THE VILLAGE INTERNATIONAL SCHOOL
"We Nurture Dreams"

QUESTION BANK: GRADE: 9

SUBJECT: MATHEMATICS

CHAPTER 1: NUMBER SYSTEM

A. Choose the correct answer

1. Which one of the following is a rational number:
   (a) $\sqrt{3}$ (b) $\sqrt{2}$ (c) 0 (d) $\sqrt{5}$

2. 0.6666 in $\frac{p}{q}$ form is:
   (a) $\frac{6}{99}$ (b) $\frac{2}{3}$ (c) $\frac{3}{5}$ (d) $\frac{1}{66}$

3. $4\frac{1}{8}$ in decimal form is:
   (a) 4.125 (b) $4.1\overline{5}$ (c) $4.\overline{15}$ (d) $0.\overline{415}$

4. The value of $\left(3+\sqrt{3}\right)\left(3-\sqrt{3}\right)$ is:
   (a) 0 (b) 6 (c) 9 (d) 3

5. The value of $\left(\sqrt{5}+\sqrt{2}\right)^2$ is:
   (a) $7+2\sqrt{5}$ (b) $1+5\sqrt{2}$ (c) $7+2\sqrt{10}$ (d) $7-2\sqrt{10}$

6. On rationalizing the denominator of $\frac{1}{\sqrt{7}}$, we get
   (a) 7 (b) $\frac{\sqrt{7}}{7}$ (c) $\frac{-\sqrt{7}}{7}$ (d) $\sqrt{7}$

7. On rationalizing the denominator of $\frac{1}{\sqrt{5}+\sqrt{2}}$, we get
   (a) $\sqrt{5}-\sqrt{2}$ (b) $\sqrt{2}-\sqrt{5}$ (c) $\frac{\sqrt{5}-\sqrt{2}}{3}$ (d) $\frac{\sqrt{2}-\sqrt{5}}{3}$

8. The value of $9^{\frac{3}{2}}$ is :
   (a) 18 (b) 27 (c) – 18 (d) $\frac{1}{27}$

9. The value of $11^{1/2} \div 11^{1/4}$ is :
   (a) $11^{1/4}$ (b) $11^{3/4}$ (c) $11^{1/8}$ (d) $11^{1/2}$

10. If $\sqrt{10}=3.162$, then the value of $\frac{1}{\sqrt{10}}$ is
    (a) 0.3162 (b) 3.162 (c) 31.62 (d) 316.2

B. Following questions carry 2 marks each.

1. Simplify the following:
   $(i)\left(4\sqrt{3}-2\sqrt{2}\right)\left(3\sqrt{2}+4\sqrt{3}\right)$
   $(ii)\left(2+\sqrt{3}\right)\left(3+\sqrt{5}\right)$
2. Rationalize the denominator of the following: $(i)\ \frac{2}{\sqrt{3}-\sqrt{5}}$ $(ii)\ \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$
3. Find six rational numbers between 3 and 4.
4. Express the following in the form of $\frac{p}{q}$, where p and q are integers and $q \neq 0$
   $(i)0.\overline{6}$ $(ii)0.4\overline{7}$
5. .Represent the real number $\sqrt{2},\sqrt{3},\sqrt{5}$ on a single number line.

C. Following questions carry 3 marks each.

1. Simplify: $\frac{9^{\frac{1}{3}} \times 27^{\frac{-1}{2}}}{3^{\frac{1}{6}} \times 3^{\frac{-2}{3}}}$
2. If $a = 5+2\sqrt{6}$ and $b = \frac{1}{a}$ then what will be the value of $a^2 + b^2$?
3. .Evaluate the following expressions: $(i)\left(\frac{625}{81}\right)^{-\frac{1}{4}}$ $(ii)27^{\frac{2}{3}} \times 27^{\frac{1}{3}} \times 27^{-\frac{4}{3}}$
4. Simplify: $\frac{\sqrt{32}+\sqrt{48}}{\sqrt{8}+\sqrt{12}}$
5. .Find the decimal expansions of $\frac{10}{3}, \frac{7}{8}$ and $\frac{1}{7}$.

ANSWER KEY: 1. c 2. b 3 a 4 b 5 c 6 b 7 c 8 b 9 a 10 a

A. 1. $4\sqrt{6} + 36$
2. $6 + 2\sqrt{5} + 3\sqrt{5} + \sqrt{15}$
3. $3\frac{1}{4}, 3\frac{1}{8}, 3\frac{1}{2}, 3\frac{1}{16}, 3\frac{1}{7}, 3\frac{1}{5}$ (Any six between 3 and 4 can be written)

C. 1. $3^{\frac{-1}{3}}$
2. 98
3. (i) $\frac{3}{5}$ (ii) $\frac{1}{3}$
4. 2
5. 3.333… , 0.875, 0.142857…..