



INDIAN SCHOOL SOHAR
PERIODIC TEST III (2019-20)
MATHEMATICS – BASIC(241)

Class: X
Date: 05/01/2020

Maxi. Marks: 80
Duration: 3 Hours

General Instructions:

- a. All questions are compulsory.
- b. The question paper consists of 40 questions divided into four sections A, B, C and D.
- c. Section A contains 20 questions of 1 mark each. Section B contains 6 questions of 2 marks each, Section C contains 8 questions of 3 marks each, Section D contains 6 questions of 4 marks each.
- d. There is no overall choice. However, an internal choice has been provided in **two** questions of 1 mark each, **two** questions of 2 marks each, **three** questions of 3 marks each and **three** questions of 4 marks each. You have to attempt only one of the alternatives in all such questions.
- e. Use of calculators is not permitted.

SECTION A

Q 1 – Q 10 are multiple choice questions. Select the most appropriate answer from the given options.

1. HCF of the smallest composite number and smallest prime number is
 a) 2 b) 6 c) 1 d) 4
2. The length of the tangent drawn from a point, whose distance from the centre of a circle is 20 cm and radius of the circle is 16 cm is
 a) 16 cm b) 12 cm c) 50 cm d) 32 cm
3. If $p(x) = 2x^2 - 3x + 5$, then $p(-1)$ is
 a) -10 b) 0 c) 10 d) 4
4. The mean, median and mode of a frequency distribution are related by the formula :
 a) Mode = 2 Median – 3 Mean b) Mode = 3 Median – 2 Mean
 c) Mode = 2 Median + 3 Mean d) Mode = 3 Median + 2 Mean
5. If P (a, 4) is the mid point of the line segment joining the points Q (-6, 5) and R (-2, 3) then the value of a is
 a) 12 b) 4 c) -4 d) -12
6. The distance of the point P(-6, 8) from the origin is
 a) 100 b) $\sqrt{10}$ c) -10 d) 10
7. If α and β are zeroes of $x^2 + 5x + 8$, then the value of $\alpha + \beta$ is
 a) 5 b) -5 c) 8 d) -8

8. Which of the following can be the probability of an event?

- a) -0.02 b) 1.4 c) $\frac{25}{26}$ d) $\frac{5}{4}$

9. If $x = 2^3 \times 3$ and $y = 2^2 \times 3^2$, then $\text{LCM}(x,y)$ is

- a) 72 b) 12 c) 24 d) 36

10. The decimal representation of $\frac{11}{40}$ will

- a) terminate after 1 decimal place b) terminate after 2 decimal places
c) terminate after 3 decimal places d) not terminate

(Q 11 - Q 15) Fill in the blanks

11. The ordinate of a point A on the y axis is 5 and B has coordinates $(-3, 1)$, then the length of AB is _____

12. The values of K for which the pair of linear equations $3x - 2y - 7 = 0$ and $6x + Ky + 11 = 0$ has unique solution is _____

OR

If the roots of the quadratic equation $x^2 + px + 16 = 0$ are equal then the value of p is _____

13. Value of $\cos 30^\circ \cdot \cos 90^\circ \cdot \cos 45^\circ$ is _____

14. If $\tan A = \frac{4}{3}$ then $\sin A - \cos A$ is _____

15. $\triangle ABC \cong \triangle RQP$, $\angle A = 80^\circ$, $\angle B = 60^\circ$, then the value of $\angle P$ is _____

(Q 16 - Q 20) Answer the following

16. Find the value of $\sin 38^\circ - \cos 52^\circ$

OR

Find the value of $(\sin 30^\circ \cos 45^\circ + \cos 30^\circ \sin 45^\circ)$

17. If $100\pi \text{ cm}^2$ is the area of a circle, then find its diameter.

18. If the sum of first m terms of an AP is $2m^2 + 3m$, then what is its second term?

19. Two coins are tossed together. Find the probability of getting atleast one head.

20. If $\triangle ABC \sim \triangle DEF$, $BC = 4 \text{ cm}$, $EF = 5 \text{ cm}$ and $\text{ar}(\triangle ABC) = 80 \text{ cm}^2$, then find $\text{ar}(\triangle DEF)$.

SECTION B

Question numbers 21 to 26 carry 2 marks each.

21. In a single throw of two dice, find the probability of getting a total of 8.
22. 17 cards numbered 1, 2, 3,, 16, 17 are put in a box and mix thoroughly. One person draws a card from the box. Find the probability that the number on the card is
- (i) a prime number (ii) divisible by 3

OR

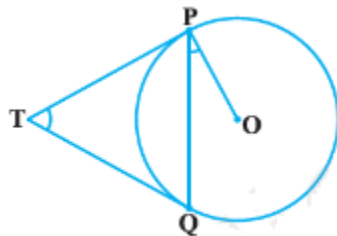
A lot of 30 bulbs contain 6 defective ones. One bulb is drawn at random from the lot. What is the probability that the bulb is good.

23. If $\sec 4A = \operatorname{cosec}(A - 20^\circ)$, where $4A$ is an acute angle, find the value of A .

OR

If $5 \tan \theta = 4$, find the value of $\frac{5 \sin \theta - 3 \cos \theta}{5 \sin \theta + 2 \cos \theta}$

24. Divide $6x^3 + 13x^2 + x - 2$ by $2x + 1$, find quotient and remainder.
25. Two tangents TP and TB are drawn to a circle with centre O from an external point T . Prove that $\angle PTQ = 2 \angle OPQ$.



26. Find the area of a quadrant of a circle whose circumference is 22 cm.

SECTION C

Question numbers 27 to 35 carry 3 marks each.

27. Prove that $\frac{\cos A}{1 + \sin A} + \frac{1 + \sin A}{\cos A} = 2 \sec A$

OR

Prove that $(\sin A + \operatorname{cosec} A)^2 + (\cos A + \sec A)^2 = 7 + \tan^2 A + \cot^2 A$

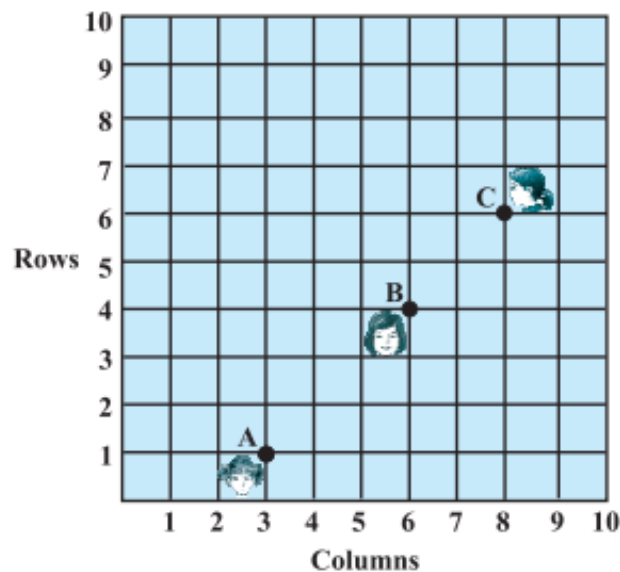
28. Solve for x and y :

$$133x + 87y = 353 ; 87x + 133y = 307$$

29. Find the other zeroes of the polynomial $x^4 - 5x^3 + 2x^2 + 10x - 8$ if it is given that two of its zeroes are $\sqrt{2}$ and $-\sqrt{2}$.

30. Prove that the parallelogram circumscribing a circle is a rhombus

31. Given figure shows the arrangement of desks in a classroom. Ashima, Bharati and Camella are seated at A(3,1), B(6, 4) and C(8, 6) respectively. Do you think they are seated in a line? Give reasons for your answer.



32. The radii of two circles are 4 cm and 3 cm. Find the radius of the circle whose area is equal to the sum of the areas of the two circles. Also find the circumference of this circle. (use $\pi = 3.14$)

33. Draw a circle of radius 4 cm. From the point 7cm away from its centre, construct the pair of tangents to the circle.

OR

Construct a triangle of sides 4 cm, 5 cm and 6 cm and then a triangle similar to it whose sides are $\frac{2}{3}$ of the corresponding sides of the first triangle.

34. Show that any positive odd integer is of the form $6q + 1$, or $6q + 3$, or $6q + 5$, where q is some integer.

OR

Given that $\sqrt{5}$ is irrational, prove that $2 + \sqrt{5}$ is an irrational number.

SECTION D

Question numbers 35 to 40 carry 4 marks each.

35. Find the sum of the first 50 positive integers divisible by 6

OR

The sum of the 4th and 8th terms of an AP is 24 and the sum of the 6th and 10th terms is 44. Find the first three terms of the A P

36. As observed from the top of a 75 m high lighthouse from the sea level, the angles of depression of two ships are 30° and 45°. If one ship is exactly behind the other on the same side of the lighthouse, find the distance between the two ships. (use $\sqrt{3} = 1.732$).

37. If a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, then prove that the other two sides are divided in the same ratio.

OR

Prove that in a right angle triangle, the square of the hypotenuse is equal the sum of the squares of the other two sides.

38. If the radii of the ends of a bucket 45 cm high are 28 cm and 7 cm. Find its capacity and surface area.

OR

A solid is in the form of a right circular cylinder with hemispherical ends. The total height of the solid is 19 cm and the diameter of the cylinder and the hemisphere is 7 cm. Find the volume and total surface area of the solid. (Use $\pi = \frac{22}{7}$)

39. The distribution below gives the weights of 30 students of a class.

| | | | | | | | |
|-----------------|---------|---------|---------|--------|---------|---------|---------|
| Weight (in Kg) | 40 - 45 | 45 - 50 | 50 - 55 | 55- 60 | 60 - 65 | 65 - 70 | 70 - 75 |
| No. of students | 2 | 3 | 8 | 6 | 6 | 3 | 2 |

Convert this distribution to less than type cumulative frequency distribution and draw its ogive.

40. Sum of the areas of two squares is 468 m². If the difference of their perimeters is 24 m, find the sides of the two squares.