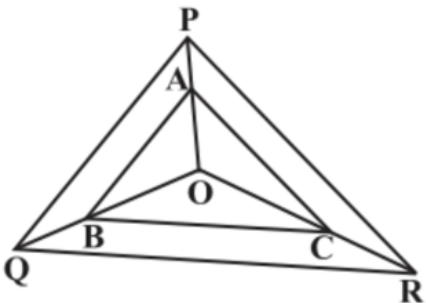
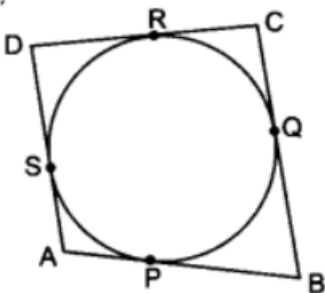


**KENDRIYA VIDYALAYA SANGATHAN, REGIONAL OFFICE LUCKNOW****MARKING SCHEME****Time: Subject: Mathematics-Basic (241)****Time Allowed: 3 Hours****Maximum Marks: 80****General Instructions:**

1. This question paper has 5 sections A-E
2. Section A has 20 MCQs carrying 1 mark each.
3. Section B has 5 questions carrying 02 marks each.
4. Section C has 6 questions carrying 03 marks each.
5. Section D has 4 questions carrying 05 marks each.
6. Section E has 3 case based integrated units of assessment (04 marks each) with sub parts of the values 1, 1 and 2 marks each respectively.
7. All questions are compulsory. However internal choice in 2 Qs of 5 marks, 2 Qs of 3 marks and 2 Qs of 2 marks has been provided. An internal choice has been provided in 2 marks questions of section E.
8. Draw neat figures wherever required. Take  $\pi = \frac{22}{7}$ , wherever required if not stated.

Q. No.	Section-A	Marks
1	c) $xy^2$	1
2	a) 18	1
3	b) 128	1
4	b) at most two zeros	1
5	c) degree	1
6	c) no solution	1
7	b) $x(x + 1) + 8 = (x + 2)(x - 2)$	1
8	b) 47	1
9	d) 1, -2, 3, -4, 5, -6, .....	1
10	c) 2	1
11	a) 4	1
12	(b) $\sqrt{3}p$	1
13	c) $\angle B = \angle D$	1
14	c) $\frac{1}{2}$	1
15	a) 1	1
16	d) $90^\circ$	1
17	(d) 15 m	1
18	c) $30^\circ$	1
19	d) $90^\circ$	1
20	c) $\frac{\theta}{360^\circ} \times \pi r^2$	1
Section-B		
21	We have, $7 \times 11 \times 13 + 13 = 13 \times (7 \times 11 + 1)$ $= 13 \times (77 + 1) = 13 \times (78)$ $= 13 \times 2 \times 3 \times 13$	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$

	<p>Since given number has more than two factors, therefore it is composite number.  <b>OR</b></p> $  \begin{array}{r l}  7 & 140 \\  5 & 20 \\  2 & 4 \\  2 & 2 \\  & 1  \end{array}  $ <p>Therefore, <math>140 = 7 \times 5 \times 2 \times 2</math></p>	1 1
22	<p>For correct use of section formula  For finding correct ratio i.e. 2:7</p>	1 1
23	<p>For using Pythagoras theorem and finding OP = 25 cm  For finding PR = OP + OR = 25 cm + 7 cm = 32 cm</p>	1 1
24	<p>For using Pythagoras theorem  For finding <math>\cos^2 A + \sin^2 A = 1</math></p> <p style="text-align: center;"><b>OR</b></p> $LHS = \frac{1 + \sec \sec A}{\sec \sec A} = \frac{1 + \frac{1}{\cos \cos A}}{\frac{1}{\cos \cos A}} = \frac{A+1)/\cos \cos A}{1/\cos \cos A} = \cos \cos A + 1$ $and RHS = \frac{\sin^2 A}{1 - \cos \cos A} = \frac{1 - \cos^2 A}{1 - \cos \cos A} = \frac{(1 - \cos \cos A)(1 + \cos A)}{(1 - \cos \cos A)} = 1 + \cos \cos A$ <p><math>\therefore LHS = RHS</math>, hence proved.</p>	1 1 1 1
25	<p>For calculating angle described by the minute hand in 5 minutes <math>= \left(\frac{360}{60} \times 5\right)^0 = 30^0</math>  For calculating area swept by the minute hand in 5 minutes <math>= \left(\frac{\theta}{360^0} \times \pi r^2\right)</math>  <math>= \left(\frac{30^0}{360^0} \times \frac{22}{7} \times 14 \times 14\right) = \frac{154}{3} cm^2</math></p>	1 1
<b>Section-C</b>		
26	<p>Let us assume, that <math>\sqrt{5}</math> is rational number.  i.e. <math>\sqrt{5} = x/y</math> (where, x and y are co-primes)  <math>y\sqrt{5} = x</math>  Squaring both the sides, we get,  <math>\Rightarrow 5y^2 = x^2 \dots\dots\dots (1)</math>  Thus, <math>x^2</math> is divisible by 5, so x is also divisible by 5.  Let us say, <math>x = 5k</math>, for some value of k and substituting the value of x in equation (1), we get,  <math>5y^2 = (5k)^2</math>  <math>\Rightarrow y^2 = 5k^2</math>  <math>\Rightarrow y^2</math> is divisible by 5 it means y is divisible by 5.  Clearly, x and y are not co-primes. Thus, our assumption about <math>\sqrt{5}</math> is rational is incorrect.  Hence, <math>\sqrt{5}</math> is an irrational number.</p>	$\frac{1}{2}$    $\frac{1}{2}$   1  1

27	For applying correct similarity criteria For showing $\frac{OA}{OC} = \frac{OB}{OD}$	2 1
28	<p>Given here,</p> <p>In <math>\triangle OPQ</math>, <math>AB \parallel PQ</math></p> <p>By using Basic Proportionality Theorem,</p> $OA/AP = OB/BQ \dots \dots \dots (i)$ <p>Also given,</p> <p>In <math>\triangle OPR</math>, <math>AC \parallel PR</math></p> <p>By using Basic Proportionality Theorem</p> $\therefore OA/AP = OC/CR \dots \dots \dots (ii)$ <p>From equation (i) and (ii), we get,</p> $OB/BQ = OC/CR$ <p>Therefore, by converse of Basic Proportionality Theorem,</p> <p>In <math>\triangle OQR</math>, <math>BC \parallel QR</math>.</p>	 1  1  1
29	<p>The figure given is:</p>  <p>From this figure we can conclude a few points which are:</p> <p>(i) <math>DR = DS</math></p> <p>(ii) <math>BP = BQ</math></p> <p>(iii) <math>AP = AS</math></p> <p>(iv) <math>CR = CQ</math></p> <p>Since they are tangents on the circle from points D, B, A, and C respectively.</p> <p>Now, adding the LHS and RHS of the above equations we get,</p> $DR + BP + AP + CR = DS + BQ + AS + CQ$ <p>By rearranging them we get,</p> $(DR + CR) + (BP + AP) = (CQ + BQ) + (DS + AS)$ <p>By simplifying,</p>	1  1  1





	<p><b>OR</b></p> $p(x) = x^2 - (\text{sum of zeroes})x + \text{product of zeroes}$ $\Rightarrow p(x) = x^2 - (-3)x + 2$ $\Rightarrow p(x) = x^2 + 3x + 2$	
37	<p><b>Case-study-2</b></p> <p>a) The point on x-axis which is equidistant from I and E is (1/2,0)</p> <p>b) The point on y-axis which is equidistant from B and C is (0,1)</p> <p>c) Coordinates of player Q are (0, 1)</p> <p><b>OR</b></p> <p>Coordinates of the position of player P are (2, 3/2)</p>	1+1+2
38	<p><b>Case-study-3</b></p> <p>a) Since number of rows were equal to the number of seats in each row in original arrangement, total seats are <math>x^2</math>. In new arrangement row are <math>2x</math> and seats in each row are <math>x - 10</math>. Total seats are 300 more than previous seats so total number of seats are <math>(2x)(x - 10)</math></p> <p>thus, <math>(2x)(x - 10) = x^2 + 300</math></p> $\Rightarrow x^2 - 20x - 300 = 0$ <p>b) We have</p> $x^2 - 20x - 300 = 0$ $\Rightarrow x^2 - 30x + 10x - 300 = 0$ $\Rightarrow x(x - 30) + 10(x - 30) = 0$ $\Rightarrow (x - 30)(x - 10) = 0$ $\Rightarrow x = -10, 30$ <p>Number of rows in the original arrangement = 30</p> <p>c) Number of seats in original arrangement, <math>= x^2 = 30^2 = 900</math></p> <p><b>OR</b></p> <p>Total seats in rearrangement <math>30^2 + 300 = 900 + 300 = 1200</math></p>	1+1+2