

Ph. D. Entrance Question Paper

Sample Questions (Engineering)

Quantitative Aptitude:

Q. 1 A vehicle travel from Mumbai to Delhi and returns to the Mumbai by same route. The speed of the vehicle during forward and return journey were constant at 60 km/hr. and 90 km/hr. respectively. What is the average speed in km/hr. for the entire journey?

Options:

- (A) 75
- (B) 74
- (C) 73
- (D) 72

Answer: (D) – 72

Q. 2 A rhombus is formed by joining the midpoints of the sides of a unit square. What is the diameter of the largest circle that can be inscribed within the rhombus?

Options:

- (A) $1/\sqrt{2}$
- (B) $1/2\sqrt{2}$
- (C) $\sqrt{2}$
- (D) $2\sqrt{2}$

Answer: (A) - $1/\sqrt{2}$

Analytical Aptitude Logic:

Q. 3 Statements:

No women teacher can play.

Some women teachers are athletes

Conclusion:

- I. Male athletes can play**
- II. Some athletes can play**

Options:

- (A) Only conclusion I follows
- (B) Only conclusion II follows

- (C) Either I or II follows
- (D) Neither I nor II follows
- (E) Both I and II follows

Answer: (D) – Neither I nor II follows

Q. 4 Find the missing number in the following series:

70, 71, 76, __, 81, 86, 70, 91, ...

Options:

- (A) 80
- (B) 96
- (C) 71
- (D) 70

Answer: (D) – 70

Spatial Aptitude

Q. 5 Six persons P, Q, R, S, T and U are sitting around a circular table facing the center not necessarily in the same order.

Consider the following statements:

- P sits next to S and T.
- Q sits diametrically opposite to P.
- The shortest distance between S and R is equal to the shortest distance between T and U.

Based on the above statements, Q is a neighbor of

Options:

- (A) U and S
- (B) R and U
- (C) R and T
- (D) P and S

Answer: (B) – R and U

Linear Algebra

Q. 6 Let X be a square matrix. Consider the following two statements on X.

I. X is invertible.

II. Determinant of X is non-zero.

Which one of the following is TRUE?

Options:

- (A) I implies II; II does not imply I
- (B) II implies I; I does not imply II
- (C) I does not imply II; II does not imply I
- (D) I and II are equivalent statements

Answer: (D) - I and II are equivalent statements

Q. 7 Consider the following system of equations:

$$\begin{aligned}3x + 2y &= 1 \\4x + 7z &= 1 \\x + y + z &= 3 \\x - 2y + 7z &= 0\end{aligned}$$

The number of solutions for this system is _____

Options:

- (A) 0
- (B) 0.5
- (C) 1
- (D) None of the above

Answer: (C) – 1

Probability:

Q. 8 Suppose a fair six-sided die is rolled once. If the value on the die is 1, 2, or 3, the die is rolled a second time. What is the probability that the sum total of values that turn up is at least 6?

Options:

- (A) 10/21
- (B) 5/12
- (C) 2/3
- (D) 1/6

Answer: (B) – 5/12

Q. 9 What is the mean of a random variable if the second moment a Poisson-distributed random variable is 2?

Options:

- (A) 10
- (B) 5
- (C) 1

(D) 0

Answer: (C) – 1

Data Analysis and Interpretation:

Q. 10 Three companies A, B and C supply 25%, 35% and 40% of the notebooks to a school. Past experience shows that 5%, 4% and 2% of the notebooks produced by these companies are defective. If a notebook was found to be defective, what is the probability that the notebook was supplied by A?

Options:

- (A) 44/69
- (B) 25/69
- (C) 13/24
- (D) 11/24

Answer: (B) – 25/69

Q. 11 Mean and standard deviation for the normal distribution are _____

Options:

- (A) Mean = 0 and Variance = 1
- (B) Mean = 1 and Variance = 0
- (C) Mean = 0 and Variance = ∞
- (D) Mean = ∞ and Variance = 0

Answer: (A) Mean = 0 and Variance = 1

Basics of Programming:

Q. 12 The _____ symbol is used at the beginning of a flow chart.

Options:

- (A) Circle
- (B) Rectangle
- (C) Diamond
- (D) None of the above

Answer: (A) – Circle

Q. 13 What is the meaning of term “Abstraction”

Options:

- (A) Solving a problem in programming code.
- (B) Removing details which are not required to solve the problem.

- (C) Identifying patterns within your program.
- (D) Identifying relationships between patterns.

Answer: (B) - Removing details which are not required to solve the problem.