

## SUMMATIVE ASSESSMENT – II (2016)

### MATHEMATICS

#### Class – IX

Time allowed : 3 hours

Maximum Marks : 90

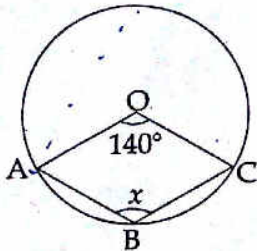
**General Instructions :**

- (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 For the graph of the linear equation  $ax + by + c = 0$  to pass through origin which of the three a, b and c is necessarily zero? 1
- 2 Cost of a small pizza is two and a half times the cost of a regular burger. Express this statement in the form of linear equation in two variables. 1
- 3 In the figure, if O is the centre of the circle and  $\angle AOC = 140^\circ$ , find x. 1

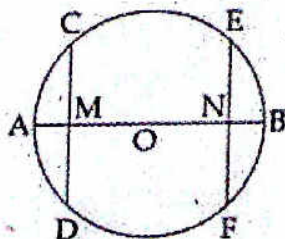


- 4 The perimeter of one face of a cube is 40 cm. Find the sum of lengths of its edges. 1

#### SECTION-B

Question numbers 5 to 10 carry two marks each.

- 5 An equilateral triangle of areas  $4\sqrt{3}$  cm<sup>2</sup> shares same base with a square. What is the area of square? Find the ratio of area of triangle to that of square. 2
- 6 If a diameter AB of a circle with centre O bisects each of the two chords CD and EF as shown in the figure, Prove that the two chords are parallel. 2



✓  
✓  
8 ✓ Construct an angle of measure  $45^\circ$ . 2

✓  
9 ✓ A solid right circular cylinder has radius of 14 cm and height of 8 cm. Find its curved surface area and total surface area. 2

✓  
10 ✓ Two coins are tossed simultaneously 500 times and following are the outcomes : 2  
no head = 100 times  
one head = 200 times  
two heads = 200 times

If the two coins are simultaneously tossed again, compute the probability of obtaining :  
(i) one head (ii) two heads

✓  
11 ✓ A farmhouse has a parking space of 20 cars. 5 cars with number plate 'DL', 6 cars with number plate 'HR' and 4 cars with number plate 'UP' are parked inside. Find the probability that the first car to exit the farmhouse is having the number plate starting with 'HR'. 2

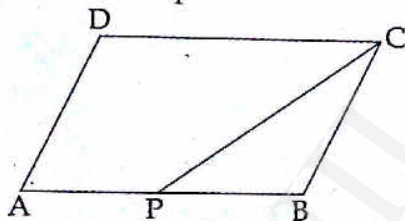
### SECTION-C

Question numbers 11 to 18 carry three marks each.

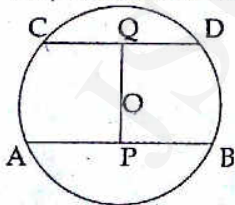
✓  
12 ✓ Write the equation of a line which is parallel to x-axis and is at a distance of 2 units above x-axis. Also draw the graph. 3

✓  
13 ✓ The cost of a toy horse is same as that of cost of 3 balls. Express this statement as a linear equation in two variables. Also draw its graph. 3

✓  
14 ✓ In the given figure, ABCD is a parallelogram and the point P bisects the base AB. Prove that  $\text{ar}(\triangle CPB) = \frac{1}{4} \text{ar}(ABCD)$ . 3



✓  
15 ✓ In the figure, AB and CD are two parallel chords of a circle with centre O and radius 5 cm such that AB = 8 cm and CD = 6 cm. If OP is perpendicular to AB and OQ is perpendicular to CD, determine the length of PQ. 3



✓  
16 ✓ Draw a line segment AB = 12 cm and by ruler and compasses, obtain a line segment of length  $\frac{3}{4}AB$ . Write steps of construction. 3

✓  
17 ✓ A match box measures 10 cm  $\times$  6.5 cm  $\times$  2.5 cm. 5 dozen match boxes are packed in a carton. Calculate the volume of the carton in  $m^3$ . 3

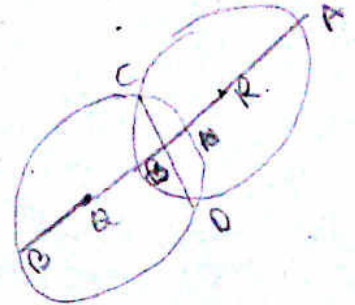
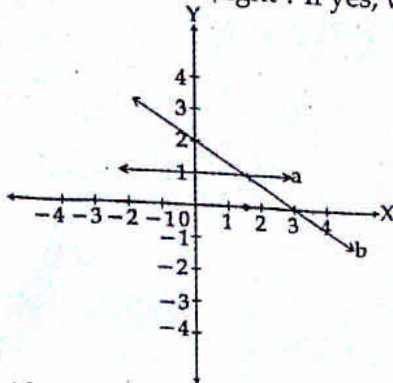
17 In Mathematics test given to 15 students, the following marks (out of 90) are recorded : 41, 39, 48, 52, 46, 62, 54, 40, 88, 52, 86, 40, 42, 52, 60  
Find the mean, median and mode of this data. 3

18 Mean of 50 observations was found to be 80.4. But later on, it was discovered that 96 was misread as 69 at one place. Find the correct mean. 3

### SECTION-D

Question numbers 19 to 28 carry four marks each.

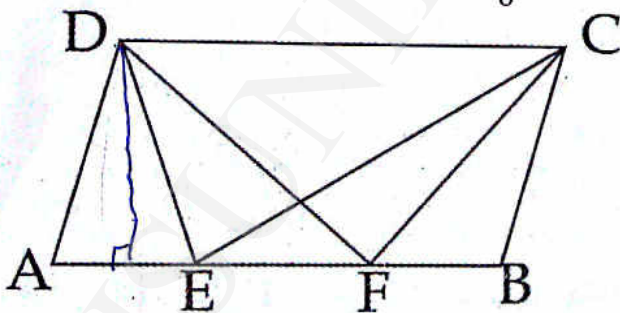
19 A student wrote the equations of the lines a and b drawn in the following graph as  $y=1$  and  $2x+3y=6$ . Is he right? If yes, write coordinates of point of intersection of lines a and b. 4



Also, find the area enclosed between these lines and  $y$ -axis.

20 Perimeter of a rectangle is 22 m. Write the given information in form of a linear equation in two variables. Also, represent it graphically. 4

21 ABCD is a parallelogram. E and F are points on side AB such that  $AE=EF=FB$ . Show that  $\text{ar}(\triangle DAE) = \frac{1}{6} \text{ar}(ABCD)$ . 4



$$\begin{array}{r} 3993 \\ 3993 \\ \hline 7986 \end{array}$$

$$\begin{array}{r} 3993 \\ \hline 5 \times 10 \times 10 \end{array}$$

22 Q and R are the centres of two congruent circles intersecting each other at points C and D. The line joining their centres intersects the circle in points A and B such that A and B do not lie between Q and R. If  $CD=6$  cm and  $AB=12$  cm, determine the radius of each circle and the distance between the centres of two circles. 4

23 Construct a  $\triangle ABC$ , given that  $BC=6.5$  cm,  $\angle C=60^\circ$  and  $AB+AC=10$  cm 4

- 24 (a) A village having a population of 1500 needs 120 litres of water per head per day. It has a tank measuring  $20\text{ m} \times 15\text{ m} \times 6\text{ m}$  full of fresh water. Due to some fault, the tank is not getting the water. For how many days will the water of this tank last? 4
- (b) If the fault is not removed and there is water in the tank even after 5 days will you recommend villagers to drink this stagnant and stale water? Explain.

25 The external and internal diameters of a hollow hemispherical bowl are 12 cm and 10 cm respectively. Find the cost of painting it all over at the rate of ₹ 2 per sq. cm. 4

26 How many full bags of wheat can be emptied into a conical tent of radius 8.4 m and height 3.5 m, if space required for each bag of wheat is  $1.96\text{ m}^3$ ? 4

27 A tyre manufacturing company kept a record of the distance covered before a tyre was replaced. The record is as shown below : 4

Distance (in km)	More than 1500	1100-1500	700-1100	300-700	Less than 300
No. of tyres	250	150	120	200	80

If you buy a tyre of this company, what is the probability that :

- (i) it will need a replacement before it has covered 700 km?
- (ii) it will last more than 1100 km?
- (iii) it will need to be replaced between 300 km to 1500 km?
- (iv) it will need to be replaced, after 1500 km?

28 In a school, marks obtained by 80 students are given in the table. Draw a histogram. 4

Marks obtained (class mark)	Number of students
305	12
315	18
325	28
335	15
345	5
355	2