SUMMER QUIZ 01

Form 6

AS & GS

Part A - MC (@2 marks)

1.	A	2.	C	3.	B	4.	D	5.	A
6.	A	7.	C	8.	C	9.	B	10.	D
11.	B	12.	D	13.	B				

1.	A	$r=\frac{T(3)}{T(2)}=\frac{360}{480}=\frac{3}{4}$ $T(n)=480\left(\frac{4}{3}\right)\left(\frac{3}{4}\right)^{n-1}$ $=480\left(\frac{4}{3}\right)^{2}\left(\frac{3}{4}\right)^{n}$ $=(0.75)^{n}\left(\frac{2560}{3}\right)$
2.	C	$T(m)\times T(2m+1)=\frac{1}{5}$ $\left(\frac{m-1}{2m}\right)\left(\frac{2m+1-1}{2(2m+1)}\right)=\frac{1}{5}$ $5m-5=4m+2$ $m=7$
3.	B	$T(6)=11$ and $T(8)=-2$ $2d=T(8)-T(6)=-2-11=-13$ $d=-\frac{13}{2}$ $T(2)=T(6)-4d$ $=11-4(\frac{-13}{2})$ $=37$
4.	D	$d=527-550=-23$ By considering $-232,-209,-186,\ldots,527,550$ $-255+23n<0$ $n<11.087$ $\therefore$ 11 terms.

5.	A	$T(18) = S(18) - S(17)$ $= \left[2(18)^2 + 18\right] - \left[2(17)^2 + 17\right]$ $= 71$
6.	A	$r^2 = \frac{T(8)}{T(6)} = \frac{\sqrt{11}}{\sqrt{3}}$ $T(7) \times T(9)$ $= T(6) \times r \times T(8) \times r$ $= T(6) \times T(8) \times r^2$ $= \sqrt{3} \times \sqrt{11} \times \frac{\sqrt{11}}{\sqrt{3}}$ $= 11$
7.	C	$a_4 = 2a_3 - a_2$ $53 = 2a_3 - 17$ $a_3 = 35$ $a_5 = 2a_4 - a_3$ $a_5 = 2(53) - 35$ $= 71$
8.	C	For I $(4-2b)-(5-2a)$ $(3-2c)-(4-2b)$ $= -1-2(b-a)$ $= -1-2(c-b)$ $= -1-2d$ $= -1-2d$ $\therefore$ I is true. For II $b^2 - a^2$ $c^2 - b^2$ $= (b-a)(b+a)$ $= (c-b)(c+b)$ $= d(2a+d)$ $= d(2a+3d)$ $\therefore$ II is false. For III $(a+c)-b$ $(a+b+c)-(a+c)$ $= a+c-b$ $= b$ $= a+d$ $= a+d$ $\therefore$ III is true.
9.	B	$T(1) = 5, T(2) = 11, T(3) = 19$ $T(10)$ $= 5 + (6+8+10+\ldots+22)$ $= 131$

10. D

$$S(\infty)=\frac{-20}{1-\frac{10}{-20}}=-\frac{40}{3}$$

11. B

$$\log 2-\log 4+\log 8-\log 16+\cdots$$
$$=(\log 2-\log 4)+(\log 8-\log 16)+\cdots$$
$$=(-\log 2)+(-\log 2)+\cdots$$
$$=-10\log 2$$

12. D

For I

$$\frac{b^2}{a^2}=\frac{c^2}{b^2}=\frac{d^2}{c^2}=r^2$$

$\therefore$ I is true.

For II

$$\left(-\frac{1}{c}\right)\div\frac{1}{d} \qquad \frac{1}{b}\div\left(-\frac{1}{c}\right) \qquad \left(-\frac{1}{a}\right)\div\frac{1}{b}$$
$$=-\frac{d}{c} \qquad =-\frac{c}{b} \qquad =-\frac{b}{a}$$
$$=-r \qquad =-r \qquad =-r$$

$\therefore$ II is true.

For III

$$\frac{4+b}{2+a} \qquad \frac{8+c}{4+b} \qquad \frac{16+d}{8+c}$$
$$=\frac{4+ar}{2+a} \qquad =\frac{8+ar^2}{4+ar} \qquad =\frac{16+ar^3}{8+ar^2}$$

$\therefore$ III is false.

For IV

$$\frac{b}{9}\div\frac{a}{3} \qquad \frac{c}{27}\div\frac{b}{9} \qquad \frac{d}{81}\div\frac{c}{27}$$
$$=\frac{3b}{9a} \qquad =\frac{9c}{27b} \qquad =\frac{27d}{81c}$$
$$=\frac{r}{3} \qquad =\frac{r}{3} \qquad =\frac{r}{3}$$

$\therefore$ IV is true.

13. B

$$r^{10-4}=\frac{T(10)}{T(4)}=\frac{\frac{128}{3}}{486}=\frac{64}{729}$$
$$r=\pm\frac{2}{3}$$

For I

$\frac{x_5}{x_7} = \frac{1}{r^2} = \frac{9}{4} > 1$

$\therefore$ I is true.

For II

$S(\infty) = \frac{486\left(\frac{3}{2}\right)^3}{1-\frac{2}{3}} = 4920.75 < 4921$

$\therefore$ II is true.

For III

$x_9 = \frac{x_{10}}{r}$

$x_9 = \frac{128}{3} \times \frac{3}{2}$ or $x_9 = \frac{128}{3} \times -\frac{3}{2}$

$x_9 = \pm 64$

$\therefore$ III is false.