Attempt all questions from Section A and any four questions from Section B. All working, including rough work, must be clearly shown and must be done on the same sheet as the rest of the answer.Omission of essential working will result in loss of marks. The intended marks for questions or parts of questions are given in brackets [ ]. Mathematical Tables are provided.

SECTION A (40 Marks)

(Attempt all questions from this section.)

Question 1

(Choose the correct option)

(i) The value of $\frac{\sin 72°}{\cos 18°} - \frac{\sec 32°}{cosec\ 58°}$ is : **[1]**

(a) 1 (b) 2 (c) 0 (d) -1

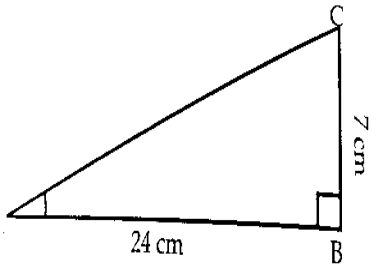
(ii) In the class intervals 10 - 20 , 20 - 30 , the number 20 is included in: **[1]**

(a) 10 – 20 (b) 20 – 30 (c) both the intervals (d) none of these intervals

(iii) Area of a triangle is 30 cm^2 . If its base is 10 cm , then its height is : **[1]**

(a) 5 cm (b) 6 cm (c) 7 cm (d) 8 cm

(iv) In the adjoining figure , the value of sin A is : **[1]**



(a) 7/24 (b) 7/25 (c) 25/7 (d) 24/25

(v) $3 \times (32)^{\frac{2}{5}} \times 7^0$ is equal to : **[1]**

(a) 0 (b) 12 (c) 1 (d) 9

(vi) If cos A = 4/5 , then the value of tan A is : **[1]**

(a) 3/5 (b) 3/4 (c) 4/3 (d) 5/3

(vii) Assertion (A) : A chord of length 8 cm is drawn in a circle of diameter 10 cm . Then its distance from the centre of the circle is 3 cm . **[1]**

Reason (R) : The perpendicular to a chord from the centre bisects the chord .

(a) Assertion is true , Reason is false .

(b) Assertion is false , Reason is true .

(c) Both Assertion and Reason are true .

(d) Both Assertion and Reason are false .

(viii) If each observation of the data is increased by 5 , then their mean : **[1]**

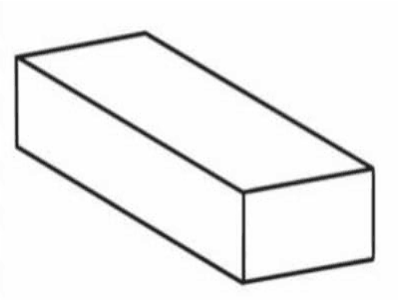
(a) remains the same (b) becomes 5 times the original mean

(c) is decreased by 5 (d) is increased by 5

(ix) The value of $\frac{1}{\sin 30°} - \frac{\sqrt{3}}{\cos 30°}$ is : **[1]**

(a) 2 (b) 1 (c) ½ (d) 0

(x) The volume of the given soild is 3600 cm^3. If it is 20 cm long and 9 cm high, its width is : **[1]**



(a) 20 cm (b) 30 cm (c) 25 cm (d) 24 cm

(xi) If $\cos (2x + 30^o) = 0$, then the value of x is : **[1]**

(a) 60^o (b) 30^o (c) 100^o (d) 75^o

(xii) The value of $\tan^2 45^o + \cot^2 45^o + \sin^2 45^o$ is : **[1]**

(a) 5/2 (b) 1/2 (c) -1/2 (d) 1/4

(xiii) The equation of the Y axis is: **[1]**

(a) y = 0 (b) y = a (c) x = 0 (d) x = b

(xiv) The diameter of a circle is 14 m. The circumference of the circle is: **[1]**

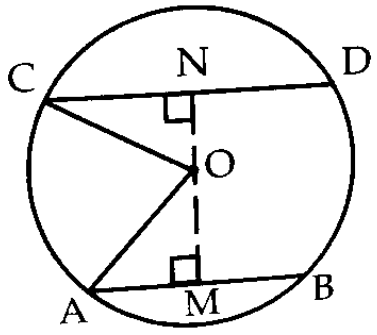
(a) 44 m (b) 70 m (c) 88 m (d) 616 m

(xv) The volume of a cube is 216 cm^3. Its total surface area is: **[1]**

(a) 250 cm^2 (b) 54 cm^2 (c) 216 cm^2 (d)36 cm^2

Question 2

(i) The lengths of two parallel chords of a circle are 6 cm and 8 cm . If the smaller chord is at a distance of 4 cm from the centre , find the distance of the other chord from the centre . **[4]**



(ii) Find the value of : $\frac{\sin 30° - \sin 90° + 2\cos 0°}{\tan 30° \times \tan 60°}$ **[5]**

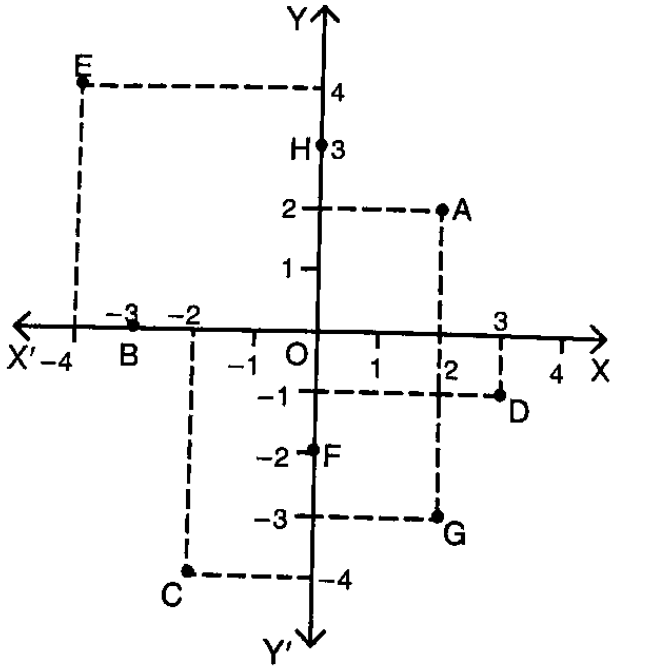
(iii) Draw a histogram for the following data : **[4]**

Marks obtained	150-160	160-170	170-180	180-190	190-200
No. of students	8	3	4	10	2

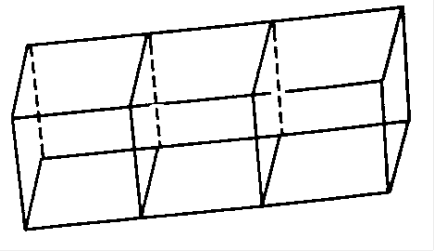
Question 3

(i) The lengths of the sides of a triangle are in the ratio 3 : 4 : 5 . Find the area of the triangle if its perimeter is 144 cm . **[4]**

(ii) Write the coordinates of the points A, B , C , D , E , F , G , H shown in the adjacent figure . **[4]**



(iii) Three cubes each of side 6 cm are joined together side by side (as shown in the adjoining figure) to form a cuboid . Find the volume and the surface area of the cuboid . **[4]**



SECTION B (40 Marks)

(Attempt any four questions from this section.)

Question 4

(i) Construct a parallelogram ABCD when BC = 4.5 cm , diagonal AC = 5.6 cm and diagonal BD = 5 cm . **[3]**

(ii) The area of an equilateral triangle is $36\sqrt{3}\ sq.cm.$ Find its perimeter. **[3]**

(iii) If $1176 = 2^p \cdot 3^q \cdot 7^r$, find the values of p , q and r . Hence calculate the value of $2^p \cdot 3^q \cdot 7^{-r}$ **[4]**

Question 5

(i) PQRS is a rhombus . **[3]**

(a) If it is given that PQ = 3 cm , calculate the perimeter of PQRS .

(b) If the height of the rhombus is 2.5 cm , calculate the area .

(ii) Calculate the value of A , if : $\cos 3A\ (2 \sin 2A - 1) = 0$. **[3]**

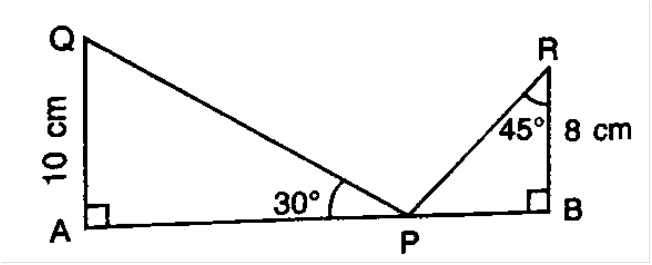
(iii) Solve graphically the simultaneous equations given below : **[4]**

$x - 2y - 4 = 0$; $2x + y = 3$

Question 6

(i) Construct a square whose one diagonal is 5.6 cm . **[3]**

(ii) Use the information given to find the length of AB . **[4]**



(iii) Evaluate : $\sqrt{\frac{1}{4}} + (0.01)^{\frac{-1}{2}} - (27)^{\frac{2}{3}}$ **[3]**

Question 7

(i) Evaluate : $\left(\frac{\cos 47°}{\sin 43°}\right)^2 + \left(\frac{\sin 72°}{\cos 18°}\right)^2 - 2\cos^2 45°$ **[4]**

(ii) The electricity bills (in rupees) of 40 houses in a locality are given below . Construct a grouped frequency distribution table by taking the class intervals 50 - 60 , 60 – 70 , etc . **[3]**

78 , 87 , 81 , 52 , 59 , 65 , 101 , 108 , 115 , 95 , 98 , 65 , 62 , 121 , 128 , 63 , 76 , 84 , 89 , 91 , 65 , 101 , 95 , 81 , 87 , 105 , 129 , 92 , 75 , 105 , 78 , 72 , 107 , 116 , 127 , 100 , 80 , 82 , 61 , 118

(iii) Construct a rectangle PQRS which has side PQ = 4.5 cm and diagonal PR = 6 cm . **[3]**

Question 8

(i) The dimensions of a cinema hall are 100 m , 60 m and 15 m . How many persons can sit in the hall , if each requires 150 m^3 of air ? **[4]**

(ii) For the given data : 11 , 15 , 17 , y + 1 , 19 , y – 2 , 3 ; if the mean is 14 , then find the value of y . **[3]**

(iii) A kite is attached to a 100 m long string . Find the greatest height reached by the kite when its string makes an angle of 60^o with the level ground . **[3]**

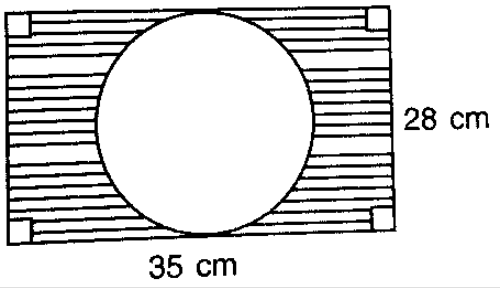
Question 9

(i) The weight of 12 students (in kg) are : **[3]**

40 , 61 , 54 , 50 , 59 , 37 , 51 , 41 , 48 , 62 , 46 and 34 .

Find the median weight . If the weight of 62 kg is replaced by 35 kg , find the new median weight .

(ii) A rectangular sheet of paper is 35 cm long and 28 cm wide . Find the area of the largest circle that can be cut from this sheet . **[3]**



(iii) If $A = 60^{o}$, verify that : **[4]**

(a) $\sin^2 A + \cos^2 A = 1$ (b) $\sec^2 A - \tan^2 A = 1$

Question 10

(i) The area of a circle is numerically equal to its circumference . Find its area. **[3]**

(ii) The volume of a cube is 729 cm^3 . Find its total surface area . **[3]**

(iii) If $2 \sin B = \sqrt{3}$, evaluate : **[4]**

(a) $4 \sin^3 B - 3 \sin B$ (b) $3 \cos B - 4 \cos^3 B$

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