



Exam Mate



Mock Test Paper for Std X, XII CBSE Board, IIT - JEE Main & Advanced.

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MOCK TEST PAPER # 6

CLASS-X (MATHEMATICS)

Time Allowed : 3 hours

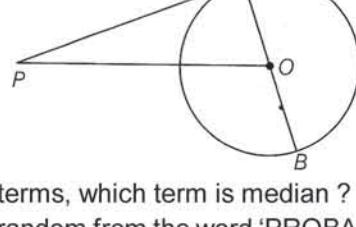
Maximum Marks: 80

GENERAL INSTRUCTIONS

- All questions are compulsory. There are 30 questions in all.
- This question paper has four sections : Section A, Section B, Section C and Section D.
- Section A contains 6 questions of one mark each, Section B contains 6 questions of two marks each, Section C contains 10 questions of three marks each, Section D contains 8 questions of four marks each.
- There is no overall choice. However, an internal choice has been provided in four questions of three marks each and three questions of four marks each. You have to attempt only one of the choices in such questions.
- Use of calculators is not permitted.

SECTION-A

- The product of two consecutive positive integers is divisible by 2. Is this statement true or false? Give reason.
- Find the value of k for which the equation $9x^2 + 3kx + 4 = 0$ has real roots.
- Find the distance of the point P(-6, 8) from the origin.
- In the given figure, PA is a tangent from an external point P to a circle with centre O. If $\angle POB = 115^\circ$, then find $\angle APO$



- In an arranged series of $4n$ terms, which term is median ?
- A single letter is selected at random from the word 'PROBABILITY'. Find the probability that it is a vowel.

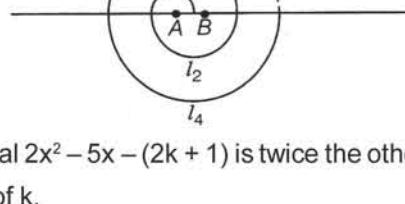
SECTION-B

- Express $\left(\frac{15}{4} + \frac{5}{40}\right)$ as a decimal without actual division.
- Find the value of y for which the distance between the points P(2, -3) and Q(10, y) is 10 units.
- The sum of a number and its positive square root is $\frac{6}{25}$. Find the number.
- Prove that $\frac{\sin \theta - 2\sin^3 \theta}{2\cos^3 \theta - \cos \theta} = \tan \theta$
- If $\cos A + \cos^2 A = 1$, find the value of $\sin^2 A + \sin^4 A$.
- Find the mean of the following data.

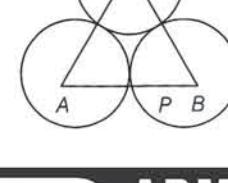
x	10	30	50	70	89
f	7	8	10	15	10

SECTION-C

- There are 156, 208 and 260 students in groups A, B and C, respectively. Buses are to be hired to take them for a field trip. Find the minimum number of buses to be hired, if the same number of students should be accommodated in each bus.
- Find the roots of the equation $5x^2 - 6x - 2 = 0$ by completing the square method.
- A spiral is made up of successive semi-circles with centres alternately at A and B, starting with centre at A, of radii 0.5 cm, 1.0 cm, 1.5 cm, 2.0 cm,..... as shown in below figure. What is the total length of such a spiral made up of thirteen consecutive semi-circles ? [take $\pi = 22/7$]



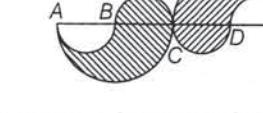
- If one zero of the polynomial $2x^2 - 5x - (2k+1)$ is twice the other, then find both the zeroes of the polynomial and the value of k.
- Find the centre of a circle passing through the points (6, -6), (3, -7) and (3, 3)
- Draw a line segment AB of length 8 cm. Taking A as centre, draw a circle of radius 4 cm and taking B as centre, draw another circle of radius 3 cm. Construct tangents to each circle from the centre of the other circle.
- In the adjoining figure, three circles with centres, A, B and C, respectively touch each other externally. If AB = 5 cm, BC = 7 cm and CA = 6 cm, then find the radius of the circle with centre A.



OR

PB and QA are the perpendicular to segment AB. If PO = 5 cm, QO = 7 cm and $\text{ar}(\Delta BOP) = 150 \text{ cm}^2$, find $\text{ar}(\Delta QOA)$

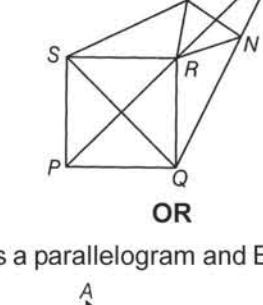
- The given figure consists of four small semi-circles of equal radii and two big semi-circles of equal radii (each 42 cm). Find the area and perimeter of the shaded region



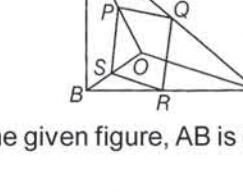
- A hemispherical depression is cut-out from one face of a cubical wooden block such that the diameter l of the hemisphere is equal to the edge of the cube. Determine the surface area of the remaining solid.
- In a game, the entry fee is Rs. 5. The game consists of tossing a coin 3 times. If one or two heads show. Sweta gets her entry fee back. If she tosses 3 heads, she receives double the entry fee. Otherwise, she will loss. For tossing a coin three times, find the probability that she
 - loses the entry fee
 - gets double entry fee
 - just gets her entry fee.

SECTION-D

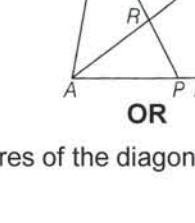
- If the zeroes of the polynomial $ax^2 + bx + b = 0$ are in the ratio $m : n$, then find the value of $\sqrt{\frac{m}{n}} + \sqrt{\frac{n}{m}}$.
- 4 men and 6 boys can finish a piece of work in 5 days, while 3 men and 4 boys can finish it in 7 days. Find the time taken by 1 man alone or that by 1 boy alone.
- In the given figure, T is the exterior point on the diagonal PR of a parallelogram PQRS. SR produced meets OT at N and QR produced meets ST at M. Prove that $MN \parallel SQ$.



In the given figure, if PQRS is a parallelogram and $BA \parallel PS$, prove that $OC \parallel SR$.



- ABCD is a parallelogram in the given figure, AB is divided at P and CD at Q, so that $AP : PB = 3 : 2$ and $CQ : QD = 4 : 1$. If PQ meets AC at R, prove that $AR = \frac{3}{7} AC$.



Prove that the sum of the squares of the diagonals of parallelogram is equal to the sum of the squares of its sides.

- A fire in a building B is reported on telephone to two fire stations P and Q, 20 km apart from each other on a straight road. P observes that the fire is at an angle of 60° to the road and Q observes that it is at an angle of 45° to the road.

$$\text{Evaluate } \frac{\cos^2 35^\circ + \cos^2 55^\circ}{\operatorname{cosec}^2 15^\circ - \tan^2 75^\circ} = \sqrt{3} (\tan 13^\circ \tan 23^\circ \tan 30^\circ \tan 67^\circ \tan 77^\circ)$$

- A trophy awarded to the best student in the class is in the form of a solid cylinder mounted on a solid hemisphere with the same radius and is made from some metal. This trophy is mounted on a wooden cuboid as shown in the figure. The diameter of the hemisphere is 21 cm and the total height of the trophy is 24.5 cm. Find the weight of the metal used in making the trophy, if the

weight of 1 cm^2 of the metal is 1.2 g. [take, $\pi = \frac{22}{7}$]



A hollow cube of internal edge 22 cm is filled with spherical marbles of diameter 0.5 cm and it is assumed that $\frac{1}{8}$ space of the cube remains unfilled. Then, find the number of marbles that the cube can accommodate.

- If mean of the following data is 53, then find the missing frequencies.

Ages (in years)	0-20	20-40	40-60	60-80	80-100	Total
Number of people	15	f_1	21	f_2	17	100

For Answers visit: www.dharitri.com

