SUGGESTED ANSWER MAT112 – SET 4

QUIZ - 10% (OCTOBER 2022)

<table>
<tr><th>No.</th><th>Answer</th><th>Marks</th></tr>
<tr><td>1a)</td><td>
<table>
<tr><th>Fraction</th><th>Decimal</th><th>Percentage (%)</th></tr>
<tr><td>$2\frac{7}{14}$</td><td>2.5 B1</td><td>250 % B1</td></tr>
<tr><td>$\frac{691}{20}$ B1</td><td>34.55</td><td>3455 %</td></tr>
</table>
</td><td>3</td></tr>
<tr><td>1b i)</td><td>$10+2(4-8y)=-3(1-y)$
$10+8-16y=-3+3y$ M1
$18-16y=-3+3y$
$-16y-3y=-3-18$ M1
$-19y=-21$
$y=\frac{21}{19}$ A1</td><td>3</td></tr>
<tr><td>1b ii)</td><td>$\frac{3(y+2)}{4}-6=\frac{y}{8}$
$\frac{3y+6}{4}-\frac{y}{8}=6$ M1
$\frac{2(3y+6)-y}{8}=6$ M1
$6y+12-y=48$ M1
$5y=48-12$
$5y=36$
$y=\frac{36}{5}$ A1</td><td>4</td></tr>
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2a)	$T_{12}: 70 = a + (12-1)d$ $70 = a + 11d$ ..... (1) **M1** $T_6: 34 = a + (6-1)d$ $34 = a + 5d$ ..... (2) **M1** (1) – (2): $70 = a + 11d$ $34 = a + 5d$ **M1** $36 = 6d$ $d = 6$ **A1** $d = 6$ into (2): $34 = a + 5d$ $34 = a + 5(6)$ **M1** $a = 4$ **A1**	6
2b)	The cleaning cost of the first floor: $d = 50,\ a = 150 - 50$ $a = \text{RM}100$ **B1** The cleaning cost of the whole building: $S_n = \frac{n}{2}[2a + (n-1)d]$ $S_{30} = \frac{30}{2}[2(100) + (30-1)(50)]$ **M2** $S_{30} = \text{RM}24,750$ **A1**	4

2c)	$T_n = ar^{n-1}$ $-\frac{40}{6561} = (-40)\left(\frac{1}{3}\right)^{n-1}$ **M1** $\frac{1}{6561} = \left(\frac{1}{3}\right)^{n-1}$ $\log\left(\frac{1}{6561}\right) = (n-1)\log\left(\frac{1}{3}\right)$ **M1** $\frac{\log\left(\frac{1}{6561}\right)}{\log\left(\frac{1}{3}\right)} = n-1$ **M1** $8 = n-1$ $n = 9$ **A1**	4
2d i)	$S_n = \frac{a\left(r^n-1\right)}{r-1}$ $819 = \frac{a\left(4^6-1\right)}{4-1}$ **M2** $819 = \frac{a(4095)}{3}$ **M1** $a = \frac{3}{5}$ **A1**	4
2d ii)	$T_n = ar^{n-1}$ $T_{12} = \frac{3}{5}(4)^{12-1}$ **M1** $T_{12} = 2516582.4$ **A1**	2