

KENDRIYA VIDYALAYA SANGATHAN
MODEL QUESTION PAPER - 3 FOR PRACTICE
MARCH 2018

Class: X
Subject: Mathematics

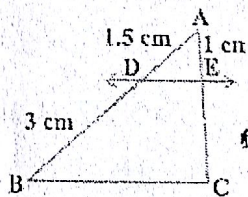
Time: 3 Hours
Marks: 80

General Instructions

4. All questions are compulsory.
5. The question paper consists of 4 sections A, B, C and D.
Section A contains 6 questions of 1 mark each.
Section B contains 6 questions of 2 marks each.
Section C contains 10 questions of 3 marks each.
Section D consists of 8 questions of 4 marks each.
Use of calculator is not permitted
6. 15 minutes time has been allotted for reading this question paper.

Section A

1. The decimal expansion of Rational number $\frac{53}{2^4 \times 5^3}$ will terminate after how many decimal places?
2. Find the value of $\sec \theta$, If $\sin \theta = \frac{3}{5}$
3. Out of 50 bulbs in a box, 10 are defective. One bulb is taken out at random from the box. What is the probability that the bulb drawn is not defective?
4. If DE is parallel to BC and AD = 1.5 cm, AE = 1 cm, BD = 3 cm. Then find the length of EC



5. Find the distance between the points (4, 2) & (1, 0)

- 6 The length of the minute hand of a clock is 14 cm. Find the area swept by the minute hand in 5 minutes.

Section B

- 7 Find the H.C.F. of 960 and 432 using Euclid's division lemma.
- 8 The radii of two circles are 12 cm and 5cm respectively. Find the radius of the circle having area equal to the sum of the areas of the two circles.
- 9 ABCD is a trapezium with $AB \parallel DC$. E and F are points on non-parallel sides AD and BC respectively such that EF is parallel to AB. Show that $\frac{AE}{BF} = \frac{ED}{FC}$.
- 10 If the points A (6, 1), B (8, 2), C (9, q) and D (p, 3) are the vertices of a parallelogram taken in order. Find the value of p, q.
- 11 If $\tan(A + B) = \sqrt{3}$ and $\tan(A - B) = \frac{1}{\sqrt{3}}$, $0 \leq A + B \leq 90^\circ$, $A > B$, Find A and B.
- 12 The following table is the cumulative frequency distribution table. Find the median class.

Age in years	Below 20	Below 25	Below 30	Below 35	Below 40
Number of policy holders	2	6	14	21	25

Section C

- 13 Prove that $\sqrt{3}$ is irrational.
- 14 Solve for x

$$\frac{1}{(x-1)(x-2)} + \frac{1}{(x-2)(x-3)} = \frac{2}{3}$$
 where $x \neq 1, x \neq 2, x \neq 3$
- 15 Find the sum of first 24 terms of the list of numbers whose n^{th} term is given by $a_n = 3 + 2n$
- 16 Evaluate

$$\frac{2 \sin 68^\circ}{\cos 22^\circ} - \frac{2 \cot 15^\circ}{5 \tan 75^\circ} + \frac{3 \tan 45^\circ \tan 20^\circ \tan 40^\circ \tan 50^\circ \tan 70^\circ}{5}$$
- 17 Water in a canal, 6m wide and 1.5 m deep, is flowing with a speed of 10km/h. How much area will it irrigate in 30-minutes, if 8 cm of standing water is needed.
- 18 Prove the identity

$$\frac{\cos A - \sin A + 1}{\cos A + \sin A - 1} = \operatorname{cosec} A + \cot A$$
- 19 An aero plane flying horizontally $1000\sqrt{3}$ m above the ground is observed at an angle of elevation 60° from a point on the ground after 10 seconds, the angle of elevation at the point of observation changes to 30° . Find the speed of the plane in m/s.

- 20 For what value of k are the points $(8, 1)$, $(3, -2k)$ and $(k, -5)$ collinear?
- 21 Find other zeroes of $2x^4 + 7x^3 - 19x^2 - 14x - 30$, if other two zeroes are $\sqrt{2}$ and $-\sqrt{2}$.
- 22 Solve graphically and find the value of x and y : $x + 3y = 6$ and $x + y = 4$

Section D

- 23 Prove that if a line is drawn parallel to one side of a triangle intersecting the other two sides at distinct points then it divides the other two sides in the same ratio
- 24 Two tangents PA and PB are from an external point P to a circle with center O , such that $\angle APB = x$ and $\angle AOB = y$. Prove that opposite angles are supplementary.
- 25 A bag contains cards numbered from 1 to 49 and mixed thoroughly. From that one card is taken out at random. What is the probability card drawn out is:

- (i) Multiple of 5
- (ii) Even number
- (iii) A perfect square number
- (iv) An even prime number

- 26 Draw a circle of radius 6 cm. Take a point P 10 cm away from the centre. Construct tangents to the circle. How many such tangents are possible? Measure the length of each tangent.
- 27 A train travel 360 km at a uniform speed. If the speed had been 5 km/h more, it would have taken 1 hour less for the same journey. Find the speed of the train.
- 28 Draw a less than ogive and more than ogive in the same graph and hence find the median

Scores	20-30	30-40	40-50	50-60	60-70	70-80
frequency	8	10	14	12	4	2

- 29 A person donates money to a trust working for education of children and women in some village. If a person donates Rs 5000 in the first year and his donation increases by Rs 250 every year. Find the total amount donated in eight years. Also write the value the person mentioned here possess.
- 30 A bucket made up of a metal sheet is in the form of a frustum of a cone of height 16 cm with radii of its lower and upper circular ends are 8 cm and 20 cm respectively. Find the cost of metal sheet used to make the container, if it cost Rs 8 per 100 cm² (Take $\pi = 3.14$)