

8. DECIMAL REPRESENTATION
OF RATIONAL NUMBERS (1)
Class: VI. MATHEMATICS (2025/26)
FOUNDATION. SOLUTIONS

TEACHING TASK
JEE MAINS

01. Short cut method

$$\text{If (i) } x = 0.\overline{ab} \Rightarrow x = \frac{ab}{99}$$

$$\text{(ii) } x = 0.\overline{abc} \Rightarrow x = \frac{abc}{999}$$

$$\text{Here, } 0.\overline{47} = \frac{47}{99}$$

Ans: —

$$02 \quad 3.\overline{27} = \frac{327 - 32}{90} = \frac{295}{90} = \frac{59}{18}$$

$$7.\overline{83} = \frac{783 - 78}{90} = \frac{705}{90} = \frac{47}{6}$$

$$\begin{aligned} \text{Now } a &= \frac{7.\overline{83}}{3.\overline{27}} = \frac{\left(\frac{47}{6}\right)}{\left(\frac{59}{18}\right)} = \frac{47}{6} \times \frac{18}{59} \\ &= \frac{147}{59} \end{aligned}$$

Ans: A

(2)

$$03 \quad x = 2.\overline{37} = \frac{237-23}{90} = \frac{214}{90}$$

$$y = 3.\overline{04} = \frac{304-30}{90} = \frac{274}{90}$$

$$x+y = \frac{214+274}{90} = \frac{488}{90}$$

$$\text{Double it} = 2 \times \frac{488}{90} = \frac{488}{45}$$

$$\text{option: A: } 10.\overline{84} = \frac{1084-108}{90} = \frac{976}{90} = \frac{488}{45}$$

Ans: A

$$04 \quad x = 1.\overline{434} = \frac{1434-14}{990} = \frac{1420}{990}$$

$$\begin{aligned} \text{Now, } 1.\overline{434} \times 100 &= \frac{1420}{990} \times 100 \\ &= \frac{142000}{99} \end{aligned}$$

Ans: D

$$05 \quad x = 1.\overline{27} = \frac{127-1}{99} = \frac{126}{99} = \frac{14}{11}$$

Ans: A

$$06 \quad x = 3.\overline{12} = \frac{312-31}{90} = \frac{281}{90}$$

$$y = 1.\overline{78} = \frac{178-17}{90} = \frac{161}{90}$$

$$x-y = \frac{120}{90} = \frac{4}{3}$$

$\therefore$ The multiplicative inverse = $\frac{3}{4}$

Ans: A



$$07 \quad x = 1.\overline{79} = \frac{179-1}{99} = \frac{178}{99}$$

Ans: B

$$08 \quad \frac{7}{11} = 0.\overline{63}$$

Ans: A

~~$$09 \quad 5.\overline{36} + x = 2.\overline{75}$$~~
~~$$\Rightarrow x = 2.\overline{75} - 5.\overline{36}$$~~

$$09 \quad 2.\overline{34} + x = 4.\overline{53}$$

$$\Rightarrow x = 4.\overline{53} - 2.\overline{34}$$

$$\text{Now } 4.\overline{53} = \frac{453-45}{90} = \frac{408}{90}$$

$$2.\overline{34} = \frac{234-23}{90} = \frac{211}{90}$$

$$\therefore x = \frac{408}{90} - \frac{211}{90} = \frac{197}{90} = 2.\overline{18}$$

Ans: D

$$10 \quad 5.\overline{36} - x = 2.\overline{75}$$

$$\Rightarrow x = 5.\overline{36} - 2.\overline{75}$$

$$5.\overline{36} = \frac{536-53}{90} = \frac{483}{90}$$

$$2.\overline{75} = \frac{275-27}{90} = \frac{248}{90}$$

$$\therefore x = \frac{483}{90} - \frac{248}{90} = \frac{235}{90} = 2.6\overline{7} \quad \text{Ans: B}$$



11.

$$\frac{8.4\overline{6}}{\lambda} = 3.4\overline{3}$$

$$\Rightarrow \lambda = \frac{8.4\overline{6}}{3.4\overline{3}}$$

$$\text{Now, } 8.4\overline{6} = \frac{846 - 84}{90} = \frac{762}{90}$$

$$3.4\overline{3} = \frac{343 - 34}{90} = \frac{309}{90}$$

$$\therefore \lambda = \frac{762}{309} = \frac{254}{103}$$

Ans D

$$12) c) \frac{13}{125} = \frac{13}{5^3}$$

Ans: C

ADVANCED LEVEL

$$01) A) 3.75 \checkmark \quad B) 2.5 \checkmark \quad D) 7.125 \checkmark \quad \text{Ans: A, B, D}$$

$$02) B) \frac{1}{12} = \frac{1}{2 \times 3} \checkmark \quad D) \frac{1}{11} \checkmark \quad \text{Ans: B, D}$$

$$\boxed{03) b) \frac{3}{5} - \frac{1}{4} = \frac{12-5}{20} = \frac{7}{20} = 0.35} \quad \boxed{\text{Ans: A, B}}$$



04. Statement I Conceptual (False)

(5)

Statement II Conceptual (True)

Ans: C

05. Statement I: $\frac{8a}{126} = \frac{85}{125} = \frac{85}{5^3}$ (True)

Statement II Conceptual (True)

Ans: A

66. Assertion: Mathematically true

$$\text{Since } 0.125 = \frac{125}{1000}$$

Reason: Conceptual (True)

Ans: A

07. Assertion: Mathematically true

$$0.4\overline{3} = \frac{43}{90}$$

Reason: Conceptual (True)

Ans: A

08. Conceptual

Ans: B

09. $0.\overline{16} = \frac{16}{99}$

Ans: B

10. Conceptual

Ans: D

11. Conceptual

Ans: C

12. $0.6\overline{3} = \frac{63}{99}$

Ans: 99

13. $\frac{25}{1000} = 0.025$

Ans: 3

14) a) $\frac{5}{100} = 0.05 (q)$
b) $\frac{101}{10} = 10.1 (r)$

c) $\frac{13}{4} = 3.25 (s)$
d) $\frac{6}{25} = 0.24 (p)$

Ans: q, r, s, p

15 a) Terminating (P)

b) non-terminating Repeating (Q)

c) Non-Terminating, non-repeating (R)

d) Terminating (P)

Ans: P, Q, R, P

LEARNERS TASK (CUES)

01 Conceptual

Ans: B

02 Non-terminating and Repeating

Ans: D

03 Conceptual

Ans: B

04 $0.\overline{142857}$
period = 142857
periodicity = 6

Ans: —

05 $0.\overline{583} = \frac{583}{999}$

Ans: A

06 $\frac{1}{80} = \frac{1}{2^4 \times 5} \rightarrow$ Terminating

Ans: A

07 non-terminating and non-repeating

Ans: C

08 $4.4 = \frac{44}{10}$

Ans: B

09 67

Ans: C

10 7 paise = $\frac{7}{100}$ Rupees = 0.07

$\text{Rs. } 130 + 0.07 = 130.07$

Ans: C

11. $\frac{2}{125} = 0.016$

⑦
Ans: C

12. B) $\frac{2}{125} = \frac{2}{5^3}$

Ans: B

JEE MAINS LEVEL

01. A) $\frac{13}{40} = \frac{13}{2^3 \times 5} \rightarrow$ Terminating

Ans: A

02. Conceptual

Ans: C

03. $0.\overline{21}$

period = 21, periodicity = 2

Ans: —

04. $0.\overline{7} = \frac{7}{9}$

Ans: C

05. Conceptual

Ans: C

06. Conceptual

Ans: C

07. $\frac{2}{3} = 0.666\ldots = 0.\overline{6}$

period = 6

Ans: A, B

08. $0.\overline{236} = \frac{236 - 2}{990} = \frac{234}{990} = \frac{13}{55}$

Ans: A

09. $\frac{5}{9} = \frac{5}{3^2} \neq \frac{5}{2^m \times 5^n}$

Ans: A

10. ~~$\frac{134}{16} = \frac{67}{8}$~~
A) $\frac{3}{16} = \frac{3}{2^4} \rightarrow$ Terminating

Ans: A

11.

$$x = 134.4\overline{57}$$

$$= \frac{134457 - 1344}{990}$$

$$= \frac{133113}{990} = \frac{44371}{330}$$

Ans: D

12

$$x = 12.3\overline{45}$$

$$= \frac{12345 - 123}{990}$$

$$= \frac{12222}{990} = \frac{679}{55}$$

Ans: C

13

Conceptual

Ans: D

14

$$\frac{0}{4}$$

Ans: D

15

Conceptual

Ans: A

JEE ADVANCED

01

Conceptual

Ans: A, B, D

02

$$\frac{11}{25} = 0.44 \text{ or } \frac{11}{25}$$

Ans: B, C

03

Statement I: Conceptual (False)

Statement II: Conceptual (True)

Ans: C

04

Statement I: $\frac{5}{6}$ is non-terminating (False)

Statement II: Conceptual (~~True~~ False)

Ans: B

Q5 Assertion: A, $\frac{7}{20} = \frac{7}{2^2 \times 5} \rightarrow$ Terminating (9)
(True)

Reason: Conceptual (True)

Ans: A

Q6 Assertion: $\frac{2}{11} = 0.\overline{18}$

periodicity = 2 (True)

Reason: Conceptual (True)

Ans: A

Q7 A) $\frac{3}{4} = \frac{3}{2^2} \checkmark$ C) $\frac{2}{5} \checkmark$

Ans: A, C

Q8 $\frac{4}{9} = 0.444 \dots$

Ans: B

Q9 $\frac{2}{15} \rightarrow$ non-terminating, Repeating

Ans: B

Q10 A) $\frac{4}{5}$

Ans: A

Q11 $\frac{1}{1} = \frac{1}{1} = 1$

Ans: 1

Q12 $\frac{9}{11} = \frac{1}{11} = 0.0\overline{9} \rightarrow$ periodicity = 2 Ans: 2

Q13 a) $0.333 \dots = \frac{1}{3}$ (Q)

b) $0.5 = \frac{5}{10} = \frac{1}{2}$ (P)

c) $0.25 = \frac{25}{100} = \frac{1}{4}$ (S)

d) $0.142857 \dots = \frac{1}{7}$ (X)

Ans: Q, P, S, X

14 a) $\frac{1}{6} = 0.1\overline{66}$ (P)

(10)

b) $\frac{1}{20} = \frac{35}{100} = 0.35$ (Q)

c) $\frac{2}{11} = 0.1\overline{8}$ (R)

d) $\frac{3}{8} = 0.375$ (S)

Ans: P, Q, R, S

$\Rightarrow$ THE END $\in$

