Aakash + BYJU'S

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Term Test 2022-23

Std: X MHB **Subject: Algebra**
Duration: 2hrs **Marks: 40**

Topics Covered: Pair of Linear Equations in two Variables, Quadratic Equation, Arithmetic Progression, Financial planning, Probability, Statistics.

Q.1 (A) Solve the following questions (any four). **(4x1= 4)**

(i) What should come in the blank? Mode= (……..) –2 (mean).
(ii) Find the probability of getting an odd number, when a dice is tossed.
(iii) If $T_n = 3 + 4n$ then Wirte the A.P.
(iv) If x+2y=5 and 2x+y=7 then find the value of x+y.
(v) Obtain a quadratic equation whose roots are –3 and –7.

(B) Solve the following questions (any two). **(2x2= 4)**

(i) Sangeeta's monthly income is Rs. 25,000. She spent 90% of her income and donated 3% for socially useful causes. How much money did she save?
(ii) Two numbers differ by 3. The sum of the greater number and twice the smaller number is 15. Find the smaller number.
(iii) Solve the following quadratic equation: $X^2 + 8x + 15 = 0$.

Q.2 (A) Choose the correct option (Any Four):- **(4x1= 4)**

(i) In the A.P. 2, –2, –6, –10, ... common difference (d) is:
(A) –4 (B) 2 (C) –2 (D) 4
(ii) For the quadratic equation $x^2 + 10x = 7$, the values of a, b, c are:
(A) a = –1, b = 10, c = 7 (B) a = 1, b = –10, c = –7

(C) a = 1, b = 10, c = –7 (D) a = 1, b = 10, c = 7

(iii) The tax levied by Central Government for trading within a state is:
(A) IGST (B) CGST (C) SGST (D) UTGST

(iv) If a die is rolled, what is the probability that number appearing on upper face is less than 2?

(A) 1/3 (B) 1/2 (C) 1 (D) 1/6

(v) What is mode of the following data 5,3,7,2,3,4,6?

(A) 3 (B) 4 (C) 2 (D) 7

(B) Solve the following questions (any two). (2x2= 4)

(i) If (2, −5) is the solution of the equation $2x - ky = 14$ then find k =?

(ii) Smita has invested Rs.12,000 to purchase shares of FV Rs. 10 at a premium of Rs. 2. Find the number of shares she purchased.

(iii) First term and common difference of an A.P. are 12 and 4 respectively. If $T_n = 96$, find n.

Q.3 (A) Solve the following questions (any two). (2x2= 4)

(i) 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.

(ii) A card is drawn at random from a pack of well shuffled 52 playing cards. Find the probability that the card drawn is –(a) Ace card (b) Red card

(iii) Find how many three digits natural numbers are divisible by 5.

(B) Solve the following questions (any two). (2x2= 4)

(i) Draw graphs of x + y = 4, 2x - y = 2 also find the intersection of these two lines.

(ii) Solve the following simultaneous equations graphically:

x + y = 0; 2x –y = 9.

iii) The weight of coffee in 60 packets is given below. Find the Median weight of the coffee packet.

Weight in gms.	200-201	201-202	202-203	203-204	204-205	205-206
Number of packets	12	16	20	9	2	1

Q.4 Solve the following questions (any three). (3x3= 9)

(i) 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?

(ii) 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.

(iii) Smt. Malhotra purchased solar panels for the taxable value of ` 85,000. She sold them for 90,000. The rate of GST is 5%. Find the ITC of Smt. Malhotra. What is the amount of GST payable by her?

(iv) In an A.P. sum of three consecutive terms is 27 and their product is 504, find the terms.

Q.5 Solve the following question (any one). (4x1= 4)

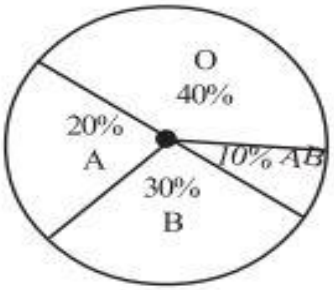
(i) The following frequency distribution table shows marks obtained by 180 students in Mathematics examination:

Marks	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
Number of Students	25	x	30	2x	65

Find the value of x. Also draw a histogram representing the above information.

(ii)

The following pie diagram shows the percentage of persons according to blood groups then answer the following :



a) Find the measure of the central angle for each blood group.

b) Find the total number of persons if there are 900 persons of blood group B.

Q.6 Solve the following question (any one). (3x1= 3)

(i) Two numbers differ by 3. The sum of the greater number and twice the smaller number is 15. Find the smaller number.

(ii) The first term of an A.P is 2 and the n^{th} term is 41. What is the value of n, if S_n=860?