DELHI PUBLIC SCHOOL, CHANDIGARH

Periodic Test - I, Session 2023-24

Class: X, Subject: Maths (Set 2)

Time 1:30 hrs MM: 40

General Instructions:

The question paper is divided into 5 sections – A, B, C, D and E.

- Section A comprises of 11 questions of 1 mark each.
- Section B comprises of 3 questions of 2 marks each. Internal choice has been provided in 1 question.
- Section C comprises of 3 questions of 3 marks each. Internal choice has been provided in 1 question.
- Section D comprises of 2 questions of 5 marks each. Internal choice has been provided in 1 question.
- Section E comprises of 1 question of 4 marks. It is case study-based question.

Section – A

1. If $\sin x = \sqrt{3} \cos x$, and $0 < x < 90^0$, then x = _____

   (a) 30^0 (b) 45^0

   (c) 90^0 (d) 60^0

2. If mean of the data is 38 and median is 36 then its mode will be

   (a) 32 (b) 38

   (c) 36 (d) 37

3. $(1 + \tan^2 A) \sin^2 A$ = _____

   (a) $\sin^2 A$ (b) $\cos^2 A$

   (c) $\tan^2 A$ (d) $\cot^2 A$

4. If one zero of the quadratic polynomial $x^2 + 4x - a$ is -2, then the value of a is

   (a) 4 (b) -8

   (c) -4 (d) 2

5. The zeros of the quadratic polynomial $2x^2 - 128$ are

   (a) both positive (b) both negative

   (c) one negative one positive (d) both equal

6. If n is any natural number, then which of the following expressions ends with 0

   (a) $(5 \times 6)^n$ (b) $(3 \times 15)^n$

   (c) $(8 \times 6)^n$ (d) $(9 \times 11)^n$

7. If HCF (16, y) = 8 and LCM (16, y) = 48, then the value of y is

   (a) 24 (b) 8

   (c) 16 (d) 48

h = Difference in class size $l + \left(\frac{f_1 - f_0}{2f_1 - f_0 - f_2}\right)$

8. The HCF of $2^3 \times 3^5 \times a^2$ and $2^2 \times 3^6 \times a^4$ is

(a) $2^3 \times 3^5 \times a^2$ (b) $2^2 \times 3^5 \times a^2$

(c) $2^3 \times 3^5 \times a^4$ (d) $2^3 \times 3^6 \times a^4$

9. If a pair of linear equations is dependent consistent, then the lines will be

(a) always coincident (b) parallel

(c) always intersecting (d) intersecting or coincident

10. In the given data the lower limit of median class is:

Class Interval	65 - 85	85 - 105	105 - 125	125 – 145	145 - 165	165 - 185	185 - 205
Frequency	7	9	13	14	23	7	5

(a) 125 (b) 145

(c) 105 (d) 165

Assertion-Reasoning based MCQs :

Read the following statements carefully to mark the correct option out of the options given below.

(a) Statement 1 is true, statement 2 is true; statement 2 is a correct explanation for statement 1.

(b) Statement 1 is true, statement 2 is true; statement 2 is not a correct explanation for statement 1.

(c) Statement 1 is true, statement 2 is false.

(d) Statement 1 is false, statement 2 is true.

11. **Assertion :** If the system of equations $2x + 3y = 7$ and $2ax + (a + b)y = 28$ has one solution, then $2a - b = 0$

Reasoning : The system of equations $3x - 5y = 9$ and $6x - 10y = 18$ has infinitely many solution.

Section – B

12. Find the zeroes of the quadratic polynomial $6x^2 - 3 - 7x$, and verify the relationship between the zeroes and its coefficients.

13. Data regarding heights of students of Class X of a School is given below. Calculate the average height of students of the class.

Height (in cm)	140 - 146	146 - 152	152 - 158	158 - 164	164 - 170
No. of students	5	6	14	7	8

OR

Find the mode of the following frequency distribution:

Class	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60
Frequency	9	10	13	7	8

14. Explain why $5 \times 13 \times 19 + 19$ is a composite number.

Section – C

15. Solve the following pair of linear equations for x and y:
$49x + 51y = 499$
$51x + 49y = 501$

OR

The taxi charges in city comprises of fixed charges together with the charge for the distance covered. For a journey of 12 km, the charge paid is ₹89 and for a journey of 20 km, the charge paid is ₹145. What will a person have to pay for travelling a distance of 30 km.

16. Prove that $2 + \sqrt{5}$ is an irrational number.

OR

Three bells toll at intervals of 12 minutes, 15 minutes and 18 minutes respectively. If they start tolling together at 10 am, at what time will they next toll together?

17. Evaluate: $\frac{5\sin^2 30^0 + 4\sec^2 30^0 - \cot^2 45^0}{\cos^2 60^0 + \sin^2 60^0}$

Section – D

18. Prove that: $\frac{\sin A - \cos A + 1}{\sin A + \cos A - 1} = \sec A + \tan A$

OR

Prove that: $\frac{\cos\theta - 2\cos^3\theta}{2\sin^3\theta - \sin\theta} = \cot\theta$

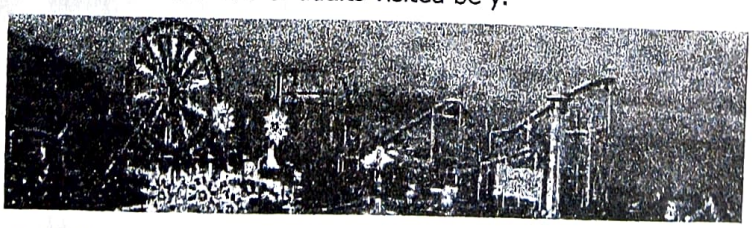
19. Find the values of a and b if the median for the following data is 32.5.

Class Interval	0 – 10	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70	Total
Frequency	a	5	9	12	b	3	2	40

Section – E

20. **Read the text carefully and answer the following questions**

Mr. R K Khanna is owner of a famous amusement park in Mumbai. The ticket charge for the park is ₹200 for children and ₹450 for adult. Generally, he does not go to park and it is managed by team of staff. One day Mr Khanna decided to random check the park and went there. When he checked the cash counter, he found that 460 tickets were sold and ₹1,45,500 was collected. Let the number of children visited be x and the number of adults visited be y.



a) Write the system of equations that model the problem. (1)

b) Find the number of children who visited the park. (1)

c) How much amount collected if 200 children and 350 adults visited the park? (2)