angles to ZWX | B1B1 |  |
|  |  | 02 |  |
| 6 | 1. Cost of the mixture

= = = 156.36 156/- to the nearest shilling1. % profit = ?

250 – 156= 94 x 100 | M1A1M1A1 | To the nearest shilling2 d.p |
|  |  | 04 |  |
| 7 |  | M1M1A1 |  |
|  |  | 03 |  |
| 8 | 3.1522 = 9.93513 x 0.1540 + 4 x 0.10070.462 + 0.4028 = 0.8648 | B1M1M1A1 | For both and square |
|  |  | 04 |  |
| 9 | M = P = m + mk2m = P – mk2h =  | M1M1A1 |  |
|  |  | 03 |  |
| 10 | Let one of the sides be a = 18 x 0.8660= 15.588= 15.59 cm | M1A1 |  |
|  |  | 02 |  |
| 11 |  =  | B1B1B1 | For numFor deno |
|  |  | 02 |  |
| 12 | (x + 3)2 + (-y – 2)2 = 32x2 + 6x + 9 + y2 + 4y + 4 = 9x2 + y2 + 6x + 4y + 4 = 0 | M1M1A1 |  |
|  |  | 03 |  |
| 13 | Wambua:Amount = 6400 = 6400= Sh. 9734Interest = 9734 – 6400 = Sh. 3334Muinde: Interest= 12800 = x 3= Sh. 4800Muinde’s investment by(4800 – 3334)= Sh. 1466 | B1B1A1 |  |
|  |  |  |  |
| 14 | 1. 1 + + 5 +

1 - - 1. 1 - (0.04) + (0.04)2 - (0.04)3

1 – 0.1 + 0.004 – 0.00008 = 0.90392 | B1M1A1 | ✓Substitution CAO |
|  |  | 03 |  |

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| 15 | x + 60 + x = 180o2x + 60 = 1802x = 120 x =  = 60o | M1A1 | For eqn |
|  |  | 02 |  |
| 16 | Log (x-1) = Log 12 – Log (x – 2) = Log  x – 1= (x – 1) (x – 2) = 12x2 – 3x + 2 = 12x2 – 3x – 10 = 0x2 + 2x – 5x – 10 = 0x(x + 2) – 5(x + 2) = 0(x – 5) (x + 2) = 0x – 5 = 0x = 5x + 2 = 0x = -2Drop the –ve value x = 5 | M1M1A1 | ` |
|  |  | 03 |  |
|  | **SECTION II** |  |  |
| 17 | 1. i) Taxable income

 21200 + 12000 + 1100 + 2000 = 36,300ii) PayeeFirst = 840/-Next = 1440/-Next = 2400/-Next = 1500/-Remaining = 90/-Tax payable 6,270/-Less personal relief 1,240Net payee = 5,030/-1. Net salary

36,300 (5030 + 250 + 120 + 4500 + 1800)Net salary = 36,300 – 11700 = 24,600/- | M1A1B1B1B1M1A1M1M1A1 | Subtract relief from Tot.Tax. |
|  |  | 10 |  |

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| 18 | 1. Prime No 2, 3, 5, 7

Multiple of 3 3, 6, 9 but 3 cannot be selected twiceP(Prime number or multiple of 3) = 1. i)

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|  | 1 | 2 | 3 | 4 |
| H | H1 | H2 | H3 | H4 |
| T | T 1 | T 2 | T 3 | T 4 |

ii) P (at least 2 and a head)P(H2 or H3 or H4) = 1. i) P(B) =

5x = 3x + 182x = 18 x = 9No of members = 9 + 6 = 15ii) P(W and B) or P(B and W)= P(W) x )P(B) + P(B) x P(W)= =  | B1B1B1B1B1M1A1B1M1A1 | Or equivalent Or equivalent |
|  |  | 10 |  |
| 19 | (a) Let cost of a cow be xLet cost of a goat be y3x + 25y = 75000x 2Both2x + 33y = 69600 x 36x + 50y = 150000-6x + 99y = 208800 - 49y = -58800 y = 12003 x 30000 = 75000 3x = 45000 x = 15000Cow = Sh. 15000; Goat = Sh. 1200(b) SP for cows = x 15000 x 3 = Sh. 63000SP for goats = x 1200 x 25 = Sh. 45000Amount received = 63000 + 45000 = Sh. 108000 | B1M1A1M1A1M1M1A1M1A1 |  |
|  |  | 10 |  |
| 20 | (a) From Δ PQT, PQ =  = 105.3m(b) From Δ PRT, PR =  = 23.63mQR = PQ – PR = 105.3 – 23.63QR = 81.67m(c) Distance = km; Time = hr Speed = x  = 21km/hr | M1A1M1A1M1A1B1B1M1A1 |  |
|  |  | 10 |  |

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| 21 | (a) (i) PQ = PO + OQ= - p + q or q – p(ii) OR = OP + PR= p + (-p + q)= p + q(iii) SQ = SO + OQ= -OP + OQ= -p +q or q - p(b) OT = n(p + q)From DOSTOT = OS + ST= p + m(p + q)p + q = p + mq = - 4n + 9m = 9…………………. (i) = m, M = ……………....(ii)+ 9 = 94n + 6n = 910n = 9 n = M = x =  | B1M1A1B1B1M1M1M1M1Both A1 |  |
|  |  | 10 |  |
| 22 | (a) A = KBnLog A = Log KBn = Log k + log KBn = nlogB + LogK(b)

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| Log | 0.18 | 0.29 | 0.40 | 0.51 | 0.65 |
| Log | 0.20 | 0.40 | 0.60 | 0.81 | 1.06 |

 | M1A1B2 |  |
|  | Log ALog B0.20.40.60.81.00.20.40.60.8XXXX | S1P1L1 |  |
|  | (c) Gradient of line = = 0.5465 n = 0.5Hence Log K = 0.07K = 100.07 = 1.175 = 1.2 (1 d.p) | M1A1B1 |  |

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| 23 | 1. **Angle CBD (2 mks)**

<CBD = 90 – 42 = 480Angle sum of a triangle1. **Angle ODB (2 mks)**

<ODB = 180 – 42 = = 690Angles of an isosceles triangle1. **Angle BAD (2 mks)**

<BAD = ½ x 138 = 640Angle at the centre is twice one at the circumference1. **Angle ABC (2 mks)**

<ABD = 420Alternate segment angles1. **Angle ODA (2 mks)**

<ODA = 360 – (64 + 222)=740 |  |  |
|  |  | 10 mrks |  |
| 24 |  |  |  |

