

- (i) Find the slant height of the cone and the volume of the hemisphere.
- (ii) Find the total volume of the article.

OR

A solid toy is in the form of a hemisphere surmounted by a right circular cone. Height of the cone is 4 cm and the diameter of the base is 8 cm. If a right circular cylinder circumscribes the solid. Find how much more space it will cover?

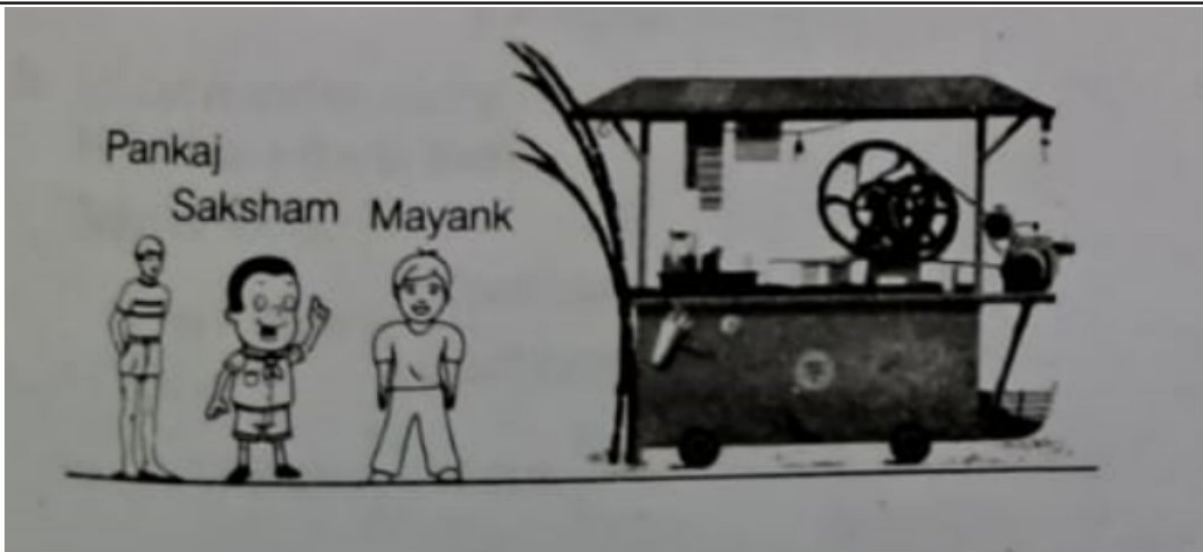
SECTION E

Section E consists of 3 questions of 4 marks each.

36

Morning Walk

In a morning walk, Pankaj, Saksham and Mayank step off together, their steps measuring 240 cm, 90 cm and 120 cm respectively. They want to go for a juice shop for a health issue, which is situated near by them.



1
1

On the basis of above information, answer the following questions.

- (i) If a and b are two numbers, then find the relation between LCM and HCF.
- (ii) Find the minimum distance of the shop from where they start to walk together, so that one can cover the distance in complete steps.

2

OR

Find the number of common steps covered by all of them to reach the juice shop.

- (iii) A largest positive integer that divides two positive integers is called...

37

Play Cards

There are three friends and they want to play some interesting games. Firstly, they consider some cards and marked with the numbers 2 to 101 are placed in a box and mixed thoroughly. One card is drawn from this box

On the basis of above information, answer the following questions

- (i) Find the probability that the drawn card is an even number.
- (ii) Find the probability that the drawn card is a number less than 14.
- (iii) Find the probability that the drawn card is a number which is a perfect square.

1

1

2

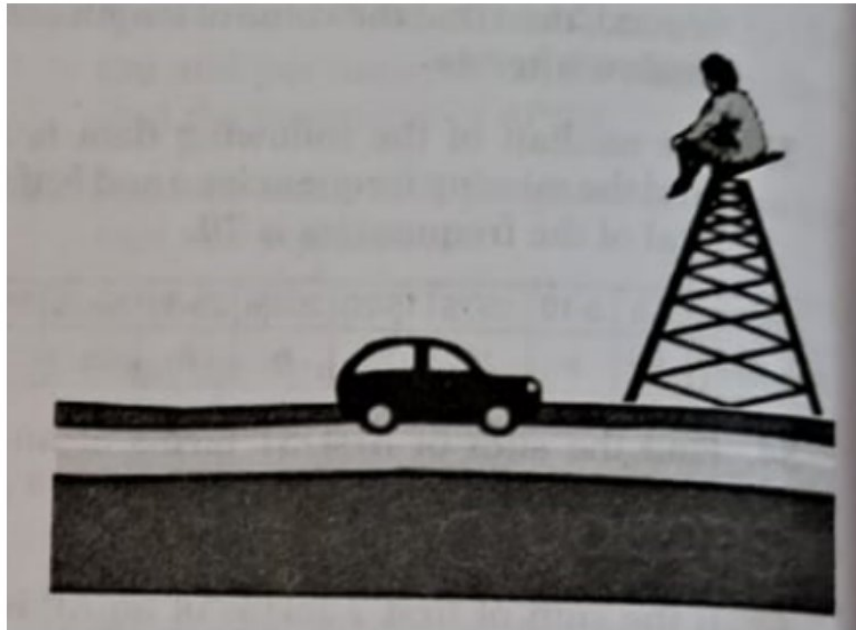
OR

Find the probability that the drawn card is a prime number and it is less than 20.

38

Telecasting Tower

A straight highway leads to the foot of a national communication and telecasting tower. A watchman standing at the top of the tower observes a car at an angle of depression of 30° which is approaching the foot of the tower with a uniform speed. Two minutes later, the angle of depression was found to be 60° . The watchman suspects that some terrorist are approaching the tower. It needs half a minute for the watchman to inform the security staff so that it may alert.



On the basis of above information, answer the following questions

- (i) Find the angle of depression from the object to the point on the ground and the angle of elevation of the same point on the ground to the same object. 1
- (ii) The angle of of an object viewed, is the angle formed by the line of sight with the horizontal. 1
- (iii) How much time will the car take to reach the foot of the tower? 2

OR

From a point on the ground, the angles of elevation of the bottom and top of a transmission tower fixed at the top of a 20 m high building are 45° and 60° respectively. Find the height of the tower.

Roll No. _____

Please check that this question paper contains 38 questions and 10 printed pages

**D.A.V. INSTITUTIONS, CHHATTISGARH
PRACTICE PAPER-9**

CLASS: X

SUBJECT: MATHEMATICS (STANDARD)

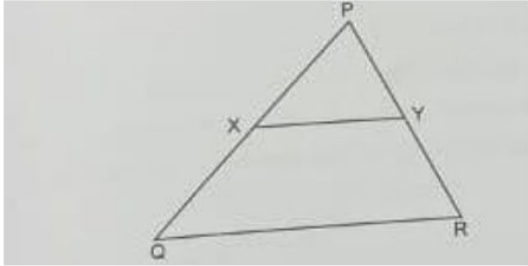
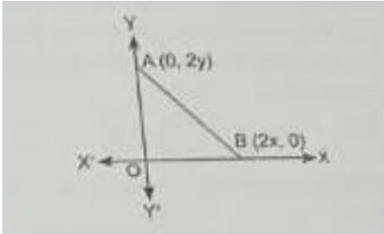
TIME: 3 HOURS

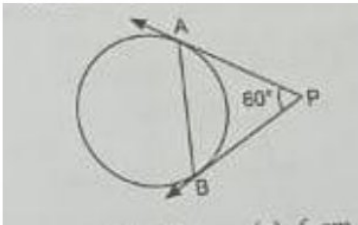
MAX MARKS: 80

General Instructions:

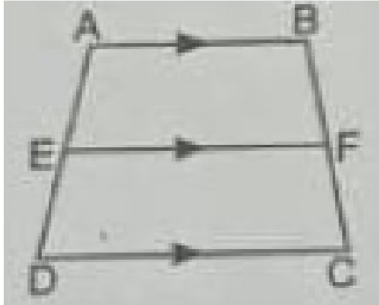
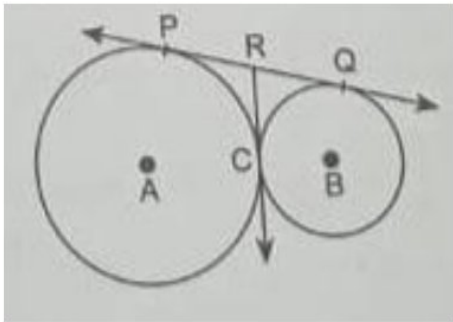
1. This Question Paper has 5 sections A – E.
2. Section A has 20 MCQs carrying 1 mark each.
3. Section B has 5 questions carrying 2 marks each.
4. Section C has 6 questions carrying 3 marks each.
5. Section D has 4 questions carrying 5 marks each.
6. Section E has 3 case based integrated units of assessment (04 marks each) with sub-parts of the values of 1, 1 and 2 marks each respectively.
7. All questions are compulsory. However, an internal choice of 2 questions of 5 marks, 2 questions of 3 marks and 2 Questions of 2 marks has been provided. An internal choice has been provided in the 2 marks questions of Section E.
8. Draw neat figures wherever required. Take $\pi = \frac{22}{7}$ wherever required if not stated.

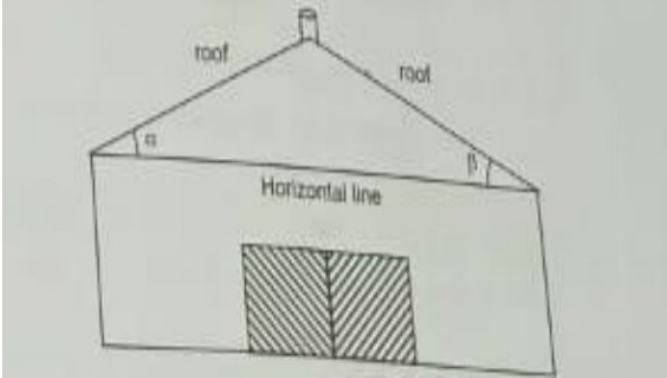
SECTION A		
Section A consists of 20 questions of 1 mark each.		
Q. No.		Marks
1	If $a=(2^2 \times 3^3 \times 5^4)$ and $b=(2^3 \times 3^2 \times 5)$, then $HCF(a,b)=$ (a) 90 (b) 180 (c) 360 (d) 540	1
2	$(x+2)^3=2x(x^2-1)$ is (a) Linear equation (b) Not quadratic equation	1

	(c) Quadratic equation	(d) Not defined		
3	In an AP, 18, 13, 8, 3, ..., the value of S_{35} =		1	
	(a) 2345	(b) 2435	(c) -2345	(d) -2435
4	If $x=a$ and $y=b$ is the solution of the linear equations $x-y=2$ and $x+y=4$, then the values of a and b are:		1	
	(a) 2,1	(b) 3,1	(c) 4,6	(d) 1,2
5	Three vertices of a parallelogram taken in the order are $(-1,-6)$, $(2,-5)$ and $(7,2)$. The fourth vertex is:		1	
	(a) (1,4)	(b) (1,1)	(c) (4,4)	(d) (4,1)
6	In the figure $XY \parallel QR$, $\frac{PX}{XQ} = \frac{PY}{YR} = \frac{1}{2}$, then		1	
				
	(a) $XY = \frac{1}{2}QR$	(b) $XY = QR$	(c) $XY^2 = QR^2$	(d) $XY = \frac{1}{2}PQ$
7	The coordinates of the point which is equidistant from the three vertices of ΔAOB as shown in the figure is		1	
				
	(a) (x, y)	(b) (y, x)	(c) $(\frac{x}{2}, \frac{y}{2})$	(d) $(\frac{y}{2}, \frac{x}{2})$
8	If $\sin\theta = \sqrt{3} \cos\theta$, $0^\circ < \theta < 90^\circ$, then θ is equal to		1	

	(a) 30°	(b) 45°	(c) 60°	(d) 90°	
9	If in two triangles ABC and PQR, $\frac{AB}{QR} = \frac{BC}{PR} = \frac{CA}{PQ}$, then				1
	(a) $\Delta PQR \sim \Delta CAB$		(b) $\Delta PQR \sim \Delta ABC$		
	(c) $\Delta CBA \sim \Delta PQR$		(d) $\Delta BCA \sim \Delta PQR$		
10	The LCM of 2.5, 0.5 and 0.175 is				1
	(a) 2.5	(b) 5	(c) 7.5	(d) 17.5	
11	In the figure, PA and PB are tangents to a circle, PA=9cm and $\angle APB=60^\circ$, then chord AB=				1
					
	(a) 4cm	(b) 7cm	(c) 6cm	(d) 9cm	
12	The arc of a circle of radius 30 cm having length 19cm, then angle subtended by this arc at the centre O of the circle is: ($\pi=22/7$)				1
	(a) 36.27°	(b) 36°	(c) 30.99°	(d) 34°	
13	If two solid hemisphere of the same base radius r are joined together along their bases, then the curved surface area of this new solid is				1
	(a) $4\pi r^2$	(b) $6\pi r^2$	(c) $3\pi r^2$	(d) $8\pi r^2$	
14	While computing mean of a grouped data, we assume that the frequencies are				1
	(a) Evenly distributed over all the classes				
	(b) Centered at the class marks of the classes				
	(c) Centered at the upper limits of the classes				
	(d) Centered at the lower limits of the classes				

15	In making 1000 revolutions, a wheel covers 88 km, then the diameter of the wheel is (Take $\pi = \frac{22}{7}$) (a) 7m (b) 14m (c) 36m (d) 28m	1
16	A card is drawn from a well-shuffled deck of 52 playing cards. The probability that the card will not be an ace is: (a) $\frac{1}{13}$ (b) $\frac{1}{4}$ (c) $\frac{12}{13}$ (d) $\frac{3}{4}$	1
17	The probability of getting a red face card from a pack of cards is; (a) $\frac{3}{26}$ (b) $\frac{1}{13}$ (c) $\frac{1}{52}$ (d) $\frac{1}{4}$	1
18	In ΔABC , $\angle B = 90^\circ$, if $\tan A = 1$, then $2\sin A \cos A =$ (a) 0 (b) 1 (c) $\frac{1}{2}$ (d) Not defined	1
19	Assertion (A): If in a ΔABC , a line $DE \parallel BC$, intersects AB in D and AC in E , then $AB/AD = AC/AE$ Reason (R): If a line is drawn parallel to one side of a triangle intersecting the other two sides, then the other two sides are divided in the same ratio. a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A). b) Both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation of Assertion (A). c) Assertion (A) is true but Reason (R) is false. d) Assertion (A) is false but Reason (R) is true.	1
20	Assertion (A): In a right-angled triangle, if $\tan \theta = \frac{3}{4}$, the greatest side of the triangle is 5 units. Reason (R): $(\text{greatest side})^2$, i.e., $(\text{hypotenuse})^2 = (\text{perpendicular})^2 + (\text{base})^2$	1

	<p>a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).</p> <p>b) Both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation of Assertion (A).</p> <p>c) Assertion (A) is true but Reason (R) is false.</p> <p>d) Assertion (A) is false but Reason (R) is true.</p>	
SECTION B		
Section B consists of 5 questions of 2 marks each.		
21	Find the sum of all multiples lying between 100 and 1000.	2
22	<p>In the given figure ABCD is a trapezium in which $AB \parallel DC \parallel EF$. Show that $AE/ED=BF/FC$</p> 	2
23	<p>In the given figure, two circles touch each other at the point C. Prove that the common tangent to the circles at C, bisects the common tangent at P and Q.</p> 	2

24	<p>An arc of a circle is of the length 7π cm and the sector it bounds is of the area 28π cm². Find the radius of the circle.</p> <p style="text-align: center;">OR</p> <p>The wheels of a car are of the diameter 80cm each. How many complete revolutions does each wheel make in 10 minutes when the car is traveling at a speed of 66 kmph? ($\pi = \frac{22}{7}$)</p>	2
25	<p>In some buildings, especially in industries, the roof is inclined. The inclined roof is the application of trigonometric functions. Here the roof of industry is inclined at angles α and β with the horizontal line as shown. Determine the value of $\sin(\alpha + \beta)$.</p> <p>$\operatorname{cosec} \alpha = \sqrt{2}$ and $\cot \beta = 1$, where both angles are acute.</p> <div style="text-align: center;">  </div> <p style="text-align: center;">OR</p> <p>Evaluate $\sin^6 \theta - \cos^6 \theta$</p>	2
SECTION C		
Section C consists of 6 questions of 3 marks each.		
26	<p>Manju and Manish participate in a cycle race, organized for National Integration. Manju takes 18 minutes to complete one round, while Manish takes 12 minutes for the same. Suppose they both start at the same time and go in the same direction.</p> <p>After how many minutes will they meet again at the starting point?</p>	3
27	<p>Solve for x: $\frac{x-2}{x-4} + \frac{x-6}{x-8} = 6\frac{2}{3}$, ($x \neq 4, 8$)</p>	3