INDIAN STATISTICAL INSTITUTE

Recruitment for posts of Associate Scientist A

SECTION I

(It is common for all Specializations in the Online Test)

Syllabus

- **English Language:** Spot the error, Fill in the blanks, Synonyms/ homonyms, Antonyms, Spellings/ detecting misspelt words, Idioms and phrases,One-word substitution, Improvement of sentences, Active/ passive Voice of Verbs, Conversion into direct/ indirect narration, Shuffling of sentence parts, Shuffling of sentences in a passage, Comprehension passage.

- **Quantitative Aptitude:** *Arithmetic*: Number systems, Computation of whole number, Decimal and fractions, Relationship between numbers.
  Fundamental Arithmetical Operations: Percentages, Ratio and proportion, Square roots, Averages, Interest (simple and compound), Profit and loss, Discount,Partnership Business, Time and distance,Time and work.
  Algebra: Basic algebraic identities of school algebra and elementary surds (simple problems) and graphs of linear equations.
  Geometry: Familiarity with elementary geometric figures (like triangles and circles) and their properties.
  Mensuration: Triangle, Quadrilateral, Regular polygon, Circle, Right prism, Right circular cone, Right circular cylinder, Sphere, Hemisphere, Rectangular parallelepiped, Regular right pyramid with triangular or square Base.
  Trigonometry: Trigonometric ratios, Complementary angles, Height and distances (simple problems), Standard identities like $sin^2\theta + cos^2\theta = 1$.

- **Logical Reasoning:** Semantic analogy, Symbolic operations, Symbolic/ number analogy, Trends, Figural analogy, Venn diagrams, Symbolic/ number classification, Deductive and inductive inference, Figural classification, Number series, Embedded figures,Critical thinking, Word building, Coding and decoding, Numerical operations.

Sample Questions for the Online Test

Note: For each of the questions there are four suggested answers, of which only one is correct. You will score

4 marks for each correctly answered question,

0 mark for each incorrectly answered question, and

1 mark for each unattempted question.

A. English Language

1. Of the four alternatives given below, choose the one which can be substituted for the phrase *that which cannot be corrected.*

   (a) Unintelligible   (b) Incorrigible   (c) Indelible   (d) Illegible   .

2. Choose the correct synonym for the word CORROBORATE.

   (a) Appreciate   (b) Substantiate   (c) Collaborate   (d) Vindictive   .

3. Fill in the blank:

   As the distance increases, the force decreases. Thus, distance and force are _____ proportional.

   (a) directly   (b) indirectly   (c) equally   (d) inversely   .

4. The first and sixth sentences (S1 and S6) of a passage are given in the beginning and in the end, respectively. The middle four sentences have been jumbled up. These are labelled as P, Q, R and S. Find out the proper order for the four sentences.

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   S1:  Many European cities have trams for local commutation.
    P:  As a result, there is horrendous congestion.
    Q:  It was going to be technically challenging.
    R:  They run down the center of the road.
    S:  To ease it, many cities decided to build underground railway lines.
   S6:  The foundation stone was laid in 1972.
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   The proper sequence should be

   (a) PRSQ   (b) PSQR   (c) SQRP   (d) RPSQ   .

5. Which of the following options best represents the following sentence in indirect speech:

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   She asked me, "Did you see the soccer match on television last night?"
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   (a) She asked me whether I had seen the soccer match on television the previous night.
   (b) She asked me whether I saw the soccer match on television the previous night.
   (c) She asked me whether I had seen the soccer match on television last night.
   (d) She asked me whether I saw I see the soccer match on television last night.

6. Which of the following options is the closest in meaning to the underlined phrase in the following sentence:

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`You cannot have your cake and eat it too.`

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(a) Enjoy forever   (b) Have it both ways
(c) Run away from responsibility   (d) Absolve yourself of guilt

B. Quantitative Aptitude

1. The quantities S and T are positive and are related by the equation $S = k/T$ where k is a constant. If the value of S increases by 50 percent, then by what percentage does the value of T decrease?

       (a) 75%   (b) 50%   (c) 25%   (d) 33.33%

2. At present the age of the father is 5 times of the age of his son. 3 years later the age of the father will be 4 times of the age of his son. Their present ages are respectively

(a) 55 years and 11 years.   (b) 45 years and 9 years.
(c) 35 years and 7 years.   (d) 50 years and 10 years.

3. A train of length 150 metres crosses a platform of length 450 metres in 20 seconds. The velocity of the train per second is

(a) 30 metres.   (b) 25 metres.   (c) 20 metres.   (d) 40 metres.

4. In an examination, 65% of the total number of examinees pass in Mathematics, 55% pass in Hindi and 25% fail in both. The percentage of examinees who passed in both subjects is

       (a) 42%.   (b) 45%.   (c) 30%.   (d) 40%.

5. If both the length and breadth of a rectangle be increased by 10% then its area will increase by

       (a) 20%.   (b) 10%.   (c) 15%.   21%.

C. Logical Reasoning

1. Tests in five subjects, namely, Physics, Chemistry, Mathematics, Life Science and English, are to be scheduled from Monday to Friday, with one test on each day, under the following constraints:

   i. Life Science and Chemistry should not be scheduled either on Monday or Friday.
   ii. Chemistry should be immediately followed by Mathematics.
   iii. English should be scheduled on the day following the Life Science test.
   iv. One test should be scheduled between English and Physics.

Which test is scheduled on Tuesday?

       (a) Chemistry   (b) Life Science   (c) English   (d) Mathematics

2. If an analog clock shows the time to be $3 : 45p.m.$, then the angle between the hour and minute hands is

      (a) 153.75°.   (b) 157.5°.   (c) 172.5°.   (d) 168.75°.

3. How many Sundays and Mondays are there in the years 2019 and 2020 taken together, given that January 1, 2019 fell on a Tuesday?

    (a) 104 Sundays, 104 Mondays   (b) 104 Sundays, 105 Mondays
    (c) 105 Sundays, 104 Mondays   (d) 105 Sundays, 105 Mondays

4. In a batch of 100 students, 80 opted for Mathematics and 75 chose Physics as a subject. What is the minimum and maximum possible number of students who took both Mathematics and Physics?

    (a) Minimum = 75, Maximum = 80
    (b) Minimum = 55, Maximum = 80
    (c) Minimum = 55, Maximum = 75
    (d) Minimum = 25, Maximum = 75

5. Consider the following three statements and two associated conclusions:

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Statement 1:  All painters are artists.
Statement 2:  All artists are highly educated.
Statement 3:  All highly-educated persons are well-dressed.

CONCLUSION I:   All well-dressed persons are painters.
CONCLUSION II: All painters are well-dressed.
```

Which of the following are correct?

    (a) Both conclusions are correct.
    (b) Conclusion I is correct but II is not.
    (c) Conclusion II is correct but I is not.
    (d) Both conclusions are incorrect.

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