

29 March 2017

Set-A

SUMMATIVE ASSESSMENT – II, 2016-17
MATHEMATICS
Class – X

Time Allowed: 3 hours

Maximum Marks: 90

General Instructions:

1. All questions are **compulsory**.
2. The question paper consists of 31 questions divided into four sections A, B, C and D. Section-A comprises of 4 questions of 1 mark each; Section-B comprises of 6 questions of 2 marks each; Section-C comprises of 10 questions of 3 marks each and Section-D comprises of 11 questions of 4 marks each.
3. There is no overall choice in this question paper.
4. Use of calculator is not permitted.

SECTION-A

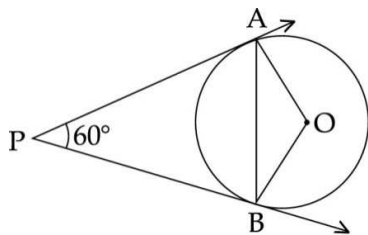
Question numbers 1 to 4 carry one mark each

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| 1 | A die is thrown once. Find the probability of getting an even prime number. | 1 |
| 2 | If the shadow of a vertical pole at a particular time of the day is equal to $\sqrt{3}$ times its height, then what is the elevation of the source of light at that time ? | 1 |
| 3 | The centre of a circle is C (3, -4) and one end of a diameter AB is A (-4, -2). Find the co-ordinates of the other end B. | 1 |
| 4 | Find the discriminant of the quadratic equation $3\sqrt{3}x^2 + 10x + \sqrt{3} = 0$. | 1 |

SECTION-B

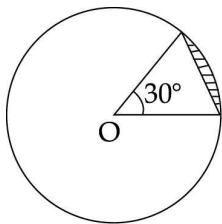
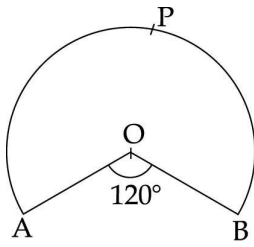
Question numbers 5 to 10 carry two marks each.

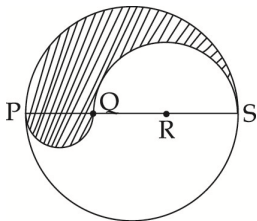
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| 5 | AB is diameter of a circle with centre O. If PA is a tangent from an external point P to the circle with $\angle POB = 115^\circ$. Find $\angle OPA$. | |
| 6 | Write first four terms of the AP, when the first term is 1.25 and common difference is -0.25 . | 2 |
| 7 | In the given figure, PA and PB are tangents to a circle with centre O such that $PA = 9$ cm and $\angle APB = 60^\circ$. Find the length of the chord AB. | 9 |

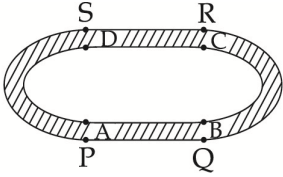
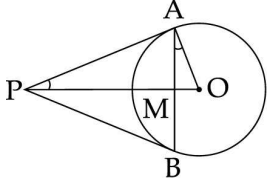


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| 8 | Draw a line segment AB of length 9.8 cm and divide it internally in the ratio 3 : 4. Measure the two parts. | |
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9	<p>In the given figure, OAPB is a sector of a circle of radius 3.5 cm with the centre at O. If $\angle AOB = 120^\circ$, then find the length of OAPBO. (Use $\pi = \frac{22}{7}$)</p>	
10	<p>If one root of the quadratic equation $2x^2 + kx - 6 = 0$ is 2, then find the value of $k + 1$.</p>	2
<p>SECTION-C</p> <p>Question numbers 11 to 20 carry three marks each.</p>		
11	<p>Two coins are tossed simultaneously. Find the probability of getting :</p> <p>(i) (A) Atleast one head (B) Atmost two tails</p>	3
12	<p>Find the number of coins 1.5 cm in diameter and 0.2 cm thick to be melted to form a right circular cylinder whose height is 10 cm and diameter is 4.5 cm.</p>	3
13	<p>The angle between two radii of a circle is 70°. Find the angle formed between the pair of tangent which are drawn at the end points of these two radii.</p>	3
14	<p>The first and last terms of an AP are 17 and 350 respectively. If the common difference is 9, how many terms are there and what is their sum ?</p>	3
15	<p>If a chord of a circle of radius 10 cm subtend an angle of 30° at the centre of the circle, find the area of the corresponding segment of the circle (See figure). (Take $\pi = 3.14$)</p>	3
16	<p>Solve for x : $8x^2 - 8\sqrt{2}x + 4 = 0$.</p>	3
17	<p>The angle of elevation of top of an electric pole from a point on the ground, which is 40 m away from the foot of the pole, is 30°. Find the height of the electric pole.</p>	3



18	A hemispherical depression of largest possible diameter is cut out from one face of a cubical wooden box of edge l . Determine the volume of the remaining solid.	3
19	Name the type of triangle formed by the points A(0, 0), B(6, 6) and C(− 6, 6).	3
20	A(1, −4), B(3, 2) and C(−1, 2) are the vertices of $\triangle ABC$ and D is the mid-point of BC. If P is a point on AD such that $\frac{AP}{PD} = \frac{2}{1}$, then, find the coordinates of P.	3
SECTION-D		
Question numbers 21 to 31 carry four marks each.		
21	Construct a $\triangle PQR$ in which $QR=6$ cm, $\angle Q=60^\circ$ and $\angle R=45^\circ$. Construct another triangle similar to $\triangle PQR$ such that its sides are $\frac{5}{6}$ of the corresponding sides of $\triangle PQR$.	4
22	An AP has 21 terms. The sum of 10 th , 11 th and 12 th terms is 129 and the sum of the last three terms is 237. Find the AP.	4
23	Find the sum of first 25 terms of an AP, in which the third term is 7 and seventh term is two more than thrice of its third term.	4
24	A school has decided to give scholar's badges to its scholar students and they were designed as shown in the figure. PQRS is a diameter of a circle of radius 6cm and the lengths PQ, PR and RS are equal. Find the perimeter of the shaded portion and the area of non-shaded portion. What is the importance of a Scholar's badge for a students ?	4
		
25	One day I asked the son of my close friend about his age. He said, "One year ago, my dad was 8 times as old as me and now his age is equal to the square of my age". Find the age of the son.	4
26	The angle of elevation of a jet plane from a point A on the ground is 60° . After a flight of 15 seconds, the angle of elevation changes to 30° . If the jet plane is flying at a constant height of $1500\sqrt{3}$ m, find the speed of the jet plane.	4

27	<p>An athletic track 21m wide consists of two straight sections 150 m long joining semi-circular ends whose diameters are 84 m each (see figure). Find the area of the track. (Use $\pi = \frac{22}{7}$ and $\sqrt{3} = 1.73$)</p> 	4
28	<p>A shopkeeper sells curd in cylindrical cups of radius 3 cm and height 6 cm. He has kept curd in a hemispherical bowl of radius 18 cm which is full. How many cylindrical cups are required to sell the entire curd ?</p>	4
29	 <p>Tangents PA and PB are drawn to a circle with centre O from a point P outside the circle. Prove that $\angle OPA = \angle OAM$.</p>	4
30	<p>One card is drawn at random from a well-shuffled deck of 52 cards. Find the probability of getting</p> <p>(A) a king of red colour. (B) a face card. (C) a red face card. (D) the jack of hearts</p>	4
31	<p>The vertices of a $\triangle ABC$ are $A(3, 0)$, $B(-1, -6)$ and $C(4, -1)$. Verify that for this triangle a median of a triangle divides it into two triangles equal in area.</p>	4
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