OBJECTIVE TYPE (1 Mark)

Q.1 Simplified form of $\left(16^{\frac{-1}{5}}\right)^{\frac{5}{2}}$ is:

A	16	B	$\frac{1}{4}$	C	$\frac{1}{2}$	D	4

Q.2 The decimal form of $\frac{429}{125}$ is:

A		B	3.423	C	3.432	D	

Q.3 $\frac{p}{q}$ form of the number 9.777… is:

A	$\frac{88}{9}$	B	$\frac{92}{9}$	C	$\frac{85}{99}$	D	$\frac{88}{99}$

Q.4 $7\sqrt{5} + 2\sqrt{3} - \sqrt{5}$ is equal to

A	$7\sqrt{5} + 3\sqrt{3}$	B	$8\sqrt{5} + 2\sqrt{3}$	C	$9\sqrt{5} + \sqrt{5}$	D	$6\sqrt{5} + 2\sqrt{3}$

Q.5 The product of $\sqrt{18}$ and $\sqrt{98}$ is equal to:

A	$3\sqrt{2} \times 7\sqrt{2}$	B	$3\sqrt{3} \times 7\sqrt{2}$	C	$3\sqrt{2} \times 7\sqrt{3}$	D	$9\sqrt{3} \times 2\sqrt{7}$

Q.6 The value of $(5^2)^{\frac{-1}{4}} \times (3^2 + 4^2)^{\frac{1}{4}}$

A	0	B	1	C	5^2	D	$5^{\frac{1}{2}}$

Q.7 Which of the following is irrational?

A	0.1416	B	0.141616…	C	0.14161416…	D	0.140140014…

Q.8 Simplify: $(2\sqrt{3} + \sqrt{2})(2\sqrt{3} - \sqrt{2})$

A	$4\sqrt{3}$	B	12	C	10	D	$4\sqrt{6}$

Q.9 The smallest rationalizing factor of $\frac{2}{\sqrt{75}}$ is:

A	$\sqrt{5}$	B	$\sqrt{3}$	C	$\sqrt{2}$	D	$\sqrt{25}$

ASSERTION AND REASONING

DIRECTION: In the question number 10 and 12, a statement of assertion (A) is followed by statement of Reason (R). Choose the correct option:

(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

(b) Both assertion (A) and reason (R) are true and reason (R) is not the correct explanation of assertion (A).

(c) Assertion (A) is true but reason (R) is false.

(d) Assertion (A) is false but reason (R) is true.

Q.10	**Assertion:** Sum of the numbers 2 and $7\sqrt{2}$ is $9\sqrt{2}$. **Reason:** If $'x'$ and $'y'$ are rational and irrational numbers respectively, then $x + y$ is an irrational number.
Q.11	**Assertion:** Decimal expansion of the number $\frac{3}{19}$ is terminating. **Reason:** Decimal expansion of a rational number is non-terminating and non-recurring.

Questions of 2 marks each

Q.12	Represent $\sqrt{10}$ on the number line.
Q.13	Express 17.2353535… in the form $\frac{p}{q}$, where p, q are integers and q≠0.
Q.14	Simplify and find the value of $\sqrt{50} + \sqrt{125} - \sqrt{98}$

Questions of 3 marks each

Q15.	Find the values of a and b: $\frac{\sqrt{5} + \sqrt{3}}{3\sqrt{5} - 2\sqrt{3}} = a - b\sqrt{15}$
Q16.	Simplify and find the value of $2\sqrt[4]{81} - 8\sqrt[3]{216} + 15\sqrt[5]{32}$.
Q17.	Represent $\sqrt{7.9}$ on the number line.

Questions of 5 marks each

Q18.	Prove that $\frac{1}{3-\sqrt{8}} - \frac{1}{\sqrt{8}-\sqrt{7}} + \frac{1}{\sqrt{7}-\sqrt{6}} - \frac{1}{\sqrt{6}-\sqrt{5}} + \frac{1}{\sqrt{5}-\sqrt{2}} = 5$

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<tr><td colspan="2" align="center">SECTION D (4marks)</td></tr>
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<td>Q20.</td>
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CASE STUDY:

In Class IX, a mathematics teacher decided to organize a competition to solve mathematics problems. In this competition, the following sets of irrational numbers $3\sqrt{27}$, $6\sqrt{3}$, $\sqrt{5}$ are also included.

Now, the names of events in the data are defined as addition, subtraction, multiplication and rationalization and so on. These events have a specific duration to solve the problem, which will be a challenge to all students. A few questions are given below. Answer the following questions.

Based on the above information, answer the following questions:

i)   Find the sum of $3\sqrt{27}$, $6\sqrt{3}$ and $\sqrt{75}$.

ii)   Find two irrational numbers between $\sqrt{2}$ and $\sqrt{3}$

iii)   If $x = 3 - 2\sqrt{2}$, find the value of $\left(x + \frac{1}{x} \right)^2$.

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Answers

<table>
<tr><td rowspan="6">Answers</td><td>1</td><td>B</td><td>2</td><td>C</td><td>3.</td><td>A</td><td>4</td><td>D</td></tr>
<tr><td>5</td><td>A</td><td>6</td><td>BA</td><td>7</td><td>D</td><td>8</td><td>C</td></tr>
<tr><td>9</td><td>B</td><td>10</td><td>D</td><td>11</td><td>C</td><td>12</td><td>construction</td></tr>
<tr><td>13</td><td>$\dfrac{17063}{990}$</td><td>14</td><td>$12\sqrt{2} + 5\sqrt{3}$</td><td>15</td><td>a=$\dfrac{21}{33}$, b=$\dfrac{5}{33}$</td><td>16</td><td>-12</td></tr>
<tr><td>17</td><td>construction</td><td>18</td><td>To prove</td><td>19</td><td>$\dfrac{8}{27}$</td><td>20</td><td>i)$20\sqrt{3}$
ii)1.4204200..
1.4304300...
iii)36</td></tr>
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