

Chapter Weightage: 12 Marks (Approximate)

505

[Sep 2021]

<u>Q.1) A. MCQ [each 1 mark]</u>

- 1) For simultaneous equations in variables x and y, if $D_x = 49, D_y = -63, D = 7$, then what is the value of y? (A) 9 (B) 7 (C)-7 (D) -9 [March 2022]
- 2) Find the value of $|^{2} |^{3}$ (A) -22 (B) 2 (C) 22 (D) -2

3) For simultaneous equations in variables x and y, if [March 2020] $D_x = 49, D_y = -63, D = 7$, then what is the value of x? (A) 7 (B) -7 (C) $\frac{1}{2}$ (D) $\frac{-1}{2}$

4) Find the value of $\begin{bmatrix} 5 & 3 \\ -1 & (B) & -41 \end{bmatrix}$ [July 2019/ Aug 2022]

5) To draw graph of 4x + 5y = 19, what will be the value of y when [Nov 2020/ x = 1: (A) 4 (B) 3 (C) 2 (D) -3 Find the value of $\begin{vmatrix} 3 & 2 \\ 2 & \end{vmatrix}$ [July 2023] (A) 2 (B) 7 (C) -7 (D) 23

2 Page		
<u>Q.1) B.</u>	Solve the following [each 1 mark]	
1)	If $x + y = 5$ and $x - y = 1$, then find the value of x.	[July 2019]
2)	For simultaneous equations in variable x and y, if $Dx = 25$, $Dy = 40$, $D = 5$, then what is the value of x?	[Nov 2020]
3)	If $x + 2y = 5$ and $2x + y = 4$, then find the value of $x + y$.	[Sept 2021]
4)	If $3x + 5y = 9$ and $5x + 3y = 7$, then find the value of $x + y$	[March 2019]
5)	If $15x + 17y = 21$ and $17x + 15y = 11$, then find the value of $x + y$.	[March 2020/ July 2023]
6)	The sum of father's age and twice the age of his son is 70. Use the given information to form linear equation in two variables.	[August 2022]
7)	To draw a graph of $4x + 5y = 19$. Find y when $x = 1$	[March 2022]
8) <u>Q.2) A.</u>	Find the value of the following determinant: $\begin{vmatrix} 4 & 3 \\ 2 & 7 \end{vmatrix}$ <u>Activity [each 2 marks]</u>	[March 2023]
1)	To draw the graph of $4x + 5y = 19$, complete the following activity	[Sept 2021]
	to find y, when $x = 1$. Activity : 4x + 5y = 19	
	$\therefore \qquad 4 \times \boxed{} + 5y = 19$	
	5y = 19 -	
~	$\therefore \qquad \qquad y = \frac{5}{5}$	
	\therefore $y = $	

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5) Complete the activity to find the value of the determinant. [March 2022] **Activity** : $\begin{vmatrix} 2\sqrt{3} & 9 \\ 2 & 3\sqrt{3} \end{vmatrix} = 2\sqrt{3} \times \boxed{} - 9 \times \boxed{}$ 7 – 18 = = [6) Complete the following activity; find the value of x: [March 2023] 5x + 3y = 9 (I) 2x - 3y = 12 (II) Add equations (I) and (II) 5x + 3y = 9+ 2x - 3y = 127x =x Complete the following table to draw the graph of the equation [July 2023] x + y = 3: 3 x 3 5 y

(0, 3)

(x, y)

(3, 0)

5 Page		
<u>Q.2) B.</u>	Solve [each 2 marks]	
1)	Solve the following simultaneous equations: 4x + 3y = 11; $3x + 4y = 10$	[July 2019]
2)	Sum of two numbers is 7 and their difference is 5. Find the numbers.	[Nov 2020]
3)	Solve the following simultaneous equations: 5x + 4y = 17; $4x + 5y = 10$	[Sept 2021]
4)	Find the value of the determinant: $\begin{array}{c} 7 & 5 \\ \hline 3 & 3 \\ \end{array}$	[March 2020]
5)	For the simultaneous equations in variables x and y, if $D_X = 49$, $D_y = -63$ and $D = 7$, find the value of x and y.	[Sept 2021]
6)	If $ 4 5 = 22$, then find the value of <i>m</i> .	[March 2019]
7)	Two numbers differ by 3. The sum of the greater number and twice the smaller number is 15. Find the smaller number.	[March 2019]
8)	For solving the following simultaneous equations, find the values of $(x + y)$ and $(x - y)$: 15x + 17y = 21, $17x + 15y = 11$	[August 2022]
9)	To solve the following simultaneous equations by Cramer's rule, Find the values of D_x and D_y 3x + 5y = 26 x + 5y = 22	[March 2022]
10)	$\Box ABCD$ is a parallelogram. The ratio of measures of $\angle A$ and $\angle B$ is 5: 4. Find the measure of $\angle B$.	[July 2019]

6 Page		
11)	Find the values of $(x + y)$ and $(x - y)$ of the following simultaneous equations: 49x - 57y = 172	[March 2022]
	57x - 49y = 252	C
12)	Find D_x and D_y for the following simultaneous equations: x + 2y = -1, $2x - 3y = 12$	[Aug 2022]
13)	Solve the following simultaneous equations: x + y = 4; 2x - y = 2	[March 2023]
14)	Solve the following simultaneous equations: x + y = 6; x - y = 4	[July 2023]
<u>Q.3) B.</u>	Solve [each 3 marks]	
1)	Solve the following simultaneous equations graphically: x + y = 2; $x - y = 4$.	[July 2019]
2)	Solve the following simultaneous equations graphically: x + y = 5; $x - y = 1$.	[Nov 2020]
3)	The denominator of a fraction is 4 more than twice its numerator. Denominator becomes 12 times the numerator, if both the numerator and the denominator are reduced by 6, find the fraction.	[March 2020]
4)	Solve the following simultaneous equations, using Cramer's rule: 4m + 6n = 54; $3m + 2n = 28$	[Sept 2021/ March 2023]
5)	Solve the following simultaneous equations by using graphically: x + y = 7, x - y = -1	[Sept 2021]
6)	Solve the following simultaneous equations by using graphically: x + y = 0, $2x - y = 9$	[March 2019]

7 P a g e		
7)	Solve the given equations:	[August 2022]
	$\frac{5}{1}$ $\frac{1}{4}$	
	2 3 3	
8)	Solve the following simultaneous equations by using graphically: $x + 3y = 7$, $2x + y = -1$	[March 2022]
9)	A two-digit number and the number with digits interchanged add up to 143. In the given number the digit in unit's place is 3 more than the digit in the ten's place. Find the original number.	[Aug 2022]
	Sum of the present ages of Manish and Savita is 31 years.	
10)	Manish's age 3 years ago was 4 times the age of Savita at that time. Find their present ages.	[March 2022]
11)	Two numbers differ by 3. The sum of the twice the smaller number and thrice the greater numbers is 19. Find the numbers.	[July 2023]
<u>Q.4)</u>	Solve [each 4 marks]	
1)	Out of 555 km, Vishal travelled certain distance by bus and remaining distance by car. Bus travels with an average speed of 60 km/hr and the average speed of car is 75 km/hr. He takes total 8 hours to complete the journey. Find the distance that Vishal travelled by bus.	[July 2019]
2)	When one is added to the numerator as well as denominator of a certain fraction, it becomes $\frac{1}{2}$ and if one is subtracted from the	[Sept 2021]
	numerator and denominator both, the fraction becomes $\frac{1}{2}$	
	Find the original fraction.	
3)	The perimeter of an isosceles triangle is 24 cm. The length of its congruent sides is 13 cm less than twice the length of its base. Find the lengths of all sides of the triangle.	[March 2022]
4)	Solve the following simultaneous equations by graphically: x + y = 4, $3x - 2y = 7$	[August 2022]







4)

Complete the following activity to find the value of discriminant of the equation $x^2 + 10x - 7 = 0$.

[July 2023]

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Solution :

Comparing $x^2 + 10x - 7 = 0$ with $ax^2 + bx + c = 0$

a = 1, b = 10, c =

$$b^2 - 4ac = \boxed{-4 \times 1 \times (-7)}$$

= 100 +

=

.

1)	Find the value of k, if $x = 3$ is a root of the equation $kx^2 - 10x + 3 = 0$	[July 2019]
2)	Solve the following quadratic equation: $x^2 + 8x + 15 = 0$	[March 2019]
3)	Obtain a quadratic equation whose roots are –3 and –7.	[March 2019]
4)	Solve the quadratic equation by factorisation method $x^2 - 15x + 54 = 0$	[March 2020]
5)	Solve the quadratic equation by factorisation method: $x^2 + x - 20 = 0$	[Nov 2020] [March 2022]
6)	Determine nature of the roots of the quadratic equation $2x^2 - 5x + 7 = 0$ by using discriminant.	[Sept 2021]
7)	Find the value of the discriminant of the quadratic equations: $2y^2 - y + 2 = 0$	[Aug 2022]
8)	Write the following equation in the form $ax4 + bx + c = 0$, then write the values of a, b, c: $2y = 10 - y^2$	[March 2023]
9)	Solve the quadratic equation by factorisation method: $x^2 + 15x + 54 = 0$	[July 2023]

Q.3) A. <u>Activity [each 3 marks]</u>

1) One of the roots of equation $kx^2 - 10x + 3 = 0$ is 3. Complete [March 2022] the following activity to find the value of k. Activity : One of the roots of equation $kx^2 - 10x + 3 = 0$ is 3. Putting x = in the above equation $\therefore \quad k(\square)^2 - 10 \times \square + 3 = 0$ -30 + 3 = 0*.*:. ... 9k = ... k = 🗌 If x = 5 is a root of quadratic equation $kx^2 - 14x - 5 = 0$, then 2) 2021] find the value of k by completing the following activity. Activity : One of the roots of quadratic equation $kx^2 - 14x - 5 = 0$ is 5. \therefore Substituting x = [in the above equation. $^{2} - 14 \times 5 - 5 = 0$ k - 70 - 5 = 025k = k =*:*. k = ...



14 P a g	е	
1)	Solve quadratic equation using formula method: $5m^2 + 13m + 8 = 0$	[Nov 2020]
2)	Solve quadratic equation using formula method: $x^2 + 10x + 2 = 0$	[March 2022/ March 2023]
3)	Solve the given equation by factorisation: $5m^2 = 22m + 15$	[Aug 2022]
4)	Solve quadratic equation using formula method: $5x^2 + 13x + 8 = 0$	[July 2023]
<mark>Q.4)</mark>	Solve [each 4 marks]	
1)	Two taps together can fill a tank completely in 3 $\frac{1}{-}$ minutes. The smaller tap takes 3 minutes more than the bigger tap to fill the tank. How much time does each tap take to fill the tank completely?	[March 2019]
2)	The sum of the areas of two squares is 400 <i>sq.m.</i> If the difference between their perimeters is 16 <i>m</i> , find the sides of two squares.	[March 2020]
3)	Out of the total students of class 10^{th} , $\frac{7}{2}$ times the square root of total number of students are playing on the ground and remaining 2 students are studying in the classroom. Find the total number of students in class 10^{th} .	[Sept 2021]
4)	A train travels 240 km with uniform speed. If the speed of the train is increased by 12 km/hr, it takes one hour less to cover the same distance. Find the initial speed of the train.	[Aug 2022]
5)	If 460 is divided by a natural number, then quotient is 2 more than nine times the divisor and remainder is 5. Find the quotient and divisor.	[March 2022]
6)	If one root of the quadratic equation $ax^2 + bx + c = 0$ is half of the other root, show that, $b^2 = \frac{9ac}{2}$	[Nov 2020]
7)	The sum of two roots of a quadratic equation is 5 and sum of their cubes is 35, find the equation.	[July 2023]
8)	The sum of the squares of five consecutive natural numbers is 1455. Find the numbers.	[March 2023]

15 P a g	e	
<mark>Q.5)</mark>	Solve [3 marks each]	
1)	For a quadratic equation in variable 'm', the coefficients a, b, and c are such that a = 2, b = 4a, c = 3a. Form the quadratic equation and solve it by factorisation method	[Sept 2021]
2)	A dealer sells a toy for Rs 24 and gains as much percent as the cost price of the toy. Find the cost price of the toy.	[March 2020]
3)	Construct a word problem on quadratic equation, such that one of its answers is 20 (years, rupees, centimetre etc.). Also solve it.	[July 2019]
4)	Product of two numbers is 352 and their mean is 19. Find the numbers.	[Aug 2022]
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2)	First term and common difference of an A.P. are 6 and 3	[0
3)	respectively. Complete the following activity to find S ₂₇ .	[Sept 2021]
	Tespectively. Complete the following denses	
	Activity :	
	$a = 6, d = 3, S_{27} = ?$	
	$S_n = \frac{n}{2} \left[\boxed{ + (n-1) \times d} \right]$	5
	:. $S_{27} = \frac{27}{2} \Big[12 + (27 - 1) \times \Big] \Big]$	
	$\therefore S_{27} = \frac{27}{2} \times $	
	$\therefore S_{27} = 27 \times 45$	
	∴ S ₂₇ =	
4)	Complete the following activity to find the 19th term of an A.P.,	[March 2022]
-)	7, 13, 19, 25,	
	Activity :	
	Given A.P. : 7, 13, 19, 25,	
	Here first term $a = 7$; $t_{19} = ?$	
	$t_n = a + () d \dots (formula)$	
	\therefore $t_{19} = 7 + (19 - 1)$	
	:. $t_{19} = 7 + $	
	$\therefore t_{19} = $	

[Aug 2022] 5) Complete the following activity to find the 27th term of the following A.P : 0550 9, 4, -1, -6, -11, **Activity** : a = 9, d =, n = 27Here $t_n = [---] + (n - 1)d$ (formula) $t_{27} = 9 + (-5)$... $t_{27} = 0$ <mark>Q.2) B.</mark> Solve [each 2 marks] [March 2019] First term and common difference of an A.P. are 12 and 4 respectively. 1) If $t_n = 96$, find n. Find the 19th term of the A.P. 7, 13, 19, 25, ... [March 2019] 2) / [Nov 2020] [March 2020] Decide whether the following sequence is an A.P. if so, find the 20th term of 3) the progression: -12, -5, 2, 9, 16, 23, 30, ... [Sept 2021] Find the 24th term of an A.P: 12, 16, 20, 24, ... 4) [July 2019] Find the 23th term of an A.P: 9, 4, -1, -6, -11, ... 5) [March 2022] Find the sum of first 'n' even natural numbers. 6) [Aug 2022] Find the sum of the first 21 even natural numbers. 7) 8) The first term a = 8 and common difference d = 5 are given. [July 2023] Write an A.P. [March 2023] Write an A.P. whose first term is a = 10 and common difference 9) d= 5.

<mark>Q.3) A.</mark> Activity [each 3 marks]

J, then [N In an A.P. the first term is -5 and last term is 45. If sum of 'n' terms in the A.P. is 120, then [Nov 2020] 1) complete the activity to find n.

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Activity:



Q.3) B. Solve [each 3 marks]

1)	Amit saves certain amount every month in a specific way. In the first month he saves Rs. 200, in the second month Rs. 250, in the third month Rs. 300 and so on. How much will be his total savings in 17 months?	[March 2019]
2)	Sachin invested some amounts in National Saving Certificates in a specific way. In the first year he invested Rs. 4,000 in the second year Rs. 6,000 in the third year Rs. 8,000 and so on for 12 years. Find the total amount he invested in 12 years.	[July 2019]
3)	In an A.P. sum of three consecutive terms is 27 and their products is 504. Find the terms. (Assume that three consecutive terms in an A.P. are a – d, a, a + d.)	[March 2020] / [Sept 2021]
4)	There is an auditorium with 27 rows of seats. There are 20 seats in the first row, 22 seats in the second row, 24 seats in the third row and so on. Find how many total seats are there in the auditorium?	[March 2022]
5)	If the first term of an A.P. is <i>p</i> , second term is <i>q</i> and last term is <i>r</i> , then show that sum of all terms is $(q + r - 2p) \times \frac{(p+r)}{2(q-p)}$	[March 2023]
6)	If p times the p^{th} term of an A.P. is equal to q times the q^{th} term, then show that $(p + q)^{th}$ term of that A.P. is zero $(p \neq q)$.	[July 2023]

Q.4) Solve [each 4 marks]

1)	One person borrows Rs. 4,000 and agrees to repay with a total interest of Rs. 500 in 10 instalments. Each instalment being less than the preceding instalment by Rs. 10. What should be the first and the last instalments?	[March 2020]
2)	In an A.P. 16, 14, 12, the sum of how many terms is 60? Write these terms with all possibilities.	[Sept 2021]
3)	If the 9 th term of an A.P. is zero, then prove that the 29 th term is double the 19 th term.	[March 2022]
4)	If the sum of the first p terms of an A.P. is equal to the sum of first q terms, then show that the sum of its first $(p + q)$ terms is zero $p \neq q$)	[Aug 2022]
<mark>Q.5)</mark>	Solve [each 3 marks]	
1)	Write any one Arithmetic progression with common difference 5. Find its nth term and sum of first 'n' terms.	[Sept 2021]
2)	Measures of angles of a triangle are in A.P. The measure of smallest angle is five times of common difference. Find the measures of all angles of a triangle. (Assume the measures of angles $a, a + d, a + 2d$.)	[March 2022]
3)	Measures of angles of a quadrilateral are in A.P. The measure of largest angle is twice the smallest. Find the measures of all angles of the quadrilateral. (Assume measures of angles as $a, a + d, a + 2d, a + 3d$, where $a < a + d < a + 3d$).	[Aug 2022]
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MOST IMPORTANT QUESTIONS	
CHAPTER 4 FINANCIAL PLANNING	
REVIOUS YEARS QUESTIONS (2019, 2020, 2021, 2022	, 2023)
Chapter Weightage: 8 Marks [Approximate]	50
MCQs [each 1 mark]	2
he tax levied by Central Government for trading within a state is: A)IGST (B) CGST (C) SGST (D) UTGST	[March 2019]
a the format of GSTIN there arealpha-numerals. A)15 (B) 10 (C) 16 (D) 9	[March 2020] [Nov 2020]
Solve [each 1 mark]	
'Pawan Medicals' supplies medicines. On some medicines the rate of GST is 12%, then what is the rate of CGST and SGST?	[March 2020]
On the certain article if rate of CGST is 9%, then what is the rate of SGST and what is the rate of GST?	[July 2023]
On the certain article if rate of CGST is 9%, then what is the rate of SGST?	[March 2023]
	MOST IMPORTANT QUESTIONS CHAPTER 4 FINANCIAL PLANNING REVIOUS YEARS QUESTIONS (2019, 2020, 2021, 2022) Chapter Weightage: 8 Marks [Approximate] MC0s leach 1 mark! the tax levied by Central Government for trading within a state is: (B) CGST (C) SGST (D) UTGST (B) 10 (C) 16 (D) 9 Solve [each 1 mark] Pawan Medicals' supplies medicines on some medicines the rate of SGST is 12%, then what is the rate of GST1's 9%, then what is the rate of SGST and what is the rate of GST's 9%, then what is the rate of SGST and what is the rate of GST's 9%, then what is the rate of SGST? On the certain article if rate of CGST is 9%, then what is the rate of SGST?

Activity [each 2 marks] <u>Q.2) A.</u>

[March 2019] 1) Smita has invested ₹ 12,000 to purchase shares of FV ₹ 10 at a premium of \gtrless 2. Find the number of shares she purchased. Complete the given activity to get the answer. 25

Activity : FV = ₹ 10, Premium = ₹ 2

 \therefore MV = FV + +2 = 12

Total investment \therefore No. of shares = MV

$$=$$
 $\frac{12}{12}$ $=$ $\frac{12}{12}$ shares

Complete the following table using given information : [March 2023] 2)

Sr. No.	FV	Share is at	MV
1.	₹ 100	Par	
2.		Premium ₹ 500	₹ 575
3.	₹ 10		₹5
4.	₹ 200	Discount ₹ 50	

3)

Complete the following table using given information : [July 2023]

3

Sr. No.	FV	Share is at	MV
1.	₹ 10	Premium of ₹ 7	
2.	₹ 25		₹ 16
3.	₹ 300		₹ 315
4.		at par	₹ 5

Q.2) B. Solve [each 2 marks]

- 1) Market value of a share is Rs. 200. If the brokerage rate is 0.3%, then find the [July 2019] purchase value of the share.
- 2) Courier service agent charged total Rs.590 to courier a parcel from Nashik [March 2023] to Nagpur. In the tax invoice taxable value is Rs.500 on which CGST is Rs.45 and SGST is Rs.45. Find the rate of GST charged for this service.
- 3) Mr. Rohit is a retailer. He paid GST of Rs. 6,500 at the time of purchase. [July 2023] He collected GST of Rs. 8,000 at the time of sale.
 - a) Find his input tax and output tax
 - b) What is his input tax credit?
 - c) Find his GST payable.
 - d) Hence find the payable CGST and payable SGST.

Q.3) A. Activity [each 3 marks]

 Shri Shantilal has purchased 150 shares of FV ₹ 100, for MV of ₹ 120, Company has paid dividend at 7%, then to find the rate of return on his investment, complete the following activity:

Solution: FV = ₹ 100; Number of shares = 150 Market value = ₹ 120

1. Sum investment = $MV \times No.$ of Shares

= ____×

- ∴ Sum investment = ₹ 18,000
- 2. Dividend per share = $FV \times Rate$ of dividend

= ____× <u>100</u> = ₹ 7

 \therefore Total dividend received = 150×7

3. Rate of return =
$$\frac{DMdend Income}{Sum invested} \times 100$$

= $\frac{1050}{18000} \times 100$
= $\boxed{$

2)

[July 2023]

Smita has invested ₹ 12,000 and purchased shares of FV ₹ 10 at a premium of ₹ 2. Find the number of shares she purchased. Complete the given activity to get the answer.

Solution :



[March 2020]

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3)		Fil	ll in t	the boxe	s with the	help of	given info	rmation	:	[March 2023]
	Tax invoice of services provided (Sample)									
	Food Junction, Khed-Shivapur, Pune Invoice No. 58									
		Mob.	No. 7	5885800	00, email–a	har.kheo	l@yahoo.co	m		
	GSTI	N : 27AAAAA	5555B	BIZA	4	In	voice Date	e 25 Feb	o., 2020	
	SAC	Food Items	Qty	Rate (in ₹)	Taxable amount	CO	F ST	so	ST	50
	9963	Coffee	1	20	20.00	2.5%	₹ 0.50	2.5%		5
	9963	Masala Tea	1	10	10.00		₹ 0.25	2.5%		0
	9963	Masala Dosa	2	60		2.5%		2.5%	₹ 3.00	
				Total	150.00				₹ 3.75	
						G	rand Total	1 = ₹	157.50	
<u>Q.3) I</u> 1) 2)	 <u>Solvant</u> A readyrand charand charand charand charand A retaile A retaile If the ratain the tax 	ve [each 3 ma nade garmer ges 5% GST ess for the cu r sold 2 tins e of GST is 2 x invoice.	arks] nt she on th ustor of lus 8%, t	l opkeep ne rema ner? stre pai then fin	er gives 5 aining amo nt and tax d the amo	% disco ount. W cable va	ount on a hat is the lue of eac CGST and	dress o e purch ch tin is l SGST o	of Rs. 2,00 ase price s Rs. 2,800 charged	00 [July 2019] 0. [Nov 2020]
3)	Smt. Mal She sold	hotra purcha them for Rs.	ased 90,0	solar p)00. The	anels for t e rate of G	he taxa ST is 59	ble value %. Find tl	e of Rs. he ITC o	85,000. of	[March 2019]
<u>0.4)</u>	Smt. Malhotra. What is the amount of GST payable by her <u>Q.4</u>) <u>Solve [each 4 marks]</u>									
1)	 Bhujangrao invested Rs. 2,50,590 in shares of F.V. Rs. 10 when M.V. is Rs. 250. [Nov 2020] Rate of brokerage is 0.2% and GST is 18%, then find: a. the number of shares purchased, b. the amount of brokerage paid, and c. GST paid for the trading. 									
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27 P a	g e							
Γ		MOST IMPO	ORTANT QUE	STIONS				
	CHAPTER 5 PROBABILITY							
	PREVIOUS	S YEAR QUES	TIONS (2019, 202	20, 2021, 2022, 202	23)			
	C	hapter Weight	age: 8 Marks [Ap	proximate]				
<mark>Q.1) A</mark>	A. MCQs [each 1]	mark]			69			
1)	If a die is rolled is less than 2?	l, what is the pro	bability that numbe	r appearing on upper	face [March 2019]			
	$\frac{1}{3}$	2		6				
2)	If $n(A) = 2$, $p(A) = 2$	$A) = \frac{1}{2} \text{ then } n(S)$	=?		[July 2019]/			
	(A) 10	(B) 2	(C) 5	(D) 20				
3)	Which number (A ²	cannot represer (B) 1.5	nt probability? (C) 15%	(D) 0.7	[Sept 2021] [March 2022]			
4)	There are 40 c card is drawn	ards in a bag. Eac at random. What	ch card bears a numl is the probability th	ber from 1 to 40. One hat the card bears a	[Aug 2022]			
	number which $(A)^{\frac{1}{-}}$	(B) $\frac{3}{-}$	(C) $\frac{4}{-}$	(D) $\frac{1}{-}$				
5)	If $n(A) = 2$, $p(A)^{\frac{2}{2}}$	$A) = \frac{1}{2} \text{ then } n(S)$ $(B) = \frac{5}{2}$	=? (C) 10	(D) ¹	[March 2020/ March 2023]			
6)	If two coins are	e tossed simultan	eously, write the nu	umber of sample poin	ts July 2023]			
	n(S). (A) 2(B) 4	(C) 6	() 8					

28 Pag	e	
<u>Q.1) B.</u>	Solve [each 1 mark]	
1)	A die is rolled then write sample space 'S' and number of sample point n(S).	[Nov 2020]
2)	If two coins are tossed simultaneously, write the sample space.	[Sept 2021] [March 2022]
3)	A die is thrown. Write sample space.	[Aug 2022]
4)	If $n(S) = 2$ and $n(A) = 1$, then find $P(A)$	[July 2023]
5)	If one coin is tossed, write the sample space 'S'.	[March 2023]
<mark>Q.2) A.</mark>	Activity [each 2 marks]	
1)	Two coins are tossed simultaneously. Complete the following activity of writing the sample space (S) and expected outcomes of the events: a) Event A: to get at least one head. b) Event B: to get no head. Activity: If two coins are tossed simultaneously \therefore S = {	[March 2019]
2)	There are 9 tickets in a box, each bearing one of the numbers from 1 to 9. One ticket is drawn at random from the box. Event A: Ticket shows an even number. Complete the following activity from the given information: $Activity: S = \{ \boxed{ \ } \ \\ n(S) = \ \\ A = \{ \boxed{ \ } \ \\ n(A) = \ \\ \hline \ \\ n(A) = \ \ n(A) = \ n(A) = \ \ n(A) = $	[July 2019]
•		

3)

[March 2020]

A card is drawn from a well shuffled pack of 52 playing cards. Find the probability of the event, the card drawn is a red card.

Solution:

Suppose 'S' is sample space.

$$\therefore \quad n(S) = 52$$

Event A: Card drawn is a red card.

- \therefore Total red cards = hearts + 13 diamonds
- $\therefore \quad n(\mathbf{A}) =$

$$\therefore \quad p(\mathbf{A}) = \frac{|\mathbf{A}|}{n(\mathbf{S})} - \text{formula}$$

$$p(A) = \frac{1}{52}$$

$$\therefore \quad p(\mathbf{A}) =$$

4)

One die is rolled. Complete the following activity, to find the probability that the number on the upper face is prime :

Activity :

'S' is the sample space

 $\mathbf{S} = \{$

 \therefore n(S) = 6

Event A : Getting prime number on the upper face.

$$\therefore A = \left\{ \boxed{} \right\}$$

$$\therefore n(A) = 3$$

$$\therefore P(A) = \boxed{} \dots \text{ (formula)}$$

$$\therefore P(A) = \boxed{}$$

[Aug 2022]

30 Pag	e	
<mark>Q.2) B.</mark>	Solve the following [each 2 marks]	
1)	A two-digit number is formed with digits 2, 3, 5, 7, 9 without repetition. What is the probability that the number formed is an odd number?	[March 2020]
2)	For the following experiments, write sample space 'S' and number of sample points n(S): Two-digit numbers are formed using digits 2, 3 and 5 without repeating a digit.	[Nov 2020]
3)	A box contains 5 strawberry chocolates, 6 coffee chocolates and 2 peppermint chocolates. Find the probability that the chocolate picked at random from the box is a coffee chocolate.	[Sept 2021]
4)	A box contains 5 red, 8 blue and 3 green pens. Rutuja wants to pick a pen at random. What is the probability that the pen is blue?	[March 2022]
5)	Two coins are tossed simultaneously. Find the probability of the event getting 'no head'.	[Aug 2022]
0.3) A. 1)	Activity [each 3 marks] A card is drawn from a well shuffled pack of 52 playing cards. Complete the activity to find the probability of the event that the card drawn is a red card. Activity: 'S' is the sample space. n(S) = 52 Event A: Card drawn is a red card. Total number of red cards = hearts + diamonds \therefore $n(A) = \ p(A) = \\therefore p(A) = \ \therefore p(A) = \$	[Nov 2020]

		[Sept 2021]
2)	A two digit number is to be formed from the digits 2, 3, 5 without	
	repetition of the digits. Complete the following activity to find	
	the probability that the number so formed is an odd number.	
		G
	Activity :	0,5
	Let 'S' be the sample space	
	S = 123 25 32 52 53	
	\therefore S = (25, 25, 52,, 52, 55)	
	\therefore $n(S) = $	
	Now condition for event 'A' is that number so formed is an odd	
	number.	
	\therefore A = {23, 25, 33}, \therefore n(A) = 4	
	$\therefore P(A) = \underbrace{\qquad}_{n(S)} \dots \dots \dots \dots (formula)$	
	$\therefore P(A) = \frac{1}{6}$	
	$\therefore P(A) = \square$	



 From three men and two women environment committee of two persons is to be formed. To find the probabilities of the given events, complete the following activities :

Event A : There must be at least one woman member. **Event B :** Committee of one man and one woman to be formed. **Activity :**

Let M_1 , M_2 , M_3 are three men and W_1 , W_2 are two women. Out of these men and women environment committee of the 2 persons is to be formed.

 $S = \{M_1M_2, M_1M_3, M_2M_3, M_1W_1, M_1W_2, M_2W_1, M_2W_2, M_3W_1, M_3W_2, [] \}$ $\therefore \qquad n(S) = 10$

Event A : There must be at least one woman member.

$$\therefore A = \{M_1W_1, M_1W_2, [...], M_2W_2, M_3W_1, M_3W_2, W_1W_2\}.$$

$$\therefore n(A) = [...]$$

..

.*****.

Event B : Committee of one man and one woman to be formed.

$$\therefore \quad \mathbf{B} = \{\mathbf{M}_1 \mathbf{W}_1, \ \mathbf{M}_1 \mathbf{W}_2, \ \mathbf{M}_2 \mathbf{W}_1, \ [\ \], \ \mathbf{M}_3 \mathbf{W}_1, \ \mathbf{M}_3 \mathbf{W}_2\}$$

$$\therefore \qquad n(\mathbf{B}) = \mathbf{6}$$

$$\therefore \qquad \mathbf{P}(\mathbf{B}) = \frac{n(\mathbf{B})}{n(\mathbf{S})} \dots (\text{formula})$$

$$\therefore \qquad \mathbf{P}(\mathbf{B}) = \frac{\mathbf{6}}{10}$$

P(B) =

6

ġ

5)

6)

If one die is rolled once, then find the probability of each of the following events :

- (a) Number on the upper face is prime
- (b) Number on the upper face is even.

Solution :

'S' is the sample space

A =

 $S = \{1, 2, 3, 4, 5, 6\} \therefore n(S) =$

(a) Event A : Prime number on the upper face.

$$\{2, 3, 5\} \therefore n(A) =$$

$$P(A) = \frac{n(A)}{n(S)}$$

$$P(A) = \frac{3}{\Box} = \Box$$

(b) Event B : Even number on the upper face

$$\mathbf{B} = \{2, 4, 6\} \therefore n(\mathbf{B}) =$$

$$P(B) = \frac{n(B)}{n(S)}$$

$$(B) = \boxed{=} \frac{1}{2}$$

Form a 'Road Safety Committee' of two, from 2 boys (B_1, B_2) [March 2023] and 2 girls (G_1, G_2) .

Complete the following activity to write the sample space :

[July 2023]

35 P a g	e	
<mark>Q.3) B.</mark>	Solve [each 3 Marks]	
1)	A two-digit number is to be formed using the digits 0, 1, 2, 3. Repetition of the digits is allowed. Find the probability that a number so formed is a prime number.	[March 2019]
2)	A bag contains 3 red, 3 white, 3 green and 3 black balls. One ball is picked up from the bag at random. What is the probability that the ball drawn is? a) white b) not white	[July 2019]
3)	 A balloon vendor has 2 red, 3 blue and 4 green balloons. He wants to choose one of them at random to give it to Pranali. What is the probability of the event that Pranali gets? 1) a red balloon. 2) a blue balloon. 	[March 2020]
4)	A die is rolled and a coin is tossed simultaneously. Write the	[Sept 2021]
	sample space 'S' and number of sample points $n(S)$. Also write	
	the events A and B in set form and their number of sample points	
	according to the given condition :	
	(a) Condition for event A : To get a head or tail on the coin	
	and a number divisible by 3 on the upper face of die.	
	(b) Condition for event B : To get a number on the upper face	
	of die greater than 7 and a head on the coin.	
5)	Length and breadth of a rectangular garden are 77 meters and 50 meters. There is a circular lake in the garden having diameter 14 m. Due to wind, a towel from a terrace on a nearby building fell into the garden. Then find the probability of the event that it fell in the lake.	[Aug 2022]
6)	A balloon vendor has 2 red, 3 blue and 4 green balloons. He wants to choose one of them at random to give it to Pranali. What is the probability of the event that Pranali gets? 1) a red balloon 2) a blue balloon 3) a green balloon	[July 2023]
7)	A two-digit number is to be formed using the digits 2, 3, 5, 7, 9 without repetition. What is the probability of the following events? Event A: The number formed is an odd number. Event B: The number formed is a multiple of 5.	[March 2023]

 Solve the following [each 3 marks] Six faces of a die are as shown below: A B C D E O If the die is rolled once, find the probability of event 'M' that 'English vowel appears on upper face'. A student made a cube shaped die from a card sheet. Instead of writing numbers 1, 2, 3, 4, 5, 6 on its faces, be wrote letters a, b, c, d, e, f; one on each face, randomly. If he rolls the die twice, find the probability that he gets a vowel on the upper face both times. A bag contains 8 red and some blue balls. One ball is drawn at random from find the number of blue balls. 	36 P a g	e	
 1) Six faces of a die are as shown below: A B C D E O [Nov 2020] If the die is rolled once, find the probability of event 'M' that 'English vowel appears on upper face'. 2) A student made a cube shaped die from a card sheet. Instead of writing numbers 1, 2, 3, 4, 5, 6 on its faces, he wrote letters a, b, c, d, e, f, one on each face, randomly. If he rolls the die twice, find the probability that he gets a vowel on the upper face both times. 3) A bag contains 8 red and some blue balls. One ball is drawn at random from the bag. If the ratio of Probability of getting red ball and blue ball is 2:5, then find the number of blue balls. 	<u>Q.5)</u>	Solve the following [each 3 marks]	
 If the die is rolled once, find the probability of event 'M' that 'English vowel appears on upper face'. A student made a cube shaped die from a card sheet. Instead of writing numbers 1, 2, 3, 4, 5, 6 on its faces, he wrote letters a, b, c, d, e, f one on each face, randomly. If he rolls the die twice, find the probability that he gets a vowel on the upper face both times. A bag contains 8 red and some blue balls. One ball is drawn at random from [March 2022] the bag. If the ratio of Probability of getting red ball and blue ball is 2:5, then find the number of blue balls. ***ALL THE BEST** 	1)	Six faces of a die are as shown below:ABCDEO	[Nov 2020]
 2) A student made a cube shaped die from a card sheet. Instead of writing numbers 1, 2, 3, 4, 5, 6 on its faces, he wrote letters a, b, c, d, e, f; one on each face, randomly. If he rolls the die twice, find the probability that he gets a vowel on the upper face both times. 3) A bag contains 8 red and some blue balls. One ball is drawn at random from the bag. If the ratio of Probability of getting red ball and blue ball is 2:5, then find the number of blue balls. ***ALL THE BEST*** 		If the die is rolled once, find the probability of event 'M' that 'English vowel appears on upper face'.	
3) A bag contains 8 red and some blue balls. One ball is drawn at random from the bag. If the ratio of Probability of getting red ball and blue ball is 2:5, then find the number of blue balls. ***ALL THE BEST***	2)	A student made a cube shaped die from a card sheet. Instead of writing numbers 1, 2, 3, 4, 5, 6 on its faces, he wrote letters a, b, c, d, e, f; one on each face, randomly. If he rolls the die twice, find the probability that he gets a vowel on the upper face both times.	[July 2019]
***ALL THE BEST**	3)	A bag contains 8 red and some blue balls. One ball is drawn at random from the bag. If the ratio of Probability of getting red ball and blue ball is 2:5, then find the number of blue balls.	[March 2022]

MOST IMPORTANT QUESTIONS

Chapter 6 STATISTICS

PREVIOUS YEAR QUESTIONS (2019, 2020, 2021, 2022, 2023)

Chapter Weightage: 12 Marks [Approximate]

Q.1) <u>B. Solve the following [each 1 mark]</u>

1) If $\sum fidi = 108$ and $\sum fi = 100$, then find d = ?

Q.2) <u>A. Activity [each 2 marks]</u>

1) Complete the activity to prepare a table showing the co-ordinates which necessary to draw a frequency polygon:

Class 18 - 19 19 - 2020 - 21**Class Mark** 19.5 21.5 18.5 19 4 Frequency 15 **Co-ordinates of point** (19.5, 13)(20.5, 15)(21.5, 19) [Nov 2020]

[Nov 2020]

2) The following table shows the daily supply of electricity to different places in [March 2019] a town. To show the information by a pie diagram, measures of central angles of sectors are to be decided. Complete the following activity to find the measures:

Places	Supply of electricity	Measure of central angle
	(Thousand units)	
. Roads	4	$\frac{4}{30} \times 360 = 48^{\circ}$
Factories	12	× 360 = 144°
Shops	6	$\frac{6}{30} \times 360 = $
Houses	8	× 360 =
Total ⇒	30	

Q.2) <u>B. Solve [each 2 marks]</u>

1) The following table shows causes of noise pollution. Find the measure of central angles for each, to draw a pie diagram:

Construction	Traffic	Aircraft take offs	Industry
10%	50%	15%	25%

- 2) If L = 10, $f_1 = 70$, $f_0 = 58$, $f_2 = 42$, h = 2, then find the mode by using formula.
- 3) Find the mode from the following information: L = 10, h = 2, $f_0 = 58$, $f_1 = 70$, $f_2 = 42$.
- 4) The following table shows the number of students and the time they utilized daily [July 2019] for their studies. Find the mean time, spent by students for their studies:

Time (hrs.)	No. of Students
0 - 2	8
2 - 4	14
4 - 6	18
6 – 8	10
8-10	10

5) Find the mean from the given values:

$$\sum x_i f_i = 1265; N = 50$$

6) Observe the following table and find Mean :

Assumed mean A = 300Frequency × $d_i = x_i - A$ Class Class Frequency $d_i = x_i - 300$ Deviation mark f_i $f_i d_i$ x_i 200-240 -400 220-805 -400240 - 280260 10 -40 0 280–320 | 300→ A 0 15 320-360 340 480 40 12 360-400 80 8 380 640 Total $\Sigma f_i = 50$ $\Sigma f_i d_i = 320$

[March 2023]

[July 2023]

[Nov 2020]

[March 2020]

[July 2019]

Q.3). A. Acivity [each 3 marks]

1)

			[March 2020]
Age group (in years)	No. of Persons	Measure of central angle	
20 - 25	80	$\boxed{\frac{1}{200} \times 360} = $	
25 - 30	60	$\frac{60}{200} \times 360 = $	650
30 - 35	35	$\frac{35}{200} \times \boxed{} = 63^{\circ}$	2
35 - 40	25	$\frac{25}{200} \times 360 =$	
Total	200		

Q.3) B. Solve the following [each 3 marks]

1) A milk centre sold milk to 50 customers. The table below gives the number of customers and the milk they purchased. Find the mean of the milk sold by direct method:

No. of Customers
17
13
10
7
3

2) Time allotted for the preparation of an examination by some students is shown in the table. Draw a histogram to show this information:

Time (minutes)	No. of Students
60-80	14
80-100	20
100-120	24
120-140	22

[March 2020]

[March 2020]

[Nov 2020]

 The following table shows the number of students of class X and the time they utilized daily for their studies. Find the mean time spent by 50 students for their studies by direct method.

Time (hrs.)	No. of Students
0-2	7
2–4	18
4-6	12
6-8	10
8–10	3

4) The frequency distribution table shows the number of mango trees in a [March 2023] grove and their yield of mangoes. Find the median of data

255

No. of Mangoes	No. of Trees
50-100	33
100–150	30
150-200	90
200-250	80
250-300	17

Q.4) Solve the following [each 4 marks]

1) The following table shows frequency distribution of number of trees planted [Nov 2020] students in the school:

No. of Trees Planted	No. of Students
0-10	30
10-20	70
20-30	100
30-40	70
40-50	40

2) Represent the following data by histogram:

[March 2020]

Price of Sugar (per kg in ₹)	Number of Weeks
18–20	4
20-22	8
22–24	22
24–26	12
26–28	6
28-30	8

3) The time required for some students to complete a science experiment and the number of students is shown in the following grouped frequency distribution table. Draw the frequency polygon with the help of histogram using given information:

Time required for experiment (minutes)	Number of Students
20 - 22	6
22 - 24	14
24 - 26	20
26 - 28	16
28 - 30	12
30 - 32	10

4) The following frequency distribution table shows marks obtained by [March 2019] 180 students in Mathematics examination:

Marks	Number of Students
0-10	. 25
10—20	x
20—30	30
30—40	2x
40—50	65

Find the value of x

Also draw a histogram representing the above information.

5) Show the following data by a frequency polygon:

[March 2023]

Electricity bill (7)	Families	
200-400	240	
400-600	300	
600-800	450	
800–1000	350	
1000–1200	160	

6) Draw a pie diagram to represent the world population given in the following table:

[July 2023]

255

the second state of the se				
Country	Japan	England	India	China
Percentage of				
World Population	20	10	40	30

Q.5) <u>Solve the following [each 3 marks]</u>

1) The following frequency distribution table shows the distances travelled by [March 2 some rickshaws in a day. Observe the table and answer the following questions:

Class (Daily distance travelled in km)	Continuous Classes	Frequency (Number of rickshaws)	Cumulative Frequency less than type
60—64	59.5-64.5	10	10
65—69	64.5-69.5	34	10 + 34 = 44
70—74	69.5-74.5	. 58 .	44 + 58 = 102
75—7 9	74.5-79.5	82	102 + 82 = 184
80-84	79.5—84.5	10	184 + 10 = 194
85—89	84.5-89.5	6	194 + 6 = 200

- i. Which is the modal class? Why?
- ii. Which is the median class and why?
- iii. Write the cumulative frequency (C.F.) of the class preceding the median class
- iv. What is the class interval (h) to calculate median?

2) Represent the following data using histogram:

[July 2023]

Daily Income (₹)	No. of Workers
130–135	4
135–140	7
140–145	14
145–150	16

[March 2019]

