Mock Paper
Subject:Mathematics
**Class:IX**
2017-18

Time : 3 hours **Maximum marks : 80**
General Instructions:

1. All questions are compulsory.
2. The question paper consists 30 questions divided into 4 sections, A, B, C and D. Section-A comprises of 6 questions of 1 mark each. Section-B comprises of 6 questions of 2 marks each. Section-C comprises of 10 questions of 3 marks each and Section-D comprises of 8 questions of 4 marks each.
3. All question in Section-A are to be answered in one word, one sentence or as per the exact requirement of the question.
4. There is no overall choice in this question paper.
5. Use of calculators is not permitted.

Section A

Q1   Find the sum of $2 + \sqrt{3}$ and $4 - 2\sqrt{3}$

Q2.   Find the value of k, for which the polynomials $x^3 - 3x^2 + 3x + k$ has 3 as its zero.

Q3.   In Fig. 1, find $\angle DBC$.
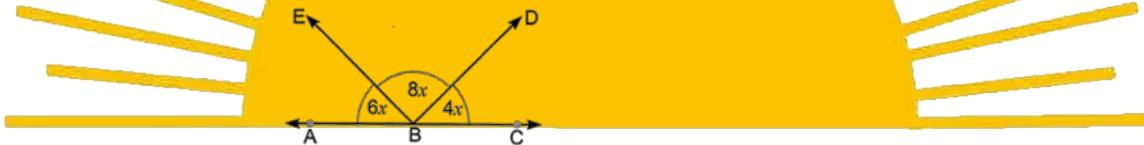
Q4   If a point is on negative side of x-axis at a distance of 5 units from origin, then find the coordinates of the point.

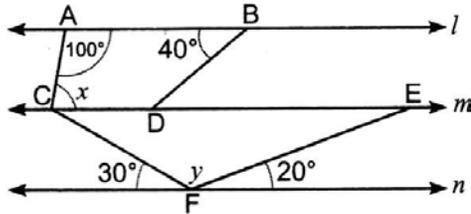Q5   In Fig. , if $AC = BD$, show that $AB = CD$. State the Euclid's postulate/ axiom used for the same.

Q6   Write the co-ordinates of the point whose ordinate is -4 and which lies on the y- axis.

Section B

Q7   Find the value of x, if $\left(\dfrac{3}{8}\right)^9 \left(\dfrac{8}{3}\right)^{-5} = \left(\dfrac{3}{8}\right)^{2x}$.
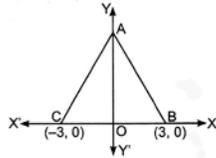
In the given fig .$l\|m\|n$.From the figure,find the value of x and y.

Q8

Q9 Using Heron's formula, find the area of an equilateral triangle with side 12 cm.

Q10 In Fig. 4, *ABC* is an equilateral triangle. The coordinates of vertices *B* and *C* are (3, 0) and (–3, 0) respectively. Find the coordinates of its vertex *A*.
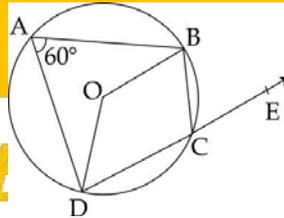

Q11 Express $0.2\overline{34}$ in the form of $\dfrac{p}{q}$

Q12 The median of the following observations arranged in ascending order, is 25. Find x

11, 13, 15, 19, x + 2, x + 4, 30, 35, 39, 46

Section C

Q13 In the given figure, O is the centre of the circle passing through the points A,B, C and D and DC is produced to a point E. If $\angle BAD=60^0$ find $\angle BCE$ and $\angle BOD$.

Q14 Factorise $y^3 – 2y^2 – 29y – 42$.

Q15 Show that a median of a triangle divides it into two triangle of equal area.

Q16 Kartikay went to a stationery shop and purchased 3 pencils and 2 erasers for Rs. 9. Represent this in the form of a linear equation in two variable and draw its graph.

Q17 A woman has a piece of canvas whose area is $551 m^2$. She uses it to have a conical tent made, with a base radius of 7m. Assuming that all the stitching margins and the wastage in curved while cuttings, amounts to approximately 1 m^2, find the volume of the tent that can be made with it.

Q18 If $x + y + z = 12$, $x^2 + y^2 + z^2 = 70$ then find the value of $x^3 + y^3 + z^3 - 3xyz$.

Q19 In Fig., *ABCD* is a square and *EF* is parallel to diagonal *BD* and *EM* = FM. Prove
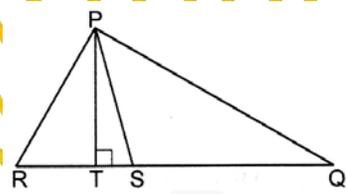
that (i) $DF = BE$ (ii) AM bisects $\angle BAD$.
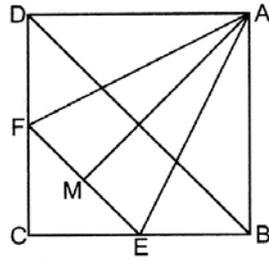
Q20   Simplify:

$$\frac{(a^2-b^2)^3+(b^2-c^2)^3+(c^2-a^2)^3}{(a-b)^3+(b-c)^3+(a-c)^3}$$

Q21   In Fig. 14, $\angle R > \angle Q$, PS is the bisector of $\angle QPR$ and $PT \perp RQ$. Show that
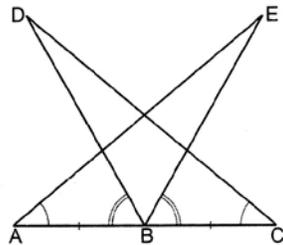
$$\angle TPS = \frac{1}{2}\,(\angle R - \angle Q).$$

Q22   Simplify:

$$\frac{1}{1+\sqrt{2}} + \frac{1}{\sqrt{2}+\sqrt{3}} + \frac{1}{\sqrt{3}+\sqrt{4}} + ... + \frac{1}{\sqrt{8}+\sqrt{9}}.$$

Section D

Q23   In Fig. 12, $AB = BC$, $\angle A = \angle C$ and $\angle ABD = \angle CBE$. Prove that $CE = AE$.

Q24   A hemispherical bowl of internal diameter 36cm contains a liquid. This liquid is to be filled in cylindrical bottles of radius 3cm and height 6cm. How many bottles are required to empty the bowl?

Q25 Construct a triangle XYZ with perimeter 9.6cm and the base angles 45^0 & 60^0.

Q26 A residential colony has a population of 5400 and 60 litres of water is required per person per day. For the effective utilization of rain water, a group of people decided to do WATER HARVESTING. They constructed a water reservoir measuring 48m × 27m × 25m to collect the rain water.

  a. For how many days the water of this tank is sufficient if during rain the height of water level is 5m.

  b. Which value is shown by the group of people?

Q27 Prove that "Parallelograms on the same base and between the same parallel lines are equal in area".

Q28 Draw a histogram and frequency polygon for the marks of students given below.

Marks	0-10	10-30	30-45	45-50
Number of Students	8	32	18	10

Q29 Over the past 200 working days the number of defective parts produced by a machine is given in the following table:

No. of defective parts	0	1	2	3	4	5	6	7	8	9	10	11
Days	50	32	22	18	12	12	10	10	10	8	6	6

Determine the probability that tomorrow's output will have
(i) no defective part.
(ii) more than 13 defective parts

Q30 If the temperature of a liquid can be measured in Kelvin units as x°K or in Fahrenheit units as y°F, the relation between the two systems of measurement of temperature is given by the linear equation:

$y = \dfrac{9}{5}(x - 273) + 32$

i) Find the temperature of the liquid in Fahrenheit if the temperature of theliquid is 313°K.
(ii) If the temperature is 158° F, then find the temperature in Kelvin.