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**INTERNATIONAL INDIAN SCHOOL, DAMMAM**

**Prelim Examination-2018**

**Class: IX**

**Subject: Mathematics**

**Max. time: 3 Hours**

**Max. marks: 80**

**SET-A**

**General Instructions:**

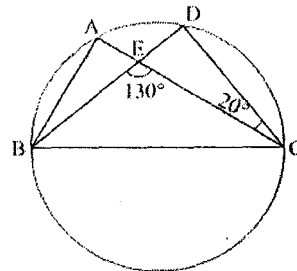
- (i) All questions are compulsory.
- (ii) The question paper consists of 30 questions divided into four sections A, B, C and D.
- (iii) Section A contains 6 questions of 1 mark each. Section B contains 6 questions of 2 marks each. Section C contains 10 questions of 3 marks each. Section D contains 8 questions of 4 marks each.
- (iv) There is no overall choice. However, an internal choice has been provided in three questions of 3 marks each and four questions of 4 marks each. You have to attempt only one of the alternatives in all such questions.
- (v) Use of calculators is not permitted.

**Section-A ( 6 X 1 = 6 marks )**

- 1 If a coin is tossed 100 times out of which 65 times we get head. Find the probability of getting a tail.
- 2 Write an irrational number between 2 and 3.
- 3 Find the class mark of the class interval 15 – 25
- 4 The height of an equilateral triangle measures  $9\sqrt{3}$ cm. Find its side.
- 5 Find the value of “k” for which  $x = 2$  and  $y = 2$  is a solution of the linear equation  $3x + ky = 8$ .
- 6 Find the distance of the point ( 2, 6 ) from the x-axis.

**Section-B ( 6 X 2 = 12 marks )**

- 7 In Fig. A, B, C and D are four points on a circle. AC and BD intersect at a point E such that  $\angle BEC = 130^\circ$  and  $\angle ECD = 20^\circ$ . Find  $\angle BAC$ .



8 Prove that a diagonal of a parallelogram divides it into two congruent triangles.

9 Find the mean of the following distribution:-

x	10	20	30	40	50	60
f	16	12	20	30	12	10

10 Find the total surface area of a hemisphere whose radius is 10cm.

11 A die is tossed 100 times and the data is recorded as below:

Outcome	1	2	3	4	5	6
Frequency	20	15	20	15	20	10

What is the probability of getting

- a) an even number in a trial ?
- b) a number less than 3 ?

12 Find the value of k, if  $x-1$  is a factor of  $p(x) = x^2 + x + k$ .

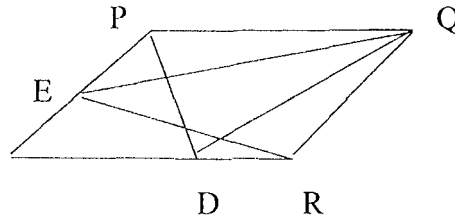
**Section-C ( 3 X 10 = 30 marks )**

13 Diagonals AC and BD of a quadrilateral ABCD intersect at O in such a way that  $ar(AOD) = ar(BOC)$ . Prove that ABCD is a trapezium.

**OR**

D and E are any two points lying on the sides SR and PS respectively of a parallelogram PQRS.

Show that  $ar(\Delta PDQ) = ar(\Delta QER)$ .



14 A solid cube of side 12cm is cut into eight cubes of equal volume. Find the side of the new cube?

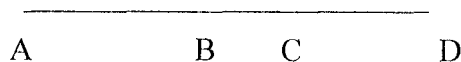
15 Give the geometrical representation of  $3x - 2 = 7$  on  
(i) number line; (ii) Cartesian plane

16 If two lines intersect each other, then the vertically opposite angles are equal.

**OR**

The sum of the angles of a triangle is  $180^\circ$ .

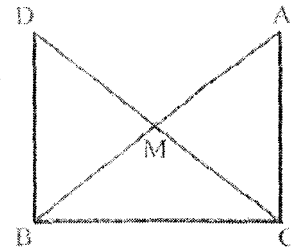
17 In the given fig. if  $AC = BD$ , then prove that  $AB = CD$ .



- 18 Find the area of a triangle whose sides are 40m, 24m and 32m.
- 19 Show that  $1.272727\dots$  can be expressed in the form  $p/q$ , where  $p$  and  $q$  are integers and  $q \neq 0$
- 20 Evaluate  $99^3$  using suitable identity.
- 21 Prove that two triangles are congruent if two angles and the included side of one triangle are equal to two angles and the included side of other triangle.

**OR**

In right triangle ABC, right angled at C, M is the mid-point of hypotenuse AB. C is joined to M and produced to a point D such that  $DM = CM$ . Point D is joined to point B. Show that:



- (i)  $\triangle AMC \cong \triangle BMD$   
 (ii)  $\triangle DBC$  is a right angle.  
 (iii)  $\triangle DBC \cong \triangle ACB$

- 22 In which quadrant or on which axis do each of the points A (-2, 4), B (3,-1) and C (-1, 0) lie? Verify your answer by locating them on the Cartesian plane.

**Section-D ( 8 X 4 = 32 marks )**

- 23 Factorise :  $x^3 + 13x^2 + 32x + 20$ .

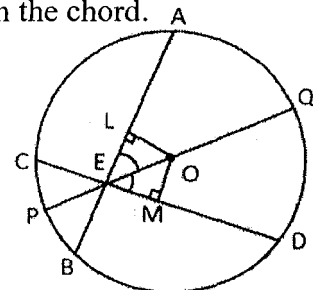
**OR**

Find the remainder when  $x^3 + 3x^2 + 3x - 1$  is divided by  $x+1$  by long division method and verify it using Remainder theorem.

- 24 ABCD is a rectangle and P, Q, R and S are mid-points of the side AB, BC, CD and DA respectively. Show that the quadrilateral PQRS is a rhombus.
- 25 Prove that the angle subtended by an arc at the centre is double the angle subtended by it at any point on the remaining part of the circle.

**OR**

If two equal chords of a circle intersect within the circle, prove that the line joining the point of intersection to the centre makes equal angles with the chord.



- 26 Construct a triangle ABC in which  $BC = 7\text{cm}$ ,  $\angle B = 75^\circ$  and  $AB + AC = 13\text{ cm}$ .
- 27 A group of students decided to build a bus stop in a village. The bus stop is barricaded from the remaining part of the road, by using 50 hollow cones , each having diameter of 120cm and height 80cm. If the outer side of each of the cones to be painted , and the cost of painting is Rs 5 per  $\text{m}^2$ ,
- What will be the cost of painting all these cones? ( $\pi = 3.14$ ).
  - What is the value depicted by the students?

**OR**

A cancer detective centre is going to develop in our city of cuboidal shape having length 600m, breadth 500m and height 400m.

- Calculate its total surface area.
  - What concept (value ) is derived from this activity ?
- 28 Draw the graph of the equation,  $y = 2x + 4$ . Find the points where the graph intersects the x- axis and the y – axis.
- 29 The number of patients attending a Cardiac clinic in a hospital in a month is given below:-

No: of days	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30
No: of patients	3	5	10	8	3	1

Draw a histogram and a frequency polygon to represent this situation in the same graph sheet.

- 30 Find the value of a and b in  $\frac{3+\sqrt{2}}{3-\sqrt{2}} = a + b\sqrt{2}$

**OR**

Represent  $\sqrt{9.3}$  on a number line.