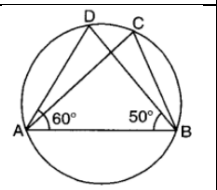
ARYAN INSTITUTE

CLASS-9TH
SUBJECT-MATHS
SAMPLE PAPER -01

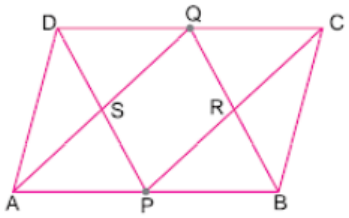
TIME : 3HR **MAX. MARKS:80**

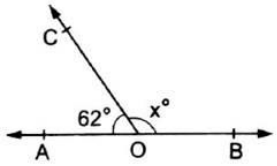
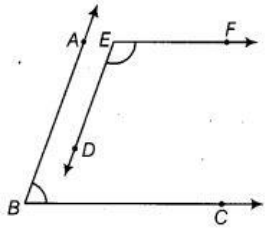
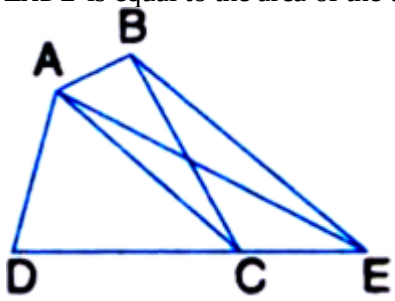
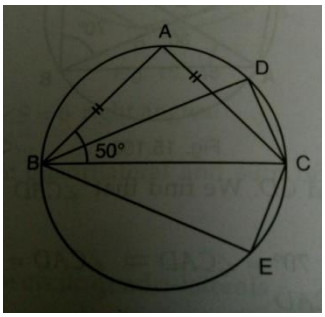
	General Instructions: ➢ The question paper comprises 40 questions divided into four sections, A, B, C and D. ➢ All questions are compulsory. ➢ Question number 1 to 20 in Section-A are multiple choice type questions carrying one mark each. ➢ Question number 21 to 26 in Section-B are very short answer type questions carrying 2 marks each. ➢ Question number 27 to 34 in Section-C are short answer type questions carrying 3 marks each. ➢ Question number 35 to 40 in Section-D are long answer type questions carrying 4 marks each. **SECTION-A**	
Q1.	The number obtained on rationalising the denominator of $\frac{2}{\sqrt{11}-3}$ is (a) $\sqrt{11}+3$ (b) $\frac{2(\sqrt{11}+3)}{8}$ (c) $\frac{2(\sqrt{11}-3)}{8}$ (d) $\frac{2(\sqrt{11}+3)}{14}$	
Q2.	If $x+y=-4$ and $xy=2$, then the value of x^2+y^2 is (a) 16 (b) 12 (c) 18 (d) -2	
Q3.	On plotting the points $O(0,0), A(5,0)B$, $C(0,4)$ and joining OA, AB, BC and CO, we obtain a (a) Square (b) Rectangle (c) Trapezium (d) Rhombus	
Q4.	Angle x in Fig. 1 is (a) 30° (b) 50° (c) 40° (d) 60°	
Q5.	In triangles ABC and PQR, AB = AC, $\angle C = \angle R$ and $\angle B = \angle Q$. The two triangles are (a) isosceles but not congruent (b) isosceles and congruent (c) congruent but not isosceles (d) neither congruent nor isosceles	
Q6.	ABCD is a rhombus such that $\angle ACB = 40°$. The $\angle ADB$ is (a) 40° (b) 45° (c) 50° (d) 60°	
Q7.	In Fig. 2, O is a point in the interior of parallelogram PQRS. If the area of parallelogram PQRS is 80 cm^2, then $ar\ (\Delta PQO) + ar(\Delta RSO)$ is (a) 20 cm^2 (b) 16 cm^2 (c) 40 cm^2 (d) none of these	

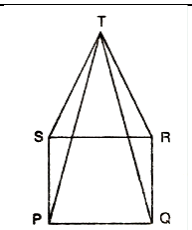
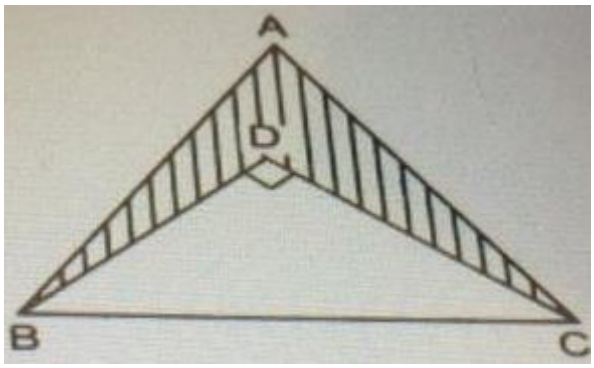
Q8.	In Fig. 3, if $\angle DAB = 60°, \angle ACB$ is equal to (a) 60° (b) 50° (c) 70° (d) 80° 	
Q9.	The curved surface area of a hemisphere is (a) πr^2 (b) $2\pi r^2$ (c) $3\pi r^2$ (d) $4\pi r^2$	
Q10.	In a survey of 278 women, 195 were found to be working. If a woman is selected at random, the probability that she is not working is (a) $\frac{83}{278}$ (b) $\frac{195}{278}$ (c) $\frac{112}{278}$ (d) 1	
Q11.	The following question consist of two statements-Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below: (a) Both A and R are true and R is the correct explanation for A. (b) Both A and R are true and R is not the correct explanation for A. (c) A is true but R is false. (d) A is false but R is true. (i) Assertion (A) : The probability of getting blue ball from a bag containing 3 red, 5 green and 2 blue balls is $\frac{1}{5}$. Reason (R) : Probability of an event E, P(E) = $\frac{Number\ of\ favourable\ outcome}{Total\ number\ of\ outcome}$ (ii) Assertion (A) : Area of a triangle with sides 12 cm, 15 cm and 17 cm is $10\sqrt{77}$ cm^2 Reason (R) : Area of a triangle = $\sqrt{s(s-a)(s-b)(s-c)}$, where s = perimeter of the triangle. (iii) Assertion (A) : In a quadrilateral ABCD, if AC = BD, then AB = CD. Reason (R) : Diagonals of a rectangle are equal. (iv) Assertion (A) : The graph of the equation $x = -5$ is a straight line parallel to the y −axis. Reason (R) : The graph of the equation $y = kx$ is a straight line passing through the origin. (v) Assertion (A) : When $x^2 + 9x + 3$ is divided by $(x + 3)$ then the remainder is -15. Reason (R) : $p(a)$ is the reminder obtained when $p(x)$ is divided by $(x + a)$.	
Q12.	**Fill in the blanks** The co-efficient of x^2 in the expression $(x - 1)^3$ is	
Q13.	The sum of any two sides of any triangle is greater than the	
Q14.	In order to construct a triangle with given perimeter and two base angles, we start the construction by drawing a line of length equal to.....	
Q15.	If the radius of a sphere is doubled, then its surface area becomes.....times.	
Q16.	$\sum_{i=1}^{6} x_i$ can be written in expanded from as.....	

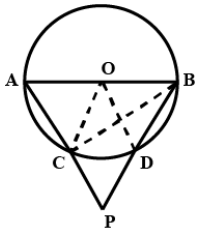
Q17.	Give an example of two irrational numbers whose sum and product both are rational.	
Q18.	Simplify : (i) $\left(\frac{32}{243}\right)^{\frac{-3}{5}}$ (ii) $\sqrt[4]{(256)^{-2}}$	
Q19.	If $a^2 + \frac{9}{a^2} = 31$, what is the value $a - \frac{3}{a}$?	
Q20.	Find the value of $p\left(\frac{-2}{3}\right)$ for $p(y) = 2y^3 - y^2 - 13y - 6$. **SECTION-B**	
Q21.	Check whether the graph of the equation $4x = 7y$ passes through the origin or not. **OR** Express x in terms of y, given that $3x + 4y = 6$, check whether the point (6, -3) lies on the given line.	
Q22.	Find the area of ΔABC in which AB = 4cm, BC = 5 cm and $\angle A = 90°$. **OR** Find the area of an equilateral triangle, if the altitude is $5\sqrt{3}$ cm.	
Q23.	Find five rational numbers between $\frac{4}{9}$ and $\frac{4}{11}$. **OR** Simplify: $3\sqrt{3} + 2\sqrt{27} + \frac{7}{\sqrt{3}}$.	
Q24.	If $f(x) = x^3 + 3x^2 - 2x + 4$, find $f(-2) + f(2) - f(0)$.	
Q25.	Plot the points (x, y) given by the following table. Use scale 1 cm = 0.25 units.	

x	1.25	0.25	1.5	-0.75
y	-0.5	1	1.5	-0.25

Q26.	In Fig. 4, ABCD is a parallelogram in which P and Q are the mid-points of opposite sides AB and CD. If AQ intersects DP at S and BQ intersects CP at R show that PSQR is a parallelogram  	

	SECTION-C	
Q27.	In Fig. 5, AOB is a straight line. Find the value of x.  **OR** In Fig. 6, BA || Ed and BC || EF. Show that $\angle ABC + \angle DEF = 180°$.  	
Q28.	ABCD is a parallelogram. X and Y are mid-points of BC and CD respectively. Prove that $ar(\Delta AXY) = \frac{3}{8} ar(\|\|^{gm} ABCD)$. **OR** In Fig. 7, ABCD is quadrilateral and BE || AC and also BE meets DC produced at E. Show that area of ΔADE is equal to the area of the quadrilateral ABCD.  	
Q29.	In Fig. 8, ΔABC is an isosceles triangle with AB = AC and $\angle ABC = 50°$. Find $\angle BDC$ and $\angle BEC$.  	
Q30.	10 bags of wheat flour each marked 10 kg, actually contained the following	

	weights of flour (in kg) 10.1, 10.2, 9.9, 9.8, 10.0, 10.3, 9.8, 9.5, 10.0, 10.4. Find the probability that any of these bags chosen at random contains (i) less than 10 kg of flour. (ii) exactly 10 kg of flour.	
Q31.	Factories: $a^7 - ab^6$.	
Q32.	BE and CF are two equal altitudes of ΔABC. Using RHS congruence rule, prove that ΔABC is isosceles.  **OR** In the Fig.9, PQRS is a square and SRT is an equilateral triangle, prove that (i) PT = QT (ii) $\Delta TQR = 15°$	
Q33.	Construct a right triangle when one side is 3.5 cm and sum of other sides and the hypotenuse is 5.5 cm. Give justification also. **OR** Construct a rhombus whose each side is of length 3.4 cm and one of its angles is 45°.	
Q34.	In the given Fig. 10**,** ΔABC is equilateral triangle with side 10 cm and ΔDBC is right angled at D. If BD = 6 cm, find the area of the shaded region. $(\sqrt{3} = 1.732)$  **SECTION-D**	
Q35.	30 circular plates, each of radius 14 cm and thickness 3 cm are placed one above the another to from a cylindrical solid. Find (i) the total surface area. (ii) volume of the cylinder so formed. **OR** A cylinder rube opened at both the ends is made of iron sheet which is 2 cm thick. If the outer diameter is 16 cm and its length is 100 cm, find how many cubic centimetres of iron has been used in making the tube?	
Q36.	A total of 25 patients admitted to a hospital are tested for levels for levels of blood sugar, (mg/dl) and the results obtained were as follows:	

	<table><tr><td>87</td><td>71</td><td>83</td><td>67</td><td>85</td></tr><tr><td>77</td><td>69</td><td>76</td><td>65</td><td>85</td></tr><tr><td>85</td><td>54</td><td>70</td><td>68</td><td>80</td></tr><tr><td>73</td><td>78</td><td>68</td><td>85</td><td>73</td></tr><tr><td>81</td><td>78</td><td>81</td><td>77</td><td>75</td></tr></table> Find mean, median and mode (mg/dl) of the above data.	
Q37.	Places X and Y are 150kms apart on a highway. One car starts from X and another st arts from Y at the same time. If the car travels in the same direction at different the speeds, they meet in 5hrs.If they travelled towards each other they meet in 1hr.What are the speeds of the two cars?	
Q38.	Construct a ΔABC in which BC = 3.8 cm, $\angle B = 45°$ and AB + AC =6.8 cm.	
Q39.	In the given figure, AB is a diameter of a circle C(O, r). Chord CD is equal to radius OC. If AC and BD when produced intersect at P, then prove that $\angle APB = 60°$. 	
Q40.	Rana has two adjacent triangular fields, He grows wheat in a field with sides 25, 52 and 63 m. He divided the adjacent field with, sides 25, 101 and 114 m into parts by joining the midpoint of the longest side to the opposite vertex. He grew rice in one part and vegetables in the other. Find the area in which he grew wheat, rice and vegetables.	