**H2 Mathematics 9758 ANNEX**

|  |  |  |
| --- | --- | --- |
| **Paper 1** | | |
| **QN** | **TOPIC (*Please Select*)** | **ANSWERS (*Exclude graphs and text answers*)** |
| 1 | Graphs & Transformations |  |
| 2 | Equations & Inequalities | \[x<-2\text{ or }x>1\]; \[\therefore -\frac{1}{2}<x<1\text{ and}\ x\ne 0.\] |
| 3 | Differentiation & Applications |  |
| 4 | Graphs & Transformations |  |
| 5 | Vectors | (i) $\overrightarrow{OC}=\frac{1}{k+1}(\mathbf{a}+k\mathbf{b})$ (iii) \[\Delta OAC=\frac{\sqrt{3}k}{2(k+1)}\] |
| 6 | Vectors | (i) \[4a+3b=0\] (iii) \[a=\frac{6}{7}c;b=-\frac{8}{7}c\] (iv) 86.7o |
| 7 | Functions | (ii) \[{{\text{f}}^{-1}}(x)=-\sqrt{\frac{1}{x}+1}\]; \[{{\text{D}}\_{{{\text{f}}^{-1}}}}=[\frac{1}{3},\infty )\] (iii) \[{{\text{R}}\_{\text{gf}}}=(-\infty ,k]\] |
| 8 | Differentiation & Applications | (i) \[OE=2a\pi \]; max height = 2*a* |
| 9 | Sigma Notation & MOD | (i) \[{{2}^{n+2}}+\frac{1}{3}n\left( n+1 \right)\left( n+2 \right)-198\] or \[{{2}^{7}}\left( {{2}^{n-5}}-1 \right)+\frac{\left( n+1 \right)}{6}\left( n+2 \right)\left( 2n+3 \right)-91-\frac{\left( n-5 \right)\left( 8+n \right)}{2}\]  (ii) $\frac{3}{4}-\frac{1}{2n}-\frac{1}{2(n+1)}$ (iii) \[\frac{3}{4}\] |
| 10 | Vectors | (i) \[\beta =-10\] (ii) \[\sqrt{\frac{31}{2}}\] (iv) \[\left( \begin{matrix}  5 \\  -1 \\  -1 \\  \end{matrix} \right)\] (v) \[\mathbf{r}=\left( \begin{matrix}  6 \\  0 \\  -2 \\  \end{matrix} \right)+\lambda \left( \begin{matrix}  1 \\  1 \\  2 \\  \end{matrix} \right)\] |
| 11 | Differentiation & Applications | (i) max vol = \[3750\sqrt{3}\]  (iia) \[0.125\ \text{cm}\ {{\text{s}}^{\text{-1}}}\] (iib) 12.5 cm2s-1 |
| 12 | APGP | (i) 37th month (ii) 41 months, 5984.09 (v) $74,472.64 |
| 13 | H2 P1 Q13 Topic |  |
| 14 | H2 P1 Q14 Topic |  |
| **Paper 2** | | |
| **QN** | **TOPIC (*Please Select*)** | **ANSWERS (*Exclude graphs and text answers*)** |
| 1 | H2 P2 Q1 Topic |  |
| 2 | H2 P2 Q2 Topic |  |
| 3 | H2 P2 Q3 Topic |  |
| 4 | H2 P2 Q4 Topic |  |
| 5 | H2 P2 Q5 Topic |  |
| 6 | H2 P2 Q6 Topic |  |
| 7 | H2 P2 Q7 Topic |  |
| 8 | H2 P2 Q8 Topic |  |
| 9 | H2 P2 Q9 Topic |  |
| 10 | H2 P2 Q10 Topic |  |
| 11 | H2 P2 Q11 Topic |  |
| 12 | H2 P2 Q12 Topic |  |
| 13 | H2 P2 Q13 Topic |  |
| 14 | H2 P2 Q14 Topic |  |