SAMPLE QUESTIONPAPER

CLASS XI (2022-23)

MATHEMATICS

Time allowed: 3 hours **Maximum marks:80**

General instructions:

1. The Question paper contains- five sections A,B, C, D and E. Each section is compulsory. However, there are internal choices in some questions.
2. Section A has 18 MCQ's and 02 Assertion-Reason based questions of 1 mark each.
3. Section B has 5 very short (VSA)- type questions of 2 marks each.
4. Section C has 6 short (SA)- type questions of 3 marks each.
5. Section D has 4 long (LA)- type questions of 5 marks each.
6. Section E has 3 source based/case-based questions of 4 marks each.

SECTION A

Q1. If $(x, 3y, 4) = (4, -3, 2z)$, then the value of $x + 2y + 2z$ is

(a) 6 (b) 1 (c) -1 (d) -2

Q2. The value of:$i^{49} + i^{50} + i^{51} + i^{52}$ where i = $\sqrt{-1}$

(a) 1 (b) 0 (c) i (d) -i

Q3. The intercept form of the equation of line 7x +4y -28 = 0 is

a) $\frac{x}{4} + \frac{y}{7} = 1$ b) $\frac{x}{-4} + \frac{y}{-7} = 1$ c) $\frac{x}{4} + \frac{y}{-7} = 1$ d) $\frac{x}{7} + \frac{y}{4} = 1$

Q4. If $\lim_{x\to 1}\frac{x^4-1}{x-1} = \lim_{x\to k}\frac{x^3-k^3}{x^2-k^2}$ then k is_____

(a) $\frac{2}{3}$ (b)$\frac{8}{3}$ (c)$\frac{4}{3}$ (d)3

Q5. Five marbles are drawn from a bag which contains 7 blue marbles and 4 black marbles. What is the probability that all drawn marbles are blue?

(a) $\frac{5}{11}$ (b)$\frac{2}{11}$ (c)$\frac{1}{22}$ (d)$\frac{5}{7}$

Q6. An arc of circle of length $\frac{330}{7}$ cm makes an angle of $\frac{3\pi}{4}$ at the center of the circle. The radius of the circle is

(a) 10 cm (b) 20 cm (c) $11\frac{1}{4}$cm (d) $22\frac{1}{2}$ cm

Q7.Solve:$4x + 7 < 6x + 3$ for real values of x.

(a) $x \in (2, \infty)$ (b) $x \in (-\infty, 2)$
(c) $x \in (-2, \infty)$ (d) $x \in (-\infty, -2)$

Q8 If $\frac{1}{9!} + \frac{1}{10!} = \frac{x}{11!}$, find x.

(a) 100 (b) 90 (c)110 (d)121

Q9. The coordinates of centre of a circle x^2 + y^2 +4x -6y +8 = 0 is

a) (-2,-3) b) (2,3) c) (-2,3) d) (2,-3)

Q10. $\lim_{x\to 0}\frac{10^x-5^x-2^x+1}{x^2}$ is _____

(a) $log5$ (b)$log2$ (c)$log\frac{5}{2}$ (d)$log5log2$

Q11. If A lies in second quadrant and $3\tan A+4=0$, then the value of $2\cot A-5\cos A+\sin A$ is equal to

(a) $\frac{-53}{10}$ (b) $\frac{23}{10}$ (c) $\frac{37}{10}$ (d) $\frac{-37}{10}$

Q12. The coefficient of x^2 in the expansion of $(1-2x)^5$is:

(a) -80 (b) -40 (c) 40 (d) 80

Q13. Equation of the directrix of the parabola y^2 = 16x is

a) x = 4 b) x = -4 c) y = 4 d) y = -4

Q14. Derivative of $sin2x\ at\ x=\frac{\pi}{6}\ is$_____

(a) -1 (b)$\frac{\sqrt{3}}{2}$ (c)0 (d)1

Q15. Find $n(S\cap P)$ where S = $\{x: x\ is\ a\ multiple\ of\ 3\ less\ than\ 20\}$

and P = $\{x: x\ is\ a\ prime\ number\ less\ than\ 20\}$

(a) 0 (b) 1 (c) 2 (d) 3

Q16. Given that the general term of a sequence is represented by

$$T_n = \begin{cases} n(n+2), \text{if n is even number} \\ \frac{4n}{n^2+1}, \text{if n is odd number} \end{cases}$$

Find 15th term

a) 240 b) 255 c) $\frac{10}{113}$ d) $\frac{30}{113}$

Q17. Image of the point (4,-7,6) in xy plane is

a) (4,-7,-6) b) (-4,7,-6) c) (4,-7,6) d) (-4,7,6)

Q18. Distance of the point (4,6,-8) from x – axis is

a) 10 units b) $\sqrt{116}$ units c) 4 units d) $\sqrt{52}$ units

ASSERTION-REASON BASED QUESTIONS

In the following questions, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.

(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true and R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

Q19. Assertion (A): The number of permutations of the letters of the word INDEPENDENCE is $\frac{12!}{3!4!2!}$

Reason (R): The number of permutations of n different objects taken r at a time, where $0 < r \leq n$ and the objects do not repeat is ^nP_r.

Q20. Assertion (A): A=$\{x \in R : 3 < x < 4\}$ is an infinite set.

Reason(R): Between two Real numbers there are infinite Real numbers.

SECTION B

Q21. If $U = \{1,2,3,4,5,6,7,8,9\}, A = \{1,2,3,4\}, B = \{2,4,6,8\}, C = \{3,4,5,6\}$, find:

(i) $(A \cup B)'$
(ii) $(B - C)'$

Q22 Find the real values of x and y if $\frac{x+iy}{1+i}$ is the conjugate of $5 - i$.

Q23 Find the term independent of x in the expansion of $\left(x - \frac{1}{3x^2}\right)^{12}$ $, x \neq 0$.

Q24. Find the variance of all factors of 6.

Or

The mean of 50 observations is 20 and their standard deviation is 2. Find the sum of squares of all the observations.

Q25 Define Greatest integer function. Draw its graph for $-2 < x < 2$.Hence, write the value of $[-1.9]$ and [1.2].

Or

Let the relation R be defined on N such that R= $\{(x, y): y = 2x; x, y \in N\}$. What is the Domain, Codomain and Range of R? Is this relation a function?

SECTION C

Q26. Show that for any two sets A and B, $A \cup B = A \cap B$ implies $A = B$.

Q27. Solve the system of inequalities in R

$$\frac{7x - 1}{2} < -3, \qquad \frac{3x + 8}{5} + 11 < 0$$

and hence, represent its solution on the real number line.

Or

How many litresof water will have to be added to 600 litres of the 45% solution of acid so that the resulting mixture will contain more than 20% but less than 30% acid content

Q28. Find the equation of hyperbola having the foci $(0, \pm\sqrt{10})$ and passing through the point (2,3).

Or

Find the equation of the ellipse whose centre is at the origin, length of major axis is $\frac{9}{2}$ and e = $\frac{1}{\sqrt{3}}$, where the major axis is the horizontal axis.

Q29 Find the Domain of f(x) = $\frac{1}{\sqrt{x+|x|}}$

Q30. Find the ratio of two positive numbers a and b such that AM: GM = 2:1

Q31. Find $\sin\frac{x}{2}$, $\cos\frac{x}{2}$ *and* $\tan\frac{x}{2}$ when tan x = $\frac{-4}{3}$, x is in quadrant II.

Or

Prove that: $\frac{\sec 8x-1}{\sec 4x-1} = \frac{\tan 8x}{\tan 2x}$

SECTION D

Q32 For the function f, given by f (x) =sin x, complete the following table:

x	-2π	$\frac{-3\pi}{2}$	$-\pi$	$\frac{-\pi}{2}$	0	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π
f(x)			0		0	1			

Hence, draw the graph using appropriate scale. Also find the maximum and minimum value of y.

Q33. Aman saw his younger brother playing with building blocks. He observed that he is playing in a pattern by making a tower of 32 blocks and then dividing into half a tower of 16 blocks and so on till he got a tower of 1 block.

a) What kind of pattern is brother making? Also, how many towers did the boymake? (2)

b) How many total blocks does the boy carry with him? (3)

Or

On a Sunday, Sunil and his friend went to see a circus show and observed that thearrangement of chairs in a row has a peculiar arrangement. The number of chairs in his row, which is the third row, are 125 and the number of chairs in the first row are 75. The number of chairs is increasing by a fixed number. There are 12 rows of chairs in all.

a) How many chairs are there in the 7th row, where his friend is seated? (2)

b) If all the chairs are occupied, how many people saw that show? Also, find the

arithmetic mean of the number of chairs in the row Sunil and his friend were seated? (3)

Q34. Find the derivative of $xsinx$ using first principle.

Or

If for $f(x) = ax^2 + bx + 12, f'(4) = 15\ and\ f'(2) = 11, then\ find\ a\ and\ b.$

Q35. The mean and variance of 7 observations are 8 and 16 respectively. If five of the observations are 2, 4, 10, 12 and 14, find the remaining two observations.

SECTION E

Q.36 A student has 4 library tickets and, in the library, there are 2 language books, 4 subject specific books and 3 fictional books of his interest. Of these 9 books, he chooses exactly 2 subject specific books and 2 other books.

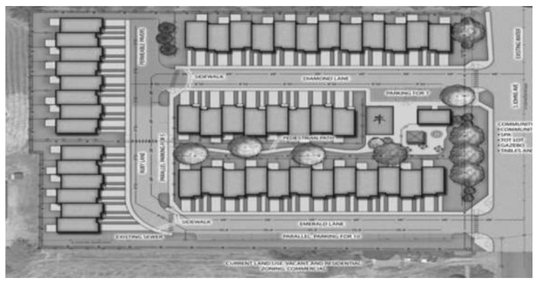
Based on the above information, answer the following questions:

(i) In how many ways can he borrow the four books?

(ii) Once selected, in how many ways, can he now arrange the borrowed books in his bookshelf so that the subject specific books are always kept together?

Q37 Ram and Rahim are cousins living in the same colony. The lanes of their houses

are represented by the lines $4x - 3y + 6 = 0$ and $4x - 3y - 9 = 0$, respectively.



Based on the above information, answer the following questions:

(i)Find the slope of the lane where Rahim lives?

(ii)Find the angle between the two lanes?

(iii) What is the distance of the point (0,2) in Ram's lane to Rahim's lane?

Q38.Two Students A and B appeared in an examination. The Probability that A will qualify the examination is 0.05 and that B will qualify the examination is 0.10. The probability that both will qualify the examination is 0.02.

Based on the above information, answer the following questions:

(i) What is the probability that both A and B will not qualify the examination?
(ii) What is the probability that at least one of them will not qualify the examination?
(iii) What is the probability that only one of them will qualify the examination?

CLASS-XI

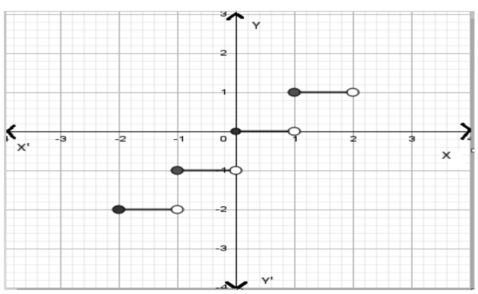
Marking Scheme

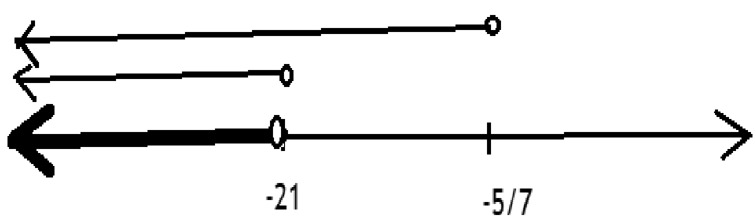
SUBJECT-MATHEMATICS

MAXIMUM MARKS: 80

NOTE: Any other relevant answer, not given herein but given by the candidate, be suitably awarded.

Q.No.	Answer/Solutions/Value points	Step Marks	Total Marks
1.	a)6	1	1
2.	b)0	1	1
3.	a)$\frac{x}{4}+\frac{y}{7}=1$	1	1
4.	b)$\frac{8}{3}$	1	1
5.	c)$\frac{1}{22}$	1	1
6.	(b)20 cm	1	1
7.	a) $x\in(2,\infty)$	1	1
8.	d)121	1	1
9.	c) (-2,3)	1	1
10.	d)$log5log2$	1	1
11.	b)$\frac{23}{10}$	1	1
12.	c) 40	1	1
13.	b)$x=-4$	1	1
14.	d)1	1	1
15.	b)1	1	1
16.	d)$\frac{30}{113}$	1	1
17.	a)(4,-7,-6)	1	1
18.	a)10 units	1	1
19.	b) Both A and R are true and R is not the correct explanation of A.	1	1
20.	a)Both A and R are true and R is the correct explanation of A.	1	1
21.	(i) $(A\cup B)$= {1,2,3,4,6,8} $(A\cup B)'$= {5,7,9} (ii) $(B-C)$={2,8} $(B-C)'$ = {1,3,4,5,6,7,9}	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	2
22.	We are given, $\frac{x+iy}{1+i}=\overline{5-i}$ $\Rightarrow \frac{(x+iy)(1-i)}{2}=5+i$ $\Rightarrow (x+y)+i(-x+y)=10+2i$ $\Rightarrow x+y=10\ and -x+y=2$ On solving, $x=4\ and\ y=6$	1 1	2
23.	$T_{r+1}=\ {}^{12}C_r(x)^{12-r}\left(-\frac{1}{3x^2}\right)^r$		

	$= {}^{12}C_r \left(-\frac{1}{3}\right)^r (x)^{12-r-2r}$ For term independent of x, we must have $12 - 3r = 0$ $r = 4$ $T_5 = {}^{12}C_4 \left(-\frac{1}{3}\right)^4 = \frac{55}{9}$ Hence 5th term is independent of x and is given by ${}^{12}C_4 \left(-\frac{1}{3}\right)^4 = \frac{55}{9}$.	1 1	2
24.	Factors of 6=1,2,3,6 Mean $\bar{x} = \frac{1+2+3+6}{4} = \frac{12}{4} = 3$ $\sum (x_i - \bar{x})^2 = (1-3)^2 + (2-3)^2 + (3-3)^2 + (6-3)^2 = 14$ Variance=$\frac{\sum (x_i - \bar{x})^2}{4} = \frac{14}{4} = 3.5$	$\frac{1}{2} \times 4$	2
24.(OR)	$\sqrt{\frac{\sum x_i^2}{n} - (\bar{x})^2} = \sigma$ $\frac{\sum x_i^2}{50} - (20)^2 = 2^2$ $\sum x_i^2 = (4 + 400) \times 50 = 20200$	1 1	2
25.	Definition: The greatest integer function is the function defined as $f(x) = [x]$for all $x \in R$, where $[x]$ denotes the greatest integer less than or equal to x.  $[-1.9] = -2$ $[1.2] = 1$ **OR** **Domain**=N Codomain=N Range=Set of all even natural Numbers Yes, given relation is a function as every element x in N has only one image $2x$ in N	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2} \times 4$	2 2

26.	$A \cup B = A \cap B (given)$ Let $a \in A$ be any element $\Longrightarrow a \in A \cup \boldsymbol{B}[\mathrm{A} \subseteq \mathrm{A} \cup \mathrm{B}]$ $\Longrightarrow a \in A \cap B\ (given)$ $\Longrightarrow a \in B$ $\Rightarrow A \subseteq B$-----(i) Let $a \in B$ be any element $\Longrightarrow a \in A \cup \boldsymbol{B}[\mathrm{B} \subseteq \mathrm{A} \cup \mathrm{B}]$ $\Longrightarrow a \in A \cap B\ (given)$ $\Longrightarrow a \in A$ $\Rightarrow B \subseteq A$------(ii) Form (i) and (ii) $A = B$	$1\frac{1}{2}$ 1 $\frac{1}{2}$	3
27.	$\frac{7x-1}{2} < -3$ ....(1) $\frac{3x+8}{5} + 11 < 0$ ....(2) On solving (1), we get : $7x - 1 < -6$ $\Rightarrow x < -\frac{5}{7}$ On solving (2), we get : $3x + 8 < -55$ $\Rightarrow x < -21$  **OR** Let x litres of water is required to be added. Total mixture = (x + 600) litres Therefore, $20\%\ of\ (x + 600) < 45\%\ of\ 600 < 30\%\ of\ (x + 600)$ $\Rightarrow \frac{20}{100}(x + 600) < \frac{45}{100}(600) < \frac{30}{100}(x + 600)$ $\Rightarrow 20x < 25(600) \quad and \quad 30x > 15(600)$ $\Rightarrow x < 750 \quad and \quad x > 300$ $\therefore \quad 300 < x < 750$	1 + 1 (for solving each equation) 1 Mark (for the correct graph on real number line) 1 1 1	3 3

28.	$\frac{y^2}{a^2}-\frac{x^2}{b^2}=1$, c = $\sqrt{10}$ b= $\sqrt{10-a^2}$ So, $\frac{y^2}{a^2}$ - $\frac{x^2}{10-a^2}$ = 1 Hyperbola passes through (2,3), $\frac{9}{a^2}$ - $\frac{4}{10-a^2}$ = 1 a^2 = 18,5 If a^2= 18, b = $\sqrt{-8}$, not possible and a^2= 5, b = $\sqrt{5}$ $\therefore$,equation of hyperbola is $\frac{y^2}{5}$ - $\frac{x^2}{5}$ = 1 Or 2a = $\frac{9}{2}$, e = $\frac{1}{\sqrt{3}}$ $\Rightarrow$ e = $\frac{c}{a}$ $\Rightarrow c = \frac{9}{4\sqrt{3}}$ c^2 = a^2 - b^2 $\Rightarrow$ b^2 = $\frac{27}{8}$ $\frac{x^2}{a^2}$+ $\frac{y^2}{b^2}$ = 1 $\therefore$, $\frac{16x^2}{81}$ + $\frac{8y^2}{27}$ = 1 $\Rightarrow$ $16x^2$ + $24y^2$ = 81.	$\frac{1}{2}$ $\frac{1}{2}$ 1 $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ 1	3 3
29.	$f(x)=\frac{1}{\sqrt{x+\lvert x\rvert}}$ $\lvert x\rvert=\begin{cases}x, x\geq 0\\ -x, x<0\end{cases}$ $x+\lvert x\rvert=\begin{cases}x+x, if\ x\geq 0\\ x-x, if\ x<0\end{cases}=\begin{cases}2x, if\ x\geq 0\\ 0, if\ x<0\end{cases}$ $f(x)=\frac{1}{\sqrt{x+\lvert x\rvert}}$ has real values if $x+\lvert x\rvert>0\Rightarrow x>0$ $\therefore Domain=(0,\infty)$	$\frac{1}{2}$ $1\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	3
30.	$\frac{a+b}{2\sqrt{ab}}$ = $\frac{2}{1}$ $\Rightarrow$ $\frac{a+b+2\sqrt{ab}}{a+b-2\sqrt{ab}}$ = $\frac{2+1}{2-1}$ (using C and d rule) $\Rightarrow$ $\frac{(\sqrt{a}+\sqrt{b})^2}{(\sqrt{a}-\sqrt{b})^2}$ = $\frac{3}{1}$ $\Rightarrow$ $\frac{\sqrt{a}+\sqrt{b}}{\sqrt{a}-\sqrt{b}}$ = $\frac{\sqrt{3}}{1}$ $\Rightarrow$ $\frac{\sqrt{aa}+\sqrt{bb}+\sqrt{aa}-\sqrt{b}}{\sqrt{a}+\sqrt{b}-\sqrt{a}+\sqrt{b}}$ = $\frac{\sqrt{3}+1}{\sqrt{3}-1}$ (using C and d rule) $\Rightarrow$ $\frac{a}{b}$ = $\frac{2+\sqrt{3}}{2-\sqrt{3}}$	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ 1	3

<table>
<tr><td>31.</td><td>$\tan x = \frac{-4}{3}, \therefore \cos x = -\frac{3}{5}$
$\frac{\pi}{2} < x < \pi, \quad \therefore \frac{\pi}{4} < \frac{x}{2} < \frac{\pi}{2}$
$\cos\frac{x}{2} = \sqrt{\frac{1+\cos x}{2}} = \sqrt{\frac{1+\left(\frac{-3}{5}\right)}{2}} = +\sqrt{\frac{1}{5}}\,(first\ quadrant)$
$\sin\frac{x}{2} = \sqrt{\frac{1-\cos x}{2}} = \sqrt{\frac{1+\frac{3}{5}}{2}} = \sqrt{\frac{4}{5}} = +\frac{2\sqrt{5}}{5}\,(first\ quadrant)$
$\tan\frac{x}{2} = \frac{\sin\frac{x}{2}}{\cos\frac{x}{2}} = \frac{\frac{2\sqrt{5}}{5}}{\frac{1}{\sqrt{5}}} = 2$</td><td>1
$\frac{1}{2}$
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$\frac{1}{2}$</td><td>3</td></tr>
<tr><td>31.OR</td><td>$LHS = \frac{\frac{1}{\cos 8x}-1}{\frac{1}{\cos 4x}-1} = \frac{1-\cos 8x}{\cos 8x} \times \frac{\cos 4x}{1-\cos 4x} = \frac{2\sin^2 4x}{2\sin^2 2x} \times \frac{\cos 4x}{\cos 8x}$
$\frac{(2\sin 4x\cos 4x)\sin 4x}{2\sin^2 2x\cos 8x} = \frac{\sin 8x(2\sin 2x\cos 2x)}{2\sin^2 2x\cos 8x}$
$\frac{\sin 8x\cos 2x}{\sin 2x\cos 8x} = \frac{\tan 8x}{\tan 2x} = RHS$</td><td>$1\frac{1}{2}$
1
$\frac{1}{2}$</td><td>3</td></tr>
<tr><td>32.</td><td><table>
<tr><td>x</td><td>-2π</td><td>$-\frac{3\pi}{2}$</td><td>$-\pi$</td><td>$-\frac{\pi}{2}$</td><td>0</td><td>$\frac{\pi}{2}$</td><td>π</td><td>$\frac{3\pi}{2}$</td><td>2π</td></tr>
<tr><td>$f(x)$</td><td>0</td><td>1</td><td>0</td><td>-1</td><td>0</td><td>1</td><td>0</td><td>-1</td><td>0</td></tr>
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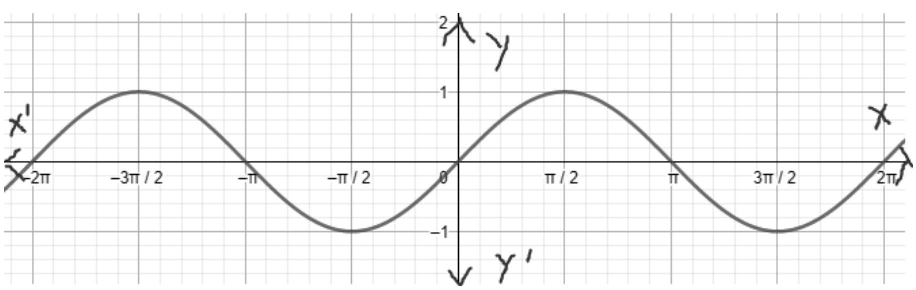
Maximum Value of $f(x) = 1$
Minimum Value of $f(x) = -1$

</td><td>3
1
1
1</td><td>5</td></tr>
<tr><td>33.</td><td>a)Towers of blocks: 32,16,8,4,2,1
It is a G.P.
Boy made 6 towers
b) a = 32, n = 6 , r = $\frac{1}{2}$
S_n = a$\left(\frac{1-r^n}{1-r}\right)$
$\Rightarrow S_n$ = 32$\left(\frac{1-(\frac{1}{2})^6}{1-\frac{1}{2}}\right)$
$\Rightarrow S_n$ = 32$\left(\frac{1-\frac{1}{64}}{\frac{1}{2}}\right)$
$\Rightarrow S_n$ = 63</td><td>$\frac{1}{2}$
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1</td><td>2
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	Or a)a= 75, a_3 = 125 d= 25 ⇒ a_7 = 75 + 6(25) = 225 $b)S_n$= $\frac{12}{2}$[2 x 75 + 11 x 25] = 6 x 425 = 2550 Also, A.M. of 125 and 225 is 175	$\frac{1}{2}$ $\frac{1}{2}$ 1 1 1 1	2 3
34.**(OR)**	$f'(x) = 2ax + b$ $f'(4) = 15 \;\therefore 2a(4) + b = 15, 8a + b = 15 \dots\dots\dots\dots\dots (i)$ $f'(2) = 11 \;\therefore 2a(2) + b = 11, 4a + b = 11 \dots\dots\dots\dots\dots (ii)$ Subtracting $(ii) from\ (i)$ $8a + b = 15$ $\underset{-}{4a} \underset{-}{+} b \underset{-}{=} 11$ $4a = 4$ $a = 1$ Putting value of a in equation (ii) $4(1) + b = 11$ $b = 11 - 4$ $b = 7$	1 1 1 1 1	5
34.	$f(x) = xsinx$ $f(x+h) = (x+h)\sin(x+h)$ $f'(x) = \lim_{h\to 0} \frac{f(x+h) - f(x)}{h}$ $= \lim_{h\to 0} \frac{(x+h)\sin(x+h) - xsinx}{h}$ $= \lim_{h\to 0} \frac{x[\sin(x+h) - sinx]}{h} + \lim_{h\to 0} \frac{hsin(x+h)}{h}$ $= \lim_{h\to 0} \frac{x[2cos\frac{(x+h+x)}{2} sin\frac{(x+h-x)}{2}]}{h} + \lim_{h\to 0} \frac{hsin(x+h)}{h}$ $= \lim_{h/2\to 0} \frac{x[2\cos\left(x + \frac{h}{2}\right) sin\frac{h}{2}]}{2 \times \frac{h}{2}} + \lim_{h\to 0} \sin(x+h)$ $= xcosx + sinx$	1 1 1 1 1	5
35.	Let other two observations be $x\ and\ y$ $\frac{2 + 4 + 10 + 12 + 14 + x + y}{7} = 8$ $42 + x + y = 56$ $x + y = 14 ------(i)$ Variance $\frac{\sum x_i^2}{n} - (\bar{x})^2 = \sigma^2$ $\frac{2^2 + 4^2 + 10^2 + 12^2 + 14^2 + x^2 + y^2}{7} - 8^2 = 4^2$ $x^2 + y^2 = 100 -----(ii)$	1 1	

	From $(i) and\ (ii)$ $x^2 + (14 - x)^2 = 100$ $x^2 - 14x + 48 = 0$ $(x - 8)(x - 6) = 0$ $x = 6,8$ When $x = 6, y = 8$ When $x = 8, y = 6$ ∴other two numbers are 6 and 8	1 1 1	 5
36.	(i) $^4C_2 \times {}^5C_2$ = 60 (ii) $2! \times 3!$ = 12	1 1 1 1	 4
37.	(i) slope = $\frac{4}{3}$ (ii)As the lines are parallel, therefore angle is zero. (iii)d=$\left\lvert\frac{0-2.3-9}{\sqrt{4^2+(-3)^2}}\right\rvert$ = $\left\lvert\frac{-15}{\sqrt{25}}\right\rvert$= 15/5 = 3units	1 1 1 1	 4
38.	Let E and F denote event that A and B will respectively qualify the examination $\therefore P(E) = 0.05, P(F) = 0.10, P(E \cap F) = 0.02, P(E \cup F) = 0.13$ (i) $P(Both\ A\ and\ B\ will\ not\ Qualify) = P(E' \cap F')$ $= P(E \cup F)' = 1 - P(E \cup F) = 1 - 0.13 = 0.87$ (ii)$P(Atleast\ one\ will\ not\ qualify) = 1 - P(both\ will\ qualify)$ $= 1 - 0.02 = 0.98$ (iii)$P(only\ one\ will\ qualify) = P(E \cap F') + P(E' \cap F)$ $P(E) - P(E \cap f) + P(F) - P(E \cap F)$ $0.05 - 0.02 + 0.10 - 0.02 = 0.11$	 1 1 1 1	 4