

MAT 120

Quiz 1

Fall 2018

1. Which of the following are rational numbers?

- i) .121221222... ii) $\sqrt{2}^3$ iii) $\sqrt{2}^4$
 a) i) only b) all of them c) i) and ii) only d) iii) only e) i) and iii) only
 Correct Answer: iii) only

2. Which of the following are real numbers?

- i) .121221222... ii) $\sqrt{-2}^3$ iii) $\sqrt{-2}^4$
 a) none of them b) iii) only c) ii) and iii) only d) ii) only e) i) and iii) only
 Correct Answer: i) and iii) only

3. Simplify: $(2 + \sqrt{-1})(2 - \sqrt{-1})$:

- a) 5 b) 3 c) 4 d) 6 e) 2
 Correct Answer: 5

4. A irrational number can be described as a number which:

- i) cannot be expressed as a ratio of two integers a/b , $b \neq 0$
 ii) can be written as the square root of an integer
 iii) can be written as a non-repeating decimal expansion
 a) all of them b) i) only c) ii) and iii) only d) i) and ii) only e) i) and iii) only
 Correct Answer: i) and iii) only

5. Simplify the expression:

$$\frac{3}{2} + \frac{3}{4} + \frac{3}{8} + \frac{3}{16} + \dots$$

- a) 3 b) 3/2 c) 3/4 d) 6 e) 7/2
 Correct Answer: 3

6. A *harmonic tone* with fundamental frequency 220 Hz contains all positive *number* multiples of 220 in its harmonic frequencies, where the type of *number* is:

- a) integer b) rational c) irrational d) real e) complex
 Correct Answer: integer

7. The Equal Tempered half step is given by a frequency ratio of:

- a) $2^{\frac{1}{12}}$ b) $2^{\frac{1}{2}}$ c) $2^{\frac{1}{3}}$ d) $2^{\frac{1}{4}}$ e) $2^{\frac{1}{6}}$
 Correct Answer: $2^{\frac{1}{12}}$

8. The interval of 2 semitones is close to a frequency ratio of:

- a) $\frac{5}{3}$ b) $\frac{3}{2}$ c) $\frac{4}{3}$ d) $\frac{9}{8}$ e) $\frac{5}{4}$
 Correct Answer: $\frac{9}{8}$

9. The interval of 4 semitones is close to a frequency ratio of:

- a) $\frac{5}{3}$ b) $\frac{3}{2}$ c) $\frac{4}{3}$ d) $\frac{9}{8}$ e) $\frac{5}{4}$
 Correct Answer: $\frac{5}{4}$

10. The interval of 7 semitones is close to a frequency ratio of:

- a) $\frac{5}{3}$ b) $\frac{3}{2}$ c) $\frac{4}{3}$ d) $\frac{9}{8}$ e) $\frac{5}{4}$
 Correct Answer: $\frac{3}{2}$