I - PERIODIC TEST : 2021-22

CLASS - X (CBSE)

Time : 2 hrs. **MATHEMATICS** M.M.: 50

General Instructions :

i) All questions are compulsory.

ii) The question paper comprises four sections A, B, C and D.

iii) Section A contains question numbers 1 to 5 of one mark each.

iv) Section B contains question numbers 6 to 10 of 2 marks each.

v) Section C contains question numbers 11 to 15 of 3 marks each.

vi) Section D contains question numbers 16 to 20 of 4 marks each.

vii) Internal choice is also given in some questions.

SECTION – A [1×5=5]

Q.1. Express 156 as a product of its prime factorisation.

Q.2. What is the sum of the zeroes of the polynomial $8x^2 - 32x+24$?

Q.3. If P(E) = 0.13, what is the probability of 'not E' ?

Q.4. If $a_n=5 - 11n$, find the common difference.

Q.5. Find the distance between the points (7, 13) and (10, 9)

SECTION – B [2×5=10]

Q.6. Find LCM and HCF of 120 and 144 by fundamental theorem of arithmetic.

Q.7. If the product of zeroes of the polynomial $ax^2 - 6x - 6$ is 4, find the value of a.

Q.8. Find the mode of the following data :

C.I.	25-30	30-35	35-40	40-45	45-50	50-55
Frequency	22	34	50	42	38	14

Q.9. Which term of the AP : 3, 8, 13, 18, ... is 78 ?

Q.10. Find the coordinates of a point A, where AB is the diameter of a circle whose centre is (2, -3) and B is (1, 4)

OR

Find the value of x, if the points (1, x), (5, 2) and (9, 5) are colinear.

SECTION – C [3×5=15]

Q.11. Show that $5-\sqrt{3}$ is an irrational number, given that $\sqrt{3}$ is irrational

Q.12. If α and β are zeroes of the quadratic polynomial $x^2 - 6x +a$, find the value of 'a' if $3\alpha + 2\beta = 20$

OR

Find the zeroes of polynomial $x^2 - 3$ and verify the relationship between the zeroes and the coefficients.

Q.13. Find the sum of first 22 terms of an AP in which d=7 and 22nd term is 149 .

Q.14. Calculate the mean for the following data :

Classes	20-40	40-60	60-80	80-100	100-120	120-140	140-160	160-180
Frequency	10	18	23	15	10	10	8	6

Q.15. Find the ratio in which the line segment joining A(1, -5) and B(-4, 5) is divided by y-axis. Also find the coordinates of the point of division.

SECTION – D [4×5=20]

Q.16. Find all the zeroes of the polynomial $x^4 + x^3 - 9x^2 - 3x + 18$. If it is given that two of its zeroes are $-\sqrt{3}$ and $\sqrt{3}$

Q.17. The following distribution gives the daily income of 50 workers of a factory :

Daily wages (in ₹)	100-120	120-140	140-160	160-180	180-200
No. of workers	12	8	14	10	6

Draw less than type cumulative frequency curve and find its mediam.

Q.18. A bag contains cards numbered from 1 to 49. A card is drawn from the bag at random, after mixing the cards thoroughly. Find the probability that the number on the drawn card is :

(i) An odd number

(ii) A multiple of 5

(iii) A perfect square

(iv) An even prime number

Q.19. What are the three numbers in AP whose sum is 21 and their product is 231 ?

OR

If S_n denotes the sum of the first n terms of an AP, prove that $S_{30} = 3(S_{20} - S_{10})$.

Q.20. Find the area of quadrilateral whose vertices taken in order are (-4, -2), (-3, -5), (3, -2) and (2, 3).

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