SUMMATIVE ASSESSMENT – II
MATHEMATICS
Class – X

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

General Instructions :
(i)   All questions are **compulsory**.
(ii)   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.
(iii)   There is no overall choice.
(iv)   Use of calculator is not permitted.

SECTION-A
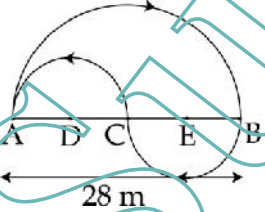Question numbers **1** to **4** carry **one** mark each.

1   What is the sum of first 'n' natural numbers?   1

2   The tops of two poles of height 16 m and 10 m are connected by a wire. If the wire makes an   1
    angle of 308 with the horizontal, find the length of the wire.

3   What is the sum of probabilities of all the elementary events of an experiment?   1

4   Find co-ordinates of any one point lying on the perpendicular bisector of line segment joining   1
    the points $\left(2\ \frac{1}{2},\ 5\right)$ and $\left(\frac{11}{2},\ 3\right)$

SECTION-B
Question numbers **5** to **10** carry **two** marks each.

5   Ram Prasad saved ` 10 in the first week of a year and then increased his weekly savings by ` 2.75. If in   2
    the nth week, his savings become ` 59.50, find n.

| 6 | If $x=\frac{5}{2}$ and $x=\frac{5}{3}$ are solutions of the equation $3x^2-2mx+12n-50$, then find the values of m and n. | 2 |

| 7 | In two concentric circles, a chord of length 24 cm of larger circle becomes a tangent to the smaller circle whose radius is 5 cm. Find the radius of the larger circle. | 2 |

| 8 | In the given figure, in what ratio does P divide line segment AB internally and how many equal parts are marked on ray BY? | 2 |

| 9 | In the figure, $\square ABCD$ circumscribes the circle. Find the length of the side CD. | 2 |

| 10 | Some children, playing on the beach, dig out sand for making a hollow cylinder in the ground of radius 14 cm and depth 20 cm. They then use this sand to make a cone like structure of radius 14 cm. What is the height of the cone? | 2 |

SECTION-C

Question numbers **11** to **20** carry **3** marks each.

| 11 | Determine the AP whose third term is 16 and the difference of 5th term from 7th term is 12. | 3 |

| 12	Solve for x: $8x^2 - 28\sqrt{2}\,x + 1450$.	3
13	If PA and PB are two tangents drawn to a circle with centre O such that $\angle BPA = 120°$, prove that $OP = 2PB$.	3
14	The angle of elevation of the top of a tower from a point, which is 30 m away from the base of the tower, is $30°$. Find the height of the tower.	3
15	Two fair dice are rolled simultaneously. What is the probability that the sum of the numbers obtained is a multiple of 3?	3
16	Using the distance formula, show that the points A (26, 0), B(0, 5) and C(6, 10) are collinear.	3
17	Show that the points A(0, 1), B(2, 3) and C(3, 4) are collinear.	3
18	The cost of painting the total outside surface of a closed cylindrical oil tank at 60 Paise per sq. m is ` 237.60 and the height of the tank is 6 times the radius of the base of the tank. Find the radius and height of the tank. (Use $\pi = \dfrac{22}{7}$)	3
19	In the given figure, points D, C and E divides AB = 28 m into 4 equal parts. A Cyclists starts from A reaches B, then to C and then back to A, all tracks being semicircular. If he takes 5 seconds to cover 11 m, how long will the cyclist take during his entire journey? (Use $p = \dfrac{22}{7}$)	3
20	A right circular cone made of iron is of 8 cm height and has base radius 2 cm. It is melted and recast into a sphere. Determine the radius of the sphere.	3

Question numbers **21** to **31** carry **4** marks each.

21 If the sum of first p terms of an AP is same as the sum of its first q terms $(p \neq q)$, then show that the sum of its first $(p+q)$ terms is zero.

4

22 Sum of the areas of two squares is 260 m². If the difference of their perimeters is 24 m, then find the sides of the two squares.

4

23 Solve for x :

$$\frac{5}{2x+1} + \frac{4}{x} = 3, \quad x \neq 0, \frac{2}{3}$$

4

24 If all the sides of a parallelogram touch a circle, show that the parallelogram is a rhambus.

4

25 Construct a triangle similar to $\triangle ABC$ whose sides are 2.5 times that of given $\triangle ABC$, where $\triangle ABC$ has sides 3 cm, 5 cm and 6 cm.

4

26 A straight highway leads to the foot of a tower of height 50 m. From the top of the tower, the angles of depression of two cars standing on the highway are 30° and 60° respectively. What is the distance between the two cars and how far is each car from the tower?

4

27 One card is drawn at random from a well-shuffled deck of 52 cards. Find the probability of getting

4

(A) A king of red colour.   (B) A face card.

(C) A red face card.   (D) the jack of hearts

28 Find the area of a quadrilateral ABCD whose vertices are A (1, 0), B (5, 3), C (2, 7) and D (22, 4). Also,

4

find the lengths of the diagonals AC and BD.

29 A trophy awarded to the best student in the class is in the form of a solid cylinder mounted on a solid 4
hemisphere with the same radius and is made from some metal. This trophy is mounted on a wooden
cuboids as shown in the figure. The diameter of the hemisphere is 21 cm and the total height of the
trophy is 24.5 cm. Find the weight of the metal used in making the trophy, if the weight of 1 cm^3 of
the metal is 1.2 g.(Use $\pi 5 \dfrac{22}{7}$)
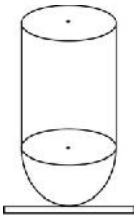
30 A man-hole on a drainage pipe is covered with an iron-plate, which is of the shape of a square of side 4
12.5 cm. From this iron-plate, a circular disc of diameter 7 cm is painted in black colour. The remaining
part is painted with blue colour paint. Find the blue paint required, if $1cm^2$ requires 0.8 g of paint. (Use
$p\, 5\ \dfrac{22}{7}$)

31 In a school for blinds, children were taught to make candles. They were given a cuboidal piece of wax 4
of dimensions 22cm39cm310cm. From this wax piece, they made cylindrical candles of radius 3cm
and height 7cm.Find how many candles will they make out of the given cuboidal piece, assuming
wastage is negligible. What values can be concluded about these blind children who are learning to
make candles?

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