Mock JMSS Entrance Exam

Numerical Reasoning SAMPLE

Question & Answer Book

- You have - Minutes to Complete this Exam.

Materials Supplied

- Question & Answer Book of 6 pages.
- Multiple-Choice Answer Sheet.

Instructions

- Follow the Instructions on your Multiple-Choice Answer Sheet.
- At the end of the examination, place your Multiple-Choice Answer Sheet inside the front cover of this book.
- Answers are at the end of the examination

Students are **not** permitted to bring mobile phones and/or any unauthorised electronic devices into the examination room.

Contents

Student's Name: _____

Student's Email: _____

Date & Time: _____

Marks: _____

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Section A

Instructions

- Answer **all** questions on the Multiple-Choice Answer Sheet.
- Read the information provided carefully before answer before answering the questions associated with it.

Q1: A rectangular garden has a length of 12 meters and a width of 8 meters. A path 1.5 meters wide is built around the outside of the garden. What is the area of this path?

(a) 69 square meters
(b) 72 square meters
(c) 75 square meters
(d) 78 square meters
(e) None of these

Q2: Two cyclists start at the same point. Cyclist A heads north at a rate of 15 km/h and Cyclist B heads east at a rate of 20 km/h. After 3 hours, what is the distance, to the nearest km, between them, using Pythagoras Theorem?

(a) 56 km
(b) 75 km
(c) 77 km
(d) 80 km
(e) None of these

Q3: A company has a 4-year compound interest loan with the interest compounded annually at 5%. At the end of the 4-year period, they owe $4862.03. What was the initial value of the loan (rounded to the nearest whole dollar)?

(a) $3900
(b) $3800
(c) $4000
(d) $4100
(e) None of these

Q4: John invests half his savings at 4% per annum simple interest, and half his savings at 5% per annum simple interest. If, after three years, his combined investment income is $412.50, how much did he invest in total?

(a) $2500
(b) $3000
(c) $3000
(d) $2750
(e) None of these

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Q5: A car travels for 2.5 hours at 60 km/h, then for 1 hour at 80 km/h, before completing the journey,
another 50km. What is the total average speed of the journey in km/h?

(a) 62 km/h
(b) 65 km/h
(c) 67 km/h
(d) 70 km/h
(e) None of these

Q6: Express 75 as a percentage of 120:

(a) 60.5%
(b) 61.5%
(c) 62.5%
(d) 63.5%
(e) None of these

Q7: Which of these fractions is the smallest?

(a) $\frac{3}{4}$
(b) $\frac{2}{5}$
(c) $\frac{1}{2}$
(d) $\frac{5}{12}$
(e) $\frac{3}{10}$

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End of Sample Examination

Solutions

Numerical Reasoning SAMPLE

We recommend not looking at these until you have finished all the questions in the Mock or are really stuck on a question.

Q1:

Inner garden area: 12 m * 8 m = 96 sq m

Outer rectangle dimensions: The path adds 1.5m to each side, so the outer rectangle is:

Length: 12 m + 1.5 m + 1.5 m = 15 m

Width: 8 m + 1.5 m + 1.5 m = 11 m

Outer rectangle area: 15 m * 11 m = 165 sq m

Area of path: 165 sq m - 96 sq m = 69 sq m

Answer: a) 69 square meters

Q2:

Cyclist A's distance: 15 km/h * 3 hours = 45 km (North)

Cyclist B's distance: 20 km/h * 3 hours = 60 km (East)

Distance between them (hypotenuse): $\sqrt{(45^2 + 60^2)} = \sqrt{(2025 + 3600)} = \sqrt{5625} = 75$ km

Answer: b) 75 km

Q3:

Given values: A = 4862.03, r = 0.05, n = 1 (annually), t = 4. We need to find P.

Plug in and solve for P:

4862.03 = P(1 + 0.05/1)^(1*4)

4862.03 = P(1.05)^4

4862.03 = P(1.2155)

P = 4862.03 / 1.2155 ≈ 4000.02

Rounded to the nearest dollar the P = 4000

Answer: c) $4000

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Q4:

Let x be the total savings: Half is x/2

Investment 1: Interest I1 = (x/2) * 0.04 * 3 = 0.06x

Investment 2: Interest I2 = (x/2) * 0.05 * 3 = 0.075x

Total Interest: I1 + I2 = 412.50

0. 06x + 0.075x = 412.50

3. 135x = 412.50

x = 412.50 / 0.135 = 3055.56

Rounded the nearest dollar is $3000

Answer: c) $3000

Q5:

Distance for first leg: 2.5 hours * 60 km/h = 150 km

Distance for second leg: 1 hour * 80 km/h = 80 km

Total Distance: 150 km + 80 km + 50 km = 280 km

Total Time: 2.5 hours + 1 hour = 3.5 hours

Average speed: 280 km / 3.5 hours = 80 km/h

Answer: e) None of these

Q6:

Part: 75

Whole: 120

Percentage: (75/120) * 100 = 0.625 * 100 = 62.5%

Answer: c) 62.5%

Q7:

Convert fractions to decimals:

3/4 = 0.75

2/5 = 0.4

1/2 = 0.5

5/12 = 0.416666...

3/10 = 0.3

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Compare decimals: From the list, 0.3 is smallest

Answer: e) 3/10

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End of Solutions