

Practice Tests Set 7 – Paper 1H mark scheme – Spring 2018

| Qn | | Working | Answer | Mark | Notes |
|----|--------|---|----------|---|---|
| 1 | (a)(i) | | 7^8 | 1 | B1 |
| | (ii) | | 4^{14} | 1 | B1 |
| | (b) | $5^n \times 5^3 = 5^{10}$ or $\frac{5^n}{5^6} = 5$ or $\frac{5^n}{5^3} = 5^4$ or $5^{n+3} = 5^{4+6}$ | 7 | 2 | M1 or a correct equation in n , e.g. $n + 3 = 10$ or $n + 3 - 6 = 4$ A1 cao |
| 2 | | 21 | 2 | M1 3 or 7 identified as a common factor A1 cao | |
| 3 | | $525 \div 3$ | 875 | 2 | M1 A1 cao |
| 4 | | $3 + 5 + 7$ or 15 $90 \div (3 + 5 + 7)$ or $90 \div 15$ or 6 or $\frac{7}{15}$ oe | 42 | 3 | M1 15 may be denominator of fraction or coefficient in an equation such as $15x = 90$ M1 dep A1 |

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| 5 | (i) | | $3x + 7$ | 2 | M1 for $x + x + 3 + x + 4$ A1 cao |
| | (ii) | | 21 | 3 | M1 for $3x = 54$ M1 for $x = 18$ A1 cao |
| 6 | (a) | | 7.5×10^4 | 1 | B1 cao |
| | (b) | | 7.5×10^{-8} | 2 | M1 for $7.5 \times 10^4 \times 10^{-12}$ A1 cao |
| 7 | | | Maths with correct comparative figure(s) | 2 | M1 for correct method to find figure(s) to compare, e.g. $\frac{32}{80} \times 100 (= 40)$ oe or 0.38×80 oe (= 30.4) C1 for maths with 40% or 30.4 or $\frac{40}{100}$ and $\frac{38}{100}$ oe. |
| 8 | | $72 \div 1 \frac{1}{3}$ oe | 54 | 3 | B1M1 accept $72 \div 1.33$ (2dp or better) or 0.9×60 (B1 M0 for $72 \div 1.2(0)\{= 60\}$ or $72 \div 80 \{= 0.9\}$ or $72 \div 1.3 \{=55.4$ or better}) or $72000 \div 1.33$ (or better) A1 cao |

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|----|--|------------------------------|------|---|
| 9 | <p>240 OR 6×40 OR 48 (can be implied) $3x + 102 + 60 + 30 = 240$ OR $\frac{192 + 60 + 30 + 3x}{6} = 40$</p> | 16 | 3 | <p>M1 A1 B1</p> |
| 10 | <p>$24 = \frac{k}{2^3}$ $x = \sqrt[3]{\frac{192}{-3}}$</p> | <p>192 -4</p> | 4 | <p>M1 A1 M1 A1</p> |

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| 11 | $\frac{(5-2) \times 180}{5}$ OR $180 - \frac{360}{5}$ | 108° | 2 | M1 A1 |
| | Either $\angle EDF = 38^\circ$ or $\angle DEF = 23^\circ$ <i>Note: Angle(s) may be marked on the diagram</i> $\angle EDF = 38^\circ$ and $\angle DEF = 23^\circ$ obtuse $\angle DFE$ $= 180 - "38" - "23"$ reflex $\angle DFE = 360 - "119"$ reflex $\angle DFE = 241$ | 241° | 4 | M1 A1 M1 A1 |
| 12 | (a) | 1 + 7 or 8 | | M1 for sight of 8. 8 may be denominator of fraction or coefficient in an equation such as $8x = 32$ |
| | | $\frac{32}{8} = 4, \quad 4 \times 7 = 28$ | 28 | 2 A1 cao |
| | (b) | $32 \times 45 = 1440$ or 14.4(0)m "1440" \div 48 | | 3 M1 M1 dep A1 cao |
| | | 30 | | |

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|----|---|-----------------------------|--------------|--|
| 13 | $1\% \text{ of } 7500 = 75$ $1\% \text{ of } 7575 = 75.75$ $\text{Total} = 75.75 + 75 = 150.75$ | 150.75 | 3 | M2 for $1.01^2 \times 7500$ A1 cao |
| 14 | (a) $a, b, a + b, a + 2b, 2a + 3b$ (b) $3a + 5b = 29$ $a + b = 7$ $3a + 3b = 21$ $b = 4, a = 3$ | Shown $a = 3, b = 4$ | 2 3 | M1 Adding pairs of successive terms C1 P1 Process to set up two equations P1 Process to solve equations A1 cao |
| 15 | | Events independent | C1 | Statement that events are independent |
| 16 | | -2 | M1 A1 | $81 = 3^4$ or $\frac{1}{81} = 3^{-4}$ cao |

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|----|---------|---|---------------------------------|-------|--|
| 17 | (a) | (20, 4) (40, 16) (60, 42) (80, 84) (100, 96) (120, 100) | | 2 | M1 (ft from sensible table i.e. clear attempt at addition) for at least 4 points plotted correctly at end of interval or for all 6 points plotted consistently within each interval in the freq table at the correct height A1 accept curve or line segments accept curve that is not joined to (0,0) |
| | (b) | Reading from graph at $t = 70$ | correct cf graph 36 – 38 | 2 | M1 for evidence of using graph at $t = 70$ ft from a cumulative frequency graph provided method is shown A1 100 – ‘63’ ft from a cf graph ft from a cumulative frequency graph provided method is shown |
| 18 | | 540/5 (108) “108” × 12 (o.e.) £ 1296 | 1296 | 3 | B1 M1 A1 |

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| 19 | $\sqrt{(8 \times 6)} + \sqrt{(18 \times 6)}$ $(2\sqrt{2} \times \sqrt{6}) + (3\sqrt{2} \times \sqrt{6})$ | $\frac{10}{\sqrt{2}}$ | 3 | M1 $\sqrt{(16 \times 3)} + \sqrt{(36 \times 3)} (= 10\sqrt{3})$ M1 $10\sqrt{3} \times \frac{\sqrt{2}}{\sqrt{2}}$ or $\frac{10\sqrt{3}}{\sqrt{6}}$ A1 (dep on at least one M1) |
| 20 | (i) | 18 | 3 | M1 Uses frequency density for under 80 bar eg $7 \div 10$ M1 Completes method to find over 95 minutes frequency eg 1.2×20 and 2.2×5 A1 35 cao |
| | (ii) | Reasoning | 1 | C1 Correct explanation about grouped data so actual values between 95 and 120 unknown |
| 21 | $2x - 4 = x^2 - 4x + 4$ $x^2 - 6x + 8 = 0$ $(x - 4)(x - 2) = 0$ $x = 4, x = 2$ When $x = 4, y = 4$ When $x = 2, y = 0$ $4 - 2 = 2$ $4 - 0 = 4$ $2^2 + 4^2$ | $\sqrt{20}$ | 6 | P1 for a process to eliminate y , e.g. $2x - 4 = x^2 - 4x + 4$ followed by reduction to 3 term quadratic P1 for factorisation or formula for a 3 term quadratic = 0 P1 for a process to find the values of y A1 all 4 values ($x = 4, y = 4$, and $x = 2, y = 0$) P1 for a correct process to find the distance ² or distance between the 2 points, e.g. $(4 - 2)^2 + (4 - 0)^2$ A1 $\sqrt{20}$ |

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| 22 | $a^2 \times 10^{2n}$ | $\frac{a^2}{10} \times 10^{2n+1}$ | 3 | M1 A1 for $\frac{a^2}{10}$ oe A1 $\times 10^{2n+1}$ oe |
| 23 | | 35° | 4 | M1 for $ABC = 90$ M1 for $(ACB =) 180 - 90 - 25 (= 65)$ M1 for $(DBC =) 180 - '65' - 80 (=35)$ A1 cao supported by working OR M1 for $(AOB =) 180 - 2 \times 25 (= 130)$ M1 for $(ADB =) 130 \div 2 (=65)$ M1 for $(DAC =) 180 - 65 - 80$ A1 cao supported by working. |

Suggested grade boundaries

| | 9 | 8 | 7 | 6 | 5 | 4 |
|----------|-----|-----|-----|-----|----|----|
| Paper 1H | 68 | 60 | 52 | 44 | 35 | 26 |
| Paper 2H | 72 | 62 | 52 | 42 | 32 | 22 |
| Paper 3H | 58 | 50 | 42 | 34 | 26 | 18 |
| Total | 198 | 172 | 146 | 120 | 93 | 66 |