**JOINT EXAM TEAM**

**MATHEMATICS PAPER 2**

**APRIL 2020**

**MARKING SCHEME**

|  |  |  |  |
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| 1 | No Log58.32 1.7658 = 1.76580.98232 1.9922 x2 = 1.9844 1. 7.502 6.935 2. 8410 2. 9092 3 1.6364 4 – 329 x 10 -1 0.4329 | M1M1A1 | √ logs√ operation , x2 , +&div. by 3 |
| 2. |  | M1M1A1 | Accept any other correct method |
| 3  |  X3 = 3ht – 3h2 t tx3 = 3ht – 3h23ht – tx3 = 3h2t (3h – x3) = 3h2 t = 3h2 3h – x3 | M1M1A1 |  |
| 4. | (a) ( 1- 2x)6 = 1 (1)6 ( -2x)0 + 6(1)5 (- 2x)1 + 15(1)4 (-2x)2 + 20(1)3 (-2x)3 = 1 – 12x + 60x2 – 160x3 (b) (1 – 2x)6 = ( 1.02)6 x = -0.01(1.02)6 = 1 – 12(-0.01) +60 ( - 0 .01)2 – 160( - 0.01)3 = 1 + 0.12 + 0.006 + 0.00016 = 1.1262 | M1M1A1 |  |
| 5 | ANS: 1/P + 1/T = 1/61/15 + 1/T = 1/6 = 1/1 = 1/10 1/6 x 4 = 2/3 1/3 x 10/1 = 31/3 days | M1M1M1A1 |  |
| 6 | P = -5/2 2 + 7/2 - 4 -19 -3 7 = 14.5 4 -2 -17P = (-19, 14.5, -17) |  |  |
| 7 | 2N = N(1 + 4/1W)n1.04n = 2n = wg2/wg 1.04 = 17.67 = 18years |  |  |
| 8 |   |  |  |
| 9 | y = mx + kz2 = 3m + 4k x 2 4 = 6m +8k1 = 2m + 3k x 3 3 = 6m + 9k -1 = + k k = 1 m = -1 y = -5 + 2 = -3 |  |  |
| 10 | 1(4n – 1) = 25,000 4 – 14n = wg75, 001 = 8.097  Wg4 n = 9 |  |  |
| 11 | Cost price = 100/130 x 171.60 = 1321:n 120 + 150n = 132 1+n  120 – 132 = 132n –150n  2/3 = 12/18 = n3:2 |  |  |
| 12 |  |  |  |
| 13 |  |  |  |
| 14 |  MaxA = 4Л(7.5)2 4 MaxA = 4Л (6.5)2 Absolute error = $\frac{4Л \left(7.5^{2}-6.5^{2}\right)}{2}$ % Error = $\frac{28Л}{4Л × 7^{2}}$ x 100% = 14.29%   | M1M1M1A1 |  |
| 15 |  360 ÷ ½ = 360 x 2 = 720 Amplitude = 6, period = 7200  |  |  |
| 16 | Det = 0-3 = -3 ignore – sign Area of Δ ABC x Det = Area of A′B′C′ Area of Δ ABC X 3 = 36cm2 Area of Δ ABC = 36cm2 = 12cm2 3 | M1 M1 A1 **03** |  |
| 17 |  ANS:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **x** | **F** | **d** | **fd** | **fd2** | **cf** |
| 14.5 | 2 | -30 | -60 | 1800 | 2 |
| 24.5 | 6 | -20 | -120 | 2400 | 8 |
| 34.5 | 7 | -10 | -70 | 700 | 15 |
| 44.5 | 13 | 0 | 0 | 0 | 28 |
| 54.5 | 6 | 10 | 60 | 600 | 34 |
| 64.5 | 4 | 20 | 80 | 1600 | 38 |
| 74.5 | 2 | 30 | 60 | 1800 | 40 |
|  |  |  | -50 | 8900 |  |

i) X = 44.5 + -50/40= 43.25ii) s.d. = 8900/40 – (50/40)2 =  = 14.86iii) 49.5 + 30 – 28 x 10 = 52.83 6 B1 – cf, B1 – fd or fx B1 – fd2 or fx2  |  |  |
| 18 | ANS: =  A1 (3,1) B1 (7,1) C1(10,4) i) shear with x axis invanant c(2,4) – c1(10,4)b) A11 (-1.5,-0.5) B2 (-3.5,0.5) C2(-5,-2)   =  Inverse = ¼ ½ -1 = -1/8 1/4  0 - ½ 0 -1/8 |  |  |
| 19 | ANS: i) 2/5 x 3/5 x 3/5 x 3 = 54/125 ii) 1 – 3/5 x 3/5 x 3/5 = 98/125b) i) K + 2K + 3K + 4K + 5K+ 6K = 121K = 1K = 1/21P(4) = 4K = 4/21 ii) P2 + P3 + P5 = 2/21 +3/21 +5/21 = 10/21 |  |  |
| 20 | ANS: AC = 52 + 52 = 7.071Cos 3.536 =  = 44.990= Cos = 2.5/4.33  = 54.73Sin = 3.536 = 54.75 4.33 54.75 x 2 = 109.50 |  |  |
| 21 | ANS: log y = wgk + xwga

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| x  | 0 | 2 | 4 | 5 | 9 | 7 | 12 |
| Wgy | 2.41 | 2.46 | 2.50 | 2.53 | 2.64 | 2.59 | 2.72 |

K = A =PTS: 1 |  |  |
| 22 |  |  |  |
| 23 |   |  |  |
| 24 |  |  |  |
|  |  |  |  |
|  |  |  |  |