11 MARCH 2016 **SET-B**

SUMMATIVE ASSESSMENT – II (2015-2016)
MATHEMATICS
Class – IX

Time allowed : 3 hours **Maximum Marks : 90**

General Instructions :

(i) All questions are **compulsory**.

(ii) The question paper consists of **31** questions divided into five **sections A, B, C, D** and **E**. **Section-A** comprises of **4** questions of **1 mark** each, **Section-B** comprises of **6** questions of **2 marks** each, **Section-C** comprises of **8** questions of **3 marks** each and **Section-D** comprises of **10** questions of **4 marks** each. **Section E comprises of two questions of 3 marks each and 1 question of 4 marks from Open Text theme.**

(iii) There is no overall choice.

(iv) Use of calculator is not permitted.

SECTION-A

Question numbers **1** to **4** carry **one** mark each.

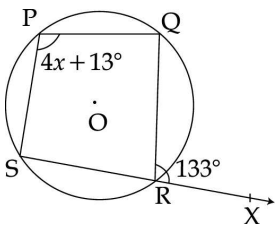
1 The points scored by a basketball team in a series of matches are as follows : 17, 7, 10, 25, 5, 10, 18, 10, 24. Find the mean. 1

2 In a history test given to 15 students the following marks (out of 75) are recorded : 1
41, 39, 48, 52, 46, 62, 54, 40, 66, 52, 70, 40, 42, 52, 60.

Prepare a continuous grouped frequency distribution table with class size 5.

3 1

O is the centre of the circle that passes through P,Q,R, and S, as shown in the figure. SR is produced to X. If $\angle QRX = 133°$, find x.



4 The radius and the lateral surface area of right circular cone are 8 cm and 220 cm^2 respectively. Find its slant height. 1

SECTION-B

Question numbers **5** to **10** carry **two** marks each.

5 Two angles of a quadrilateral are 45° and 85°. The other two angles are in the ratio 15 : 8. Find the remaining two angles of the quadrilateral. 2

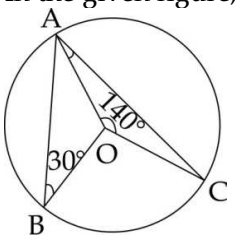
6 Using ruler and compass, construct an angle of 150°. 2

7 A die is thrown 600 times and the frequencies for the outcomes 1, 2, 3, 4, 5 and 6 are given in the following table : 2

Outcome	1	2	3	4	5	6
Frequency	60	90	175	68	50	157

Find the probability that in the next throw of dice.
(i) even number will come
(ii) odd number will come

8 In the given figure, if O is the centre of the circle, $\angle OBA = 30°$ and $\angle COA = 140°$, find $\angle BOC$. 2



9 Three coins are tossed simultaneously 250 times with the following frequencies of different outcomes : 2

Number of tails	0	1	2	3
Frequency	45	65	52	88

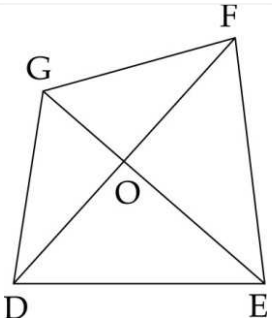
Compute the probability of getting :
(i) At most 2 heads
(ii) All heads

10 If the volume of cuboid is 440 cm^3 and the area of base is 88 cm^2, find the height of the cuboid. 2

SECTION-C

Question numbers **11** to **18** carry **three** marks each.

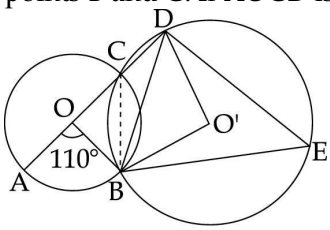
11 DEFG is a quadrilateral such that diagonal DF divides it into two parts of equal areas. Prove that the diagonal DF bisects GE. 3



12	The diameter of garden roller is 1.4 m and it is 2 m long. How much area will it cover in 15 revolutions ($\pi = \frac{22}{7}$)	3
13	Find the mean and median of first 10 composite numbers.	3
14	ΔXYZ is right angled at Y. P and Q are mid-points of sides XY and XZ respectively. If XY $= 9$ cm and PQ $= 6$ cm, then find the length of XZ.	3
15	Draw a histogram of the following data :	3

Marks	Number of Students
0 - 10	12
10 - 20	18
20 - 30	10
30 - 40	15
40 - 50	7
50 - 60	4

16	Draw a line segment PQ $= 8.4$ cm. Divide it into four equal parts, using ruler and compass.	3
17	In the given figure, O and O' are centres of two circles and the circles intersect each other at points B and C. If AOCD is a straight line and $\angle AOB = 110°$, find $\angle BED$ and $\angle BOD$.	3

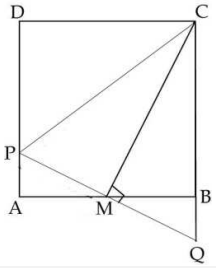
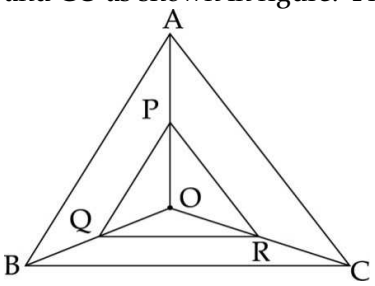
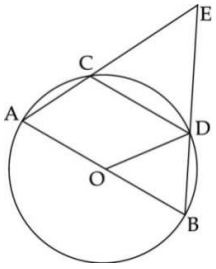


18	Prove that equal chords of a circle substend equal angles at the centre.	3

SECTION-D

Question numbers **19** to **28** carry **four** marks each.

19	Construct a triangle PQR whose perimeter is 10.5 cm and measure of the base angles are 60° and 45°.	4

	20	The patients in a hospital are given soup daily in a cylindrical bowl of diameter 7 cm. On a particular day, the girls of NCC decided to cook the soup for the patients. If they fill the bowl with soup to a height of 6 cm, then how much soup (in litres) is to be cooked for 200 patients ? Which value is depicted by the girls ?	4
	21	ABCD is a square. M is the mid−point of AB and CM⊥PQ as shown in the figure. Show that CP = CQ. 	
	22	ABC is an equilateral triangle with perimeter 30 cm. P, Q and R are mid-points of AO, BO and CO as shown in figure. Find ar(ΔPQR). 	
	23	Draw a histogram and frequency polygon to represent the following data : Class Interval | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 Frequency | 4 | 7 | 8 | 10 | 6	4
	24	In the given figure, O is the centre of the circle, AB is a diameter and CD is a chord equal to the radius of the circle. AC and BD when produced intersect at E. Prove that ∠AEB = 60°. 	4
	25	A room is 30 m long, 24 m broad and 18 m high. Find : (a) length of longest rod that can be placed in the room. (b) its total surface area. (c) its volume.	4
	25	A cuboidal tank is 6 m long, 5 m wide and 4.5 m deep. How many litres of water it can hold ? Also, find its lateral surface area.	4

27	A pen stand is cylindrical in shape with the base radius 3.5 cm and height 10.5 cm. How much cardboard will be required to make 25 such pen stands ? Also find volume of 1 pen stand		4
28	A survey of 2000 people of different age groups was conducted to find out their preference in watching different types of movies : Type I →Family Type II →Comedy and Family Type III →Romantic, Comedy and Family Type IV →Action, Romantic, Comedy and Family		4

Age Group	Type I	Type II	Type III	Type IV	All
18-29	440	160	110	61	35
30-50	505	125	60	22	18
Above 50	360	45	35	15	9

Find the probability that a person chosen at random is :
(a) in 18-29 years of age and likes type II movies
(b) above 50 years of age and likes all types of movies
(c) in 30-50 years and likes type I movies.

SECTION-E
(Open Text)
(* Please ensure that open text of the given theme is supplied with this question paper.)
Theme : Childhood Obesity in India

29	Taking the height as 200 cm, form a linear equation in 2 variables by taking BMI as x and weight as y kgs. Also calculate BMI if the person's weight is 45 kgs.	3
30	To burn calories after eating junk food, a person chooses to jog and dance. Jogging for 30 minutes burn 300 calories and dancing for 30 minutes burn 150 calories. Taking j minutes taken to jog and d minutes taken for dance, write a linear equation for the same if he wants to burn 650 calFind two solutions in integers.	3
31	It is stated that "Children from age 1 grow taller and heavier till they reach adoloscence at a whopping rate of 2 kg every year for weight and 3 inches for height. Assuming weight as variable 'w' and height as 'h' and 'y' as age in years establish a linear relationship between following when weight at age 1 is 6 kg and height is 30 inch. Write these equations in standard form and give values of a, b and c (a) y and w (b) y and h	4

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