Mock Test 08: Complete Syllabus (Basic Maths)-241

Time: 3 Hrs   **Maximum marks : 80**

INSTRUCTIONS TO THE STUDENTS

1. This question paper has 5 sections A, B, C, D and E.
2. Section A has 20 MCQs carrying 1 mark each.
3. Section B has 5 questions carrying 2 marks each.
4. Section C has 6 questions carrying 3 marks each.
5. Section D has 4 questions carrying 5 marks each.
6. Section E has 3 case based integrated units of assessment (04 marks each) with sub-parts of the values of 1, 1 and 2 marks each.
7. All questions are compulsory. However, an internal choice in 2 questions of 2 marks, 2 questions of 3 marks and 2 question of 5 marks has been provided. An internal choice has been provided in the 2 marks questions of Section E.
8. Draw neat figures wherever required. Take $\pi = \frac{22}{7}$ wherever required if not stated.
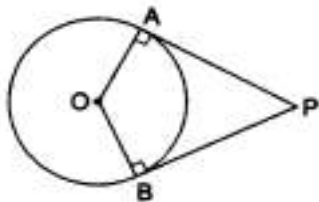
SECTION A
(Questions 1 – 10 carry 1 marks)

1	The exponent of 3 in the prime factorization of 864 is: a) 8 b) 3 c) 4 d) 2	1
2	The probability of getting a sum of 13 in a single throw of two dice is a) $\frac{5}{6}$ b) 0 c) $\frac{1}{6}$ d) 1	1
3	HCF (132, 77) is: a) 77 b) 44 c) 11 d) 22	1
4	The sum and the product of zeroes of the polynomial p(x) = x^2 + 5x + 6are respectively a) 5, - 6 b) - 2, - 3 c) - 5, 6 d) 2, 3	1
5	The pair of linear equations 2x = 5y + 6 and 15y = 6x - 18 represents two lines which are: a) parallel b) coincident c) intersecting d) either intersecting or parallel	1
6	The roots of the equation x^2 + 3x - 10 = 0 are: a) - 2, - 5 b) - 2, 5 c) 2, - 5 d) 2, 5	1
7	If in ΔABC and ΔDEF , $\frac{AB}{DE} = \frac{BC}{FD}$, then they will be similar, when a) $\angle A = \angle D$. b) $\angle B = \angle D$. c) $\angle A = \angle F$ d) $\angle B = \angle E$.	1
8	A street light is fixed on a pole 6 m above the ground. If a woman of height 1.5 m casts a shadow of 3, then distance between her and the base of the pole is _____ a) 10 m b) 9 m c) 12 m d) 8 m	1
9	The coordinates of the point P dividing the line segment joining the points A (1, 3)and B(4, 6)in the ratio 2: 1 are a) (4, 2) b) (2, 4) c) (5, 3) d) (3, 5)	1
10	The points A(9, 0), B(9, 6), C(- 9, 6) and D(- 9, 0) are the vertices of a a) square b) rhombus c) rectangle d) trapezium	1
11	If 5 tan θ - 12 = 0, then the value of sin θ is: a) $\frac{12}{13}$ b) $\frac{5}{13}$ c) $\frac{12}{5}$ d) $\frac{5}{12}$	1

12	The probability of guessing the correct answer to a certain test question is $\frac{x}{6}$. If the probability of not guessing the correct answer to this question is $\frac{2}{3}$, then the value of x is: a) 4 b) 6 c) 3 d) 2	1
13	$(\operatorname{cosec}\theta - \cot\theta)^2 =$? a) $\frac{1-\cos\theta}{1+\cos\theta}$ b) $\frac{1-\sin\theta}{1+\sin\theta}$ c) $\frac{1+\cos\theta}{1-\cos\theta}$ d) $\frac{1+\sin\theta}{1-\sin\theta}$	1
14	The length of the tangent drawn from a point P, whose distance from the centre of a circle is 25 cm, and the radius of the circle is 7 cm, is: a) 28 cm b) 24 cm c) 22 cm d) 25 cm	1
15	In a circle of radius 21 cm, an arc subtends an angle of 60^0 at the centre. The length of the arc is a) 21 cm b) 22 cm c) 23.5 cm d) 18.16 cm	1
16	A solid spherical ball fits exactly inside the cubical box of side 2a. The volume of the ball is a) $\frac{32}{3}\pi a^3$ b) $\frac{16}{3}\pi a^3$ c) $\frac{1}{6}\pi a^3$ d) $\frac{4}{3}\pi a^3$	1
17	An icecream cone has hemispherical top. If the height of the cone is 9 cm and base radius is 2.5 cm, then the volume of icecream is a) 91.67 cm^3 b) 96.67 cm^3 c) 91.76 cm^3 d) 90.67 cm^3	1
18	The mean of 2, 7, 6 and x is 5 and the mean of 18, 1, 6, x and y is 10. What is the value of y? a) 30 b) 10 c) 5 d) 20	1
19	**Assertion (A):** The H.C.F. of two numbers is 16 and their product is 3072. Then their L.C.M.= 162 **Reason:** If a, b are two positive integers, then H.C.F. × L.C.M. = a × b a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	1
20	**Assertion (A):** If tan A + cot A = 2 , then sin A + cos A = √2 . **Reason (R):** tan A + cot A = 2 implies A = 45°.	1

SECTION B
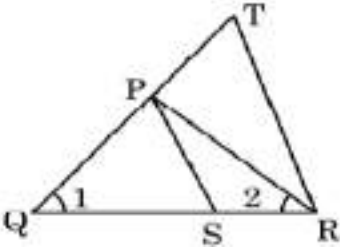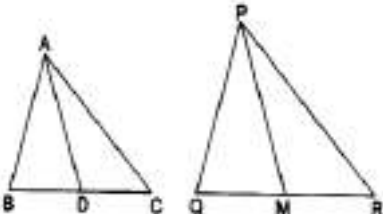### (Questions 21 – 25 carry 2 marks)

21	In an A.P. if the sum of third and seventh term is zero, find its 5th term. **OR** Which term of the AP 5, 9, 13, 17,...... is 81?	2
22	In a $\triangle ABC$, AD is the bisector of $\angle A$, meeting side BC at D.If AB = 5.6 cm, AC = 6 cm and DC = 3 cm, find BC.	2
23	Prove the trigonometric identity: $\frac{\tan\theta+\sin\theta}{\tan\theta-\sin\theta} = \frac{\sec\theta+1}{\sec\theta-1}$	2
24	PA and PB are tangents to the circle with centre O from an external point P, touching the circle at A and B respectively. Show that the quadrilateral AOBP is cyclic. **OR** Show that tangent lines at the end points of a diameter of a circle are parallel.	2
25	The minute hand of a clock is 15 cm long. Calculate the area swept by it in 20 minutes. [Take π = 3.14.]	2

SECTION C
(Questions 26 – 31 carry 3 marks)

26	Is it possible to design a rectangular park of perimeter 80 metres and area 400 m^2 . If so, find its length and breadth.	3

27	If α , β are zeroes of the quadratic polynomial $x^2 + 3x + 2$, find a quadratic polynomial whose zeroes are α + 1, β + 1.	
28	Solve 2x + 3y = 11 and 2x – 4y = –24 and hence find the value of **m** for which y = mx + 3.	3
29	If $cosecA = \sqrt{10}$ find other five trigonometric ratios. **OR** Prove the identity: (tanA + cosecB)^2 - (cotB - secA)^2 = 2tanA cotB (cosecA + secB)	3
30	Two tangents TP and TQ are drawn to a circle with centre O from an external point T. Prove that ∠PTQ = 2 ∠ OPQ.	3

31	(a)The king, queen and jack of club are removed from a deck of 52 cards. Then the cards are well - shuffled. One card is drawn at random from the remaining cards. Find the probability of getting
	   (i)a heart
	   (ii)a king
	   (iii)a club
	   (iv)a '10'of hearts.
	
	 OR
	
	 (b)A die is thrown once. Find the probability of getting
	   (i)a prime number
	   (ii)a number lying between 2 and 6
	   (iii)an odd number.
		3

SECTION D
(Questions 32 – 38 carry 4 marks)

32	A motor boat whose speed is 18 km/h in still water takes 1 hour more to go 24 km upstream, than to return to the same point. Find the speed of the stream and total time of the journey.	5
33	(a) In the given figure, $\frac{QR}{QS} = \frac{QT}{PR}$ and ∠ 1 = ∠ 2. Prove that △ PQS ~ △ TQR. (b) Sides AB and BC and median AD of a triangle ABC are respectively proportional to sides PQ and QR and median PM of △ PQR (see figure). Show that △ ABC ~△ PQR . 	3 + 2
34	A solid wooden toy is in the shape of a right circular cone mounted on a hemisphere. If the radius of the hemisphere is 4.2 cm and the total height of the toy is 10.2 cm, find the volume of that wooden toy. **OR** A solid is in the shape of a cone surmounted on a hemisphere with both their diameters being equal to 7 cm and the height of the cone is equal to its radius. Find the volume of the solid.	5

35	(a) The mode of the following frequency distribution is 36. Find the missing frequency (f).	5

Class	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70
Frequency	8	10	f	16	12	6	7

(b) If mode and mean of the given frequency table is 36 and 33.7 respectively. Find the median.

OR
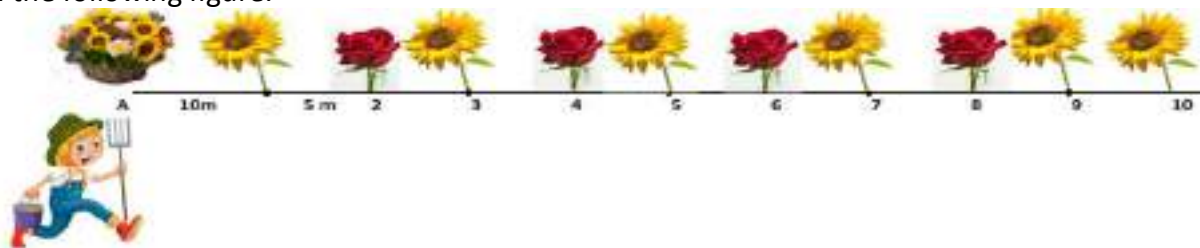
Find the mean, median and mode of the following data:

Class	0 - 10	10 - 20	20 -30	30 - 40	40 - 50	50 - 60	60 - 70
Frequency	6	8	10	15	5	4	2

SECTION E
(Questions 36 – 35 carry 5 marks)

36	**Read the following text carefully and answer the questions that follow:**	1

In a school garden, Dinesh was given two types of plants viz. sunflower and rose flower as shown in the following figure.

The distance between two plants is to be 5m, a basket filled with plants is kept at point A which is 10 m from the first plant. Dinesh has to take one plant from the basket and then he will have to plant it in a row as shown in the figure and then he has to return to the basket to collect another plant. He continues in the same way until all the flower plants in the basket. Dinesh has to plant ten numbers of flower plants.
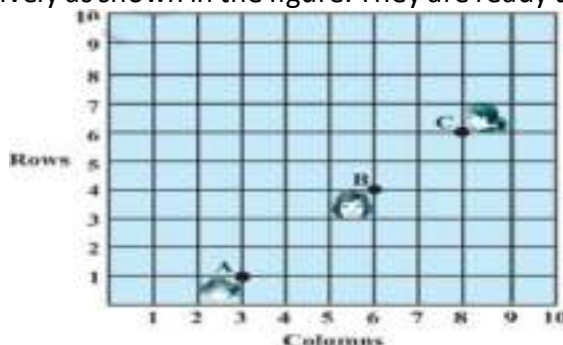
(i)Write the above information in the progression and find first term and common difference.

(ii)Find the distance covered by Dinesh to plant the first 5 plants and return to basket.

(iii)(a)Find the distance covered by Dinesh to plant all 10plants and return to basket.

OR

(b)If the speed of Dinesh is 10 m/min and he takes 15 minutes to plant a flower plant then find the total time taken by Dinesh to plant 10 plants.

(1 + 1 + 2 marks)

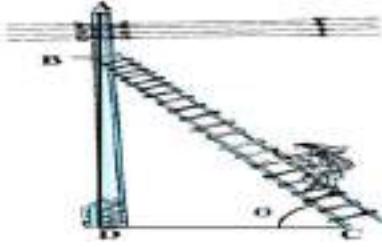| 37	**Read the following text carefully and answer the questions that follow:**	1

There is a function in the school. Anishka, Bhawna and Charu are standing in a rectangular ground at points A, B and C respectively as shown in the figure. They are ready to perform an aerobic dance.

(i)How far is Charu from y - axis?

(ii)Find distance between Anishka and Bhawna.

(iii)(a)Check whether AB + BC = AC?

OR

(b)Is A, B and C lies in a straight line?

(1 + 1 + 2 marks)

| 38 | **Read the following text carefully and answer the questions that follow:**
In a village, group of people complained about an electric fault in their area. On their complaint, an electrician reached village to repair an electric fault on a pole of height 10m. She needs to reach a point 1.5 m below the top of the pole to undertake the repair work (see the adjoining figure). She used ladder, inclined at an angle of θ to the horizontal such that $\cos\theta = \frac{\sqrt{3}}{2}$, to reach the required position.

(i)Find the height BD?
(ii)Find the length of ladder.
(iii)(a)How far from the foot of the pole should she place the foot of the ladder?
     OR
   (b)If the height of pole and distance BD is doubled, then what will be the length of the ladder? | 2
+
1
+
1 |

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