

SECTION-A

I. Multiple Choice Questions:		
1.	One ticket is drawn at random from a bag containing tickets numbered 1 to 40. The probability that the selected ticket has a number which is a multiple of 7 is : (A) $\frac{1}{7}$ (B) $\frac{1}{8}$ (C) $\frac{1}{5}$ (D) $\frac{7}{40}$	(1)
2.	Given $HCF(2520, 6600) = 40$, $LCM(2520, 6600) = 252 \times k$, then the value of k is : (A) 1650 (B) 1600 (C) 165 (D) 1625	(1)
3.	The probability of getting a bad egg in a lot of 400 eggs is 0.045. The number of good eggs in the lot is : (A) 18 (B) 180 (C) 382 (D) 220	(1)
4.	The smallest irrational number by which 20 should be multiplied so as to get a rational number, is : (A) $\sqrt{20}$ (B) $\sqrt{2}$ (C) 5 (D) $\sqrt{5}$	(1)
5.	A cone of height 12cm and slant height 13cm is surmounted on a hemisphere having radius equal to that of a cone. The entire height of the solid is : (A) 17cm (B) 18cm (C) 22cm (D) 23cm	(1)
6.	If $HCF(98, 28) = m$ and $LCM(98, 28) = n$, then the value of $n - 7m$ is : (A) 0 (B) 28 (C) 98 (D) 198	(1)
7.	If the area of a sector of circle of radius 36 cm is 54 cm^2 , then the length of the corresponding arc of the sector is : (A) $8\pi \text{ cm}$ (B) $6\pi \text{ cm}$ (C) $4\pi \text{ cm}$ (D) $3\pi \text{ cm}$	(1)
8.	If $x \text{ median} + y \text{ mean} = z \text{ mode}$; is the empirical relationship between mean, median and mode, then the value of $x + y + z$ is (A) 6 (B) 3 (C) 2 (D) 1	(1)
Directions: In Question number 9 and 10, a statement of Assertion (A) is followed by a statement of Reason (R).		

	Choose the correct option from the following: (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.	
9.	Assertion(A): In a cricket match, a batsman hits a boundary 9 times out of 45 balls he plays. The probability that in a given ball he does not hit the boundary is $\frac{4}{5}$. Reason(R): $P(E) + P(\text{not } E) = 1$.	(1)
10.	Assertion (A): Unit digit of 3^n cannot be an even number for any natural number n. Reason (R): 2 is not a prime factor of 3^n for any natural number n.	(1)

SECTION-B

II.	Very Short Answer Type Questions:																	
11.	A chord of a circle of radius 10 cm subtends a right angle at the centre. Find the perimeter of the corresponding minor segment.					(2)												
12.	(a) Prove that $-7 - 2\sqrt{3}$ is an irrational number, given that $\sqrt{3}$ is an irrational number. (OR) (b) The length, breadth and height of a room are 8m 50cm, 6m 25cm and 4m 75cm respectively. Find the length of the longest rod that can measure the dimensions of the room exactly.					(2)												
13.	Find 'p' if the mean of the given data is 15.45.					(2)												
<table border="1"><tr><td>Class</td><td>0 - 6</td><td>6 - 12</td><td>12 - 18</td><td>18 - 24</td><td>24 - 30</td></tr><tr><td>Frequency</td><td>6</td><td>8</td><td>p</td><td>9</td><td>7</td></tr></table>						Class	0 - 6	6 - 12	12 - 18	18 - 24	24 - 30	Frequency	6	8	p	9	7	
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SECTION-C

III.	Short Answer Type Questions.	
14.	Prove that $\sqrt{23}$ is an irrational number.	(3)
15.	(a) A rectangular metal block has length 15 cm, breadth 10 cm and height 5 cm. From this block, a circular hole of diameter 7 cm is drilled out. Find: (i) the volume of the remaining solid (ii) the surface area of the remaining solid. (OR) (b) From a solid cylinder of height 24cm and radius 5cm, two cones of height 12 cm and radius 5cm are hollowed out. Find the volume and surface area of the remaining solid.	(3)

SECTION-D

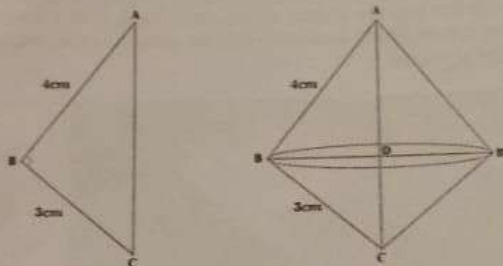
IV.	Long Answer Type questions.																							
16.	The median of the following data is 525. Find the values of p and q, if the total frequency is 100. Also, find the mode of the resulting data.	(5)																						
	<table><tr><th>Class Interval</th><th>Frequency</th></tr><tr><td>0 - 100</td><td>2</td></tr><tr><td>100 - 200</td><td>5</td></tr><tr><td>200 - 300</td><td>p</td></tr><tr><td>300 - 400</td><td>12</td></tr><tr><td>400 - 500</td><td>17</td></tr><tr><td>500 - 600</td><td>20</td></tr><tr><td>600 - 700</td><td>q</td></tr><tr><td>700 - 800</td><td>9</td></tr><tr><td>800 - 900</td><td>7</td></tr><tr><td>900 - 1000</td><td>4</td></tr></table>	Class Interval	Frequency	0 - 100	2	100 - 200	5	200 - 300	p	300 - 400	12	400 - 500	17	500 - 600	20	600 - 700	q	700 - 800	9	800 - 900	7	900 - 1000	4	
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17. (a) Marbles of diameter 1.4cm are dropped into a cylindrical beaker of diameter 7cm containing some water. Find the number of marbles that should be dropped into the beaker so that the water level rises by 5.6cm. (5)

(OR)

- (b) A right triangle whose sides are 3cm and 4cm (other than hypotenuse) is made to revolve about its hypotenuse. Find the volume and surface area of the double cone so formed. (Use $\pi = 3.14$)



SECTION - E

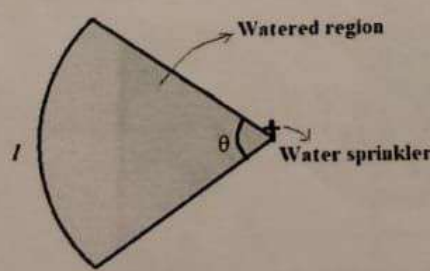
V. Case Study Based Questions:

18. Shivani took a pack of 52 cards. She kept aside all the black face cards and shuffled the remaining cards well.



Based on the above information answer the following questions.



	(i) Write the number of total possible outcomes. (ii) She draws a card from the well-shuffled pack of remaining cards. What is the probability that the card is a face card? (iii) (a) Write the probability of getting either a black card or a red card? (OR) (iii) (b) What is the probability of getting neither a black card nor an ace card.	(1) (1) (2)
19.	A water sprinkler is a device used to irrigate agricultural crops, lawns, landscapes, golf courses, and other areas. Water sprinklers can be used for residential, industrial, and agricultural usage.  A water sprinkler is set to shoot a stream of water a distance of 21 m and rotate through an angle which is equal to complementary angle of 10°. 	



i) What is the area of sector in terms of arc length?	(1)
ii) What is the area of the watered region (in terms of π)?	(1)
iii) (a) If the radius(r) changes to 28m, find the angle θ so that the area of the watered region remains the same.	(2)
(OR)	
(b) If the radius(r) is increased from 21m to 28m and the angle remains the same, what is the increase in the area of the watered region?	