

Assessment - AI_ML course sample questions

Section 1 - Aptitude

Section Summary

- No. of Questions: 10
- Duration: 15 min
- Topics : Probability , Time, Speed, Distance , Permutation

Q1.

A coin is tossed five times. What is the probability that there is at the least one tail?

$31/32$

$1/16$

$1/2$

$1/32$

None of these

Q2.

If a person walks at 14 km/hr instead of 10 km/hr, he would have walked 20 km more.

The actual distance travelled by him is:

50 km

56 km

70 km

Q3.

In how many ways can 10 engineers and 4 doctors be seated at a round table if all the 4 doctors do not sit together?

$10! \times 4!$

$13! - (10! \times 4!)$

$13! \times 4!$

$14!$

Q4.

In a locality, there are ten houses in a row. On a particular night a thief planned to steal from three houses of the locality. In how many ways can he plan such that no two of them are next to each other?

64

24

23

56

Q5.

There are two books each of 5 volumes and two books each of two volumes. In how many ways can these books be arranged in a shelf so that the volumes of the same book should remain together?

14!

$4! \times 5! \times 5! \times 2! \times 2!$

$4! \times 14!$

$4! \times 5! \times 2!$

Section 2 - Basic Math

Section Summary

- No. of Questions: 10
- Duration: 15 min
- Topics: Linear equations , Matrix, Set theory

Q1.

The value of $(0.625 * 0.0729 * 28.9)/(0.0017 * 0.025 * 8.1)$ is

0.3825

3.825

38.25

3825

Q2.

A set of linear equations is represented by the matrix equation $Ax = b$. The necessary condition for the existence of a solution for this system is

A. must be invertible

B. must be linearly depended on the columns of A

C. None of these

Q3.

For which value of k, the following system is consistent?

$$2x - 5ky + 6z = 0$$

$$kx + 2y - 2z = 0$$

$$2x + 2y - kz = 0$$

1

2

3

5

Q4.

Which of the following set(s) are empty ?

$$\{x: x = x\}$$

$$\{x: \}$$

$$\{x: x = x^2\}$$

$$\{x: x x^2\}$$

Q5.

$A - (B \cup C)$ is equal to

$$(A - B) \cup (A - C)$$

$$A - B - C$$

$$(A - B) (A - C)$$

$$(A - B) \cup C$$

Q6.

If A and B are symmetric matrices of the same order, then

AB is a symmetric matrix

A – B is a skew-symmetric matrix

AB + BA is a symmetric matrix

AB – BA is a symmetric matrix

Section 3 - Statistics

Section Summary

- No. of Questions: 12
- Duration: 20 min
- Topics: Probability , Standard deviation , Distribution

Q1.

The scores on an admission test are normally distributed with a mean of 640 and a standard deviation of 105.7. A student wants to be admitted to this university. He takes the test and scores 755. What is the probability of him being admitted to this university?

65.9%

84.6%

40.9%

54%

Q2.

Let us say that X is a normally distributed variable with mean(μ) of 43 and standard deviation (σ) of 6.4. Determine the probability of $X < 32$.

0.341

0.962

6.231

0.44

Q3.

If two events (both with probability greater than 0) are mutually exclusive, then:

They also must be independent.

They also could be independent.

They cannot be independent.

They are partially independent.

Q4.

Which of the following is the most common example of a situation for which the main parameter of interest is a population proportion?

A binomial experiment

A normal experiment

A randomized experiment

An observational study

Q5.

Pulse rates of adult men are approximately normal with a mean of 70 and a standard deviation of 8. Which choice correctly describes how to find the proportion of men that have a pulse rate greater than 78?

Find the area to the left of $z = 1$ under a standard normal curve.

Find the area between $z = -1$ and $z = 1$ under a standard normal curve.

Find the area to the right of $z = 1$ under a standard normal curve.

Find the area to the right of $z = -1$ under a standard normal curve.

Q6.

Which one of the following probabilities is a "cumulative" probability?

The probability that there are exactly 4 people with Type O+ blood in a sample of 10 people.

The probability of exactly 3 heads in 6 flips of a coin.

The probability that the accumulated annual rainfall in a certain city next year, rounded to the nearest inch, will be 18 inches.

The probability that a randomly selected woman's height is 67 inches or less.

Q7.

If 'm' is the mean of a Poisson Distribution, the standard deviation is given by

\sqrt{m}

m^2

m

$m/2$

Q8.

A random sample of 5 mosquitos is sampled. The number of mosquitos carrying the West Nile Virus in the sample is an example of which random variable?

normal

student's t

binomial

uniform

Q9

Suppose that the probability of event A is 0.2 and the probability of event B is 0.4. Also, suppose that the two events are independent. Then $P(A|B)$ is:

$$P(A) = 0.2$$

$$P(A)/P(B) = 0.2/0.4 = \frac{1}{2}$$

$$P(A) \times P(B) = (0.2)(0.4) = 0.08$$

Section 4 - Critical Reasoning

Section Summary

- No. of Questions: 12
- Duration: 20 min

Q1.

Commentator: The theory of trade retaliation states that countries closed out of any of another country's markets should close some of their own markets to the other country in order to pressure the other country to reopen its markets. If every country acted according to this theory, no country would trade with any other.

The commentator's argument relies on which of the following assumptions?

No country actually acts according to the theory of trade retaliation.

No country should block any of its markets to foreign trade.

Trade disputes should be settled by an international tribunal.

For any two countries, at least one has some market close to the other.

Countries close their markets to foreigners to protect domestic producers.

Q2.

According to mutual fund sales experts, a successful year for a stock fund should result not only in increased investor dollars flowing into the fund, but also in increased investor dollars flowing into other mutual stock funds offered by the same company. However, while last year the Grafton Mutual Company's "Growth Stock Fund" beat average market returns by a factor of two and recorded substantial new investment, the other stock funds offered by Grafton did not report any increase whatsoever.

Which of the following conclusions can properly be drawn from the statements above?

When one of the mutual funds offered by a company beats average market returns, the other mutual funds offered by that company will beat average market returns.

The mutual fund sales experts neglected to consider bond funds in formulating their theory.

The performance of the Grafton "Growth Stock Fund" was a result of a wave of mergers and acquisitions that year.

Investors currently dislike all stock mutual funds because of market volatility.

The success of one mutual fund is not the only factor affecting whether investors will invest in other mutual funds run by the same company.

Q3.

“Our House” restaurant is eliminating table-service from its casual dining restaurant in favor of prepared dinner boxes. The restaurant already fills every available seat during its operating hours, and the change to a dinner-box style will not reduce the available seats. Nonetheless, the restaurant's management expects revenue to increase as a result of the switch to the prepared dinner boxes without any concurrent change in revenue per customer or operating hours.

Which of the following, if true, provides the best reason for the expectation?

One of the dinner boxes takes up less storage space than the space taken up by one of the large dishes typically used when serving table-service customers

Diners eating out of a dinner box typically do not linger over dinner as long as diners who are served via standard table-service.

Since the restaurant will eliminate table service for only part of the restaurant, it can continue to accommodate customers who do not wish to eat out of prepared dinner boxes.

Few diners are likely to avoid the restaurant because of the new dinner-box style.

The restaurant eliminating table-service would otherwise have to hire new waiters and waitresses at a greater expense due to new city regulations on wage.

Q4.

Conservationists have established land reserves to preserve the last remaining habitat for certain species whose survival depends on the existence of such habitat. A grove of trees in Mexico that provide habitat for North American monarch butterflies in winter is a typical example of such a land reserve. If global warming occurs as predicted, however, the temperature bands within which various types of vegetation can grow will shift into regions that are currently cooler.

If the statements above are true, they provide the most support for which one of the following?

If global warming occurs as predicted, the conservation land reserves will cease to serve their purpose.

Monarch butterflies will succeed in adapting to climatic change by shortening their migration.

If global warming occurs, it will melt polar ice and so will cause the sea level to rise so high that many coastal plants and animals will become extinct.

The natural world has adapted many times in the past to drastic global warming and cooling.

If global warming occurs rapidly, species of plants and animals now protected in conservation land reserves will move to inhabit areas that are currently used for agriculture.

Q5.

In an experiment, each volunteer was allowed to choose between an easy task and a hard task and was told that another volunteer would do the other task. Each volunteer could also choose to have a computer assign the two tasks randomly. Most volunteers chose the easy task for themselves and under questioning later said they had acted fairly. But when the scenario was described to another group of volunteers, almost all said choosing the easy task would be unfair. This shows that most people apply weaker moral standards to themselves than to others.

Which of the following is an assumption required by this argument?

At least some volunteers who said they had acted fairly in choosing the easy task would have said that it was unfair for someone else to do so.

The most moral choice for the volunteers would have been to have the computer assign the two tasks randomly.

There were at least some volunteers who were assigned to do the hard task and felt that the assignment was unfair.

On average, the volunteers to whom the scenario was described were more accurate in their moral judgments than the other volunteers were.

At least some volunteers, given the choice between assigning the tasks themselves and having the computer assign them, felt that they had made the only fair choice available to them.

Section 5 - Problem Solving

Section Summary

- No. of Questions: 3
- Duration: 20 min

Q1.

Write a program to find whether a given string is a palindrome or not. A palindrome is a string which is the same as the reverse of the string. For Example 'RADAR' is a palindrome.

Input Format

The input is one string of more than 2 characters.

Output Format

Refer sample input and output

Sample InputSample Output

quantum

Enter a string : Palindrome : NO

Sample InputSample Output

ara

Enter a string : Palindrome : YES

Time Limit: - ms Memory Limit: - kb Code Size: - kb

Q2.

Consider a permutation of numbers from 1 to N written on a paper. Let's denote the product of its element as 'prod' and the sum of its elements as 'sum'. Given a positive integer N, your task is to determine whether 'prod' is divisible by 'sum' or not.

Input Format

First input will be an integer T. It depicts a number of test cases. Followed by value for each test case. Each test case will contain an integer N ($1 \leq N \leq 10^9$). It is nothing but the length of the permutation.

Output Format

For each test case, print "YEAH" if 'prod' is divisible by 'sum', otherwise print "NAH".

Sample InputSample Output

5

2

4

6

8

9

NAH

NAH

NAH

YEAH

YEAH

Time Limit: - ms Memory Limit: - kb Code Size: - kb

Q3.

Little Robert likes mathematics. Today his teacher has given him two integers and asked to find out how many integers can divide both the numbers. Would you like to help him in completing his school assignment?

Input Format

There are two integers, a and b as input to the program.

Output Format

Print the number of common factors of a and b. Both the input value should be in a range of 1 to 10^{12} .

Explanation: The common factors of 10 and 15 are 1 and 5. So the answer will be 2

Sample InputSample Output

10 15

2

Time Limit: - ms Memory Limit: - kb Code Size: - kb