**121/2**

**MATHS**

**PAPER 2**

**MARKING SCHEME. END TERM 1 2019**

|  |  |  |  |
| --- | --- | --- | --- |
| 1. |  | M1  M1  M1  A1 | Accept  For ✓addition and subtraction of numerator and denominator  ✓ multiplication by ¾ |
| 2. | L.C.M of 2,3 and 4 = 12  Place all tranctions over 12 | M1  M1  A1 | All brackets ✓ opened |
| 3 |  | M1  M1  A1 | ✓ division by 3 in numerator and 2 in denominator  ✓ly manipulating numerator  CAO |
| 4 |  | M1  A1  M1  A1 |  |
|  |  | 04 |  |
| 5 |  | B1  B1  B1 | Accept any alternative correct method |
| 6. | a)      b) | M1  A1  M1  A1 |  |
| 7 |  | M1  A1 |  |
|  |  | 02 |  |
| 8 |  | B1  M1  A1 |  |
| 9 | a)    b) | M1  A1  M1  A1 |  |
| 10 | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  |   Mean  Variance | M1  M1  A1 |  |
| 11 | 13, 15, 17, ….,47  nth term = a + d(n – 1)  13 + 2(n – 1) = 47  2n – 2 + 13 = 47  2n + 11 = 47  2n = 36  n = 18  no of plants 18/2(2x13+2(18-1))  = 9(26+34)  = 9 x 60  = 540 | **M1**  **A1**  **M1**  **A1** |  |
| 12 |  | **M1**  **M1**  **A1** | ✓subt  (5.916079783) |
| 13 | X = -7 y = 13 | **B1**  **M1**  **A1** | ✓mult by inver. matrix |
| 14 |  | B1  B1  B1 | Construct 67.50  divisions |
| 15 |  | M1  A1  B1 | both ✓ |
|  |  |  |  |
| 16 |  | M1 M1  A1 | Factorization of numerators  Simplification |
| 17. | **SECTION II** | M1  A1  A1  M1  A1  M1  A1  M1  A1 | 857375 1- 15  100  Accept 526’700,526,600 526’500  If A above is lost follow thro’ accept 658’125,….  Accept 0.6927  For both root ✓ly 0.9938 |
| 18. |  | M1  M1  M1  A1 |  |
|  |  | 04 |  |
|  |  | M1  A1  M1  M1  M1  A1 |  |
| 19 | E  D  F  G  H  C  A  B  M  N  24 cm  7 cm  5 cm  a)          b) | M1  M1  M1  M1  A1  M1  A1  M1  M1  A1 |  |
| 20 | 1. (i) P (square No) = ⅛   (ii) P (Prime or more than both)     |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | 1 | 2  3  4  5  6  7  8  9 | 3  4  5  6  7  8  9  10 | 4  5  6  7  8  9  10  11 | 5  6  7  8  9  10  11  12 | 6  7  8  9  10  11  12  13 | 7  8  9  10  11  12  13  14 | 8  9  10  11  12  13  14  15 | 9  10  11  12  13  14  15  16 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 |  1. (i) P (sum of 8) =  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | 1 | 0  1  2  3  4  5  6  7 | 1  0  1  2  3  4  5  6 | 2  1  0  1  2  3  4  5 | 3  2  1  0  1  2  3  4 | 4  3  2  1  0  1  2  3 | 5  4  3  2  1  0  1  2 | 6  5  4  3  2  1  0  1 | 7  6  5  4  3  2  1  0 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 |   (ii) P (diff 3) | M1  A1  M1  A1  B2  B1  B2  B1 | For the table  For the table |
| 21 | E  D  F  G  H  C  A  B  M  N  24 cm  7 cm  5 cm | M1  A1  M1  A1  M1  A1  M1  A1  M1  A1 |  |
| 22 | |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | X | -1800 | -1500 | -900 | -60 | -30 | 0 | 30 | 60 | 90 | 180 | | Sin(2x-30) | -0.5 | 0.5 |  |  | -1.00 | -0.5 | 0.5 |  | -0.5 |  | | 2cos x |  |  | 0 | 1.00 | 1.73 | 2 | 1.73 | 1 | -1 | 2 |   B2 for all✓  B1✓1,  (b)  (c) x = (-820 or 60) ± 3 B1  (d) Amplitude = 1 B1  Period = 360/2  = 1800 B1 |  |  |
| 23 | d1 = 60  = (60 x 55) + (60 x 70)  = 7500nm    = 60 x 70 cos 55 + 60 x 55  = 2409.02 + 3300  = 5709.02nm  tA = 5709.02  250  = 22.84hrs  = 22hrs 50min  1300hr  2250 +  3550  2400 –  1150hrs Tuesday  tB = 7500 = 30hrs  250  1300  3000  4300  2400  1900hrs Tuesday | M1  M1  A1  M1  M1  A1  M1  B1  M1  B1 | For 60 x 55 and 60 x 70 addition  M1 subs of cos θ  Time  Tuesday  Time  Tuesday |

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| 24 | |  |  |  | | --- | --- | --- | | v | Tablets (x) | Capsules (y) | | Vit A (7) | 1 | 1 | | Vit B (60) | 5 | 12 |   Cost Ksh@ 1 2  Inequalities x + y > 7  5x + 12y > 60  X > 0, y > 0  Cost (c) = x + 2y  (4, 4) C = 4 + 4 x 2 = 12  (5, 3) C = 5 + 3 x 2 = 11  (8, 2) C = 8 + 2 x 2 = 12  Minimum 5 tablets, 3 capsules  Min cost = Ksh11 | B1  B1  B1  B1  B1  M1  A1 | For x + 4 > 7  For 5x + 12u > 60  For x > 0  For y > 0  Objective function |
| ***L1 – x + y > 7***  ***L1 -5x + 12y > 60***  ***L1 – x > 0***  ***Y > 0*** | | | |