Test ID: TESTID Name: _____

MAT 120 **Quiz 1** Fall 2024

1. The number 0.5 qualifies as:

   i) a whole number ii) a rational number iii) an integer iv) an irrational number

   a) i) only b) i) and ii) only c) ii) only d) i) and iii) only e) all except iv)

   Correct Answer: ii) only

2. Which of the following are integers?

   i) $\sqrt{-2}^2$ ii) $\frac{1}{1-\frac{1}{2}}$ iii) $(\sqrt{2}-i)(\sqrt{2}+i)$

   a) all of them b) i) only c) i) and ii) only d) iii) only e) ii) and iii) only

   Correct Answer: all of them

3. Which of the following decimal patterns describes a rational number: (interpret the pattern as repeating only if you find a repeating string that accounts for the given sequence, otherwise try to find a pattern that accounts for the sequence going forward which does not use repetition)

   i) 0.123121231212312...

   ii) 0.10100100010000...

   iii) 0.112123123412345...

   a) i) only b) i) and ii) only c) all of them d) iii) only e) i) and iii) only

   Correct Answer: i) only

4. Which of the following are equivalent to $\frac{35}{10^4}\left(1+\frac{1}{10^2}+\frac{1}{10^4}+\frac{1}{10^6}\cdots\right)$

   i) $.00\overline{35}$ ii) $\frac{35}{10^4}\left(\frac{1}{1-\frac{1}{10^2}}\right)$ iii) $\frac{7}{1980}$

   a) all of them b) ii) and iii) only c) ii) only d) i) and iii) only e) iii) only

   Correct Answer: all of them

5. As a fraction, the decimal 1.1111... is equal to

   a) $\frac{10}{9}$ b) $\frac{9}{8}$ c) $\frac{9}{10}$ d) $\frac{10}{11}$ e) $\frac{11}{10}$

   Correct Answer: $\frac{10}{9}$

6. Write as an infinite sum:

   $$\frac{1}{1-\frac{2}{3}}$$

   a) $1+\frac{2}{3}+(\frac{2}{3})^2+\cdots$ b) $1+\frac{3}{2}+(\frac{3}{2})^2+\cdots$ c) $1+\frac{1}{2}+(\frac{1}{2})^2+\cdots$ d) $1+\frac{1}{3}+(\frac{1}{3})^2+\cdots$ e) $1+3+3^2+\cdots$

   Correct Answer: $1+\frac{2}{3}+(\frac{2}{3})^2+\cdots$

7. How many semitones are in an interval of an octave plus a tritone?

   a) 12 b) 6 c) 8 d) 18 e) 24

   Correct Answer: 18

8. What frequency ratio describes an interval of an octave plus a tritone?

   a) $\sqrt{8}$ b) $\sqrt{4}$ c) $\sqrt{2}$ d) $\sqrt{12}$ e) $\sqrt{18}$

   Correct Answer: $\sqrt{8}$