Indian School Talent Search Exam (ISTSE)
Sample Paper (Paper Based Exam) – Class 10

Total Questions: 50, Total Marks: 100

Instructions:

1. Duration of the test is 60 minutes.
2. Total marks are 100.
3. Questions paper contains 50 Questions.
4. The question numbers
   - 1 to 9 belong to "Mental and Logical Ability"
   - 10 to 21 belong to Mathematics
   - 22 to 33 belong to Science
   - 34 to 45 belong to English and
   - 46 to 50 are "Scholars Section"
5. Each question carries negative marking.
6. Please leave the question in case you are not sure about answer.
7. Un- attempted questions do not attract negative marking.
8. Answers are to be given on a separate OMR sheet.
9. Rough work can be done anywhere in the booklet but not on the OMR sheet/loose paper.

Section-1, Mental and Logical Ability
(1 mark for correct answer. 0.25 mark will be deducted for wrong answer)

1. If 'When' means '×', 'You' means '÷', 'Come' means '−' and 'Will' means '+', then what will be the value of '8 When 12 Will 16 You 2 Come 10'?

a) 45	b) 112
c) 94	d) 96

2. In the following question, choose the alternative figure in which the question figure (X) is embedded.

(X)

a)
b)
c)
d)

3. One morning Shekhar & Mohan were talking to each other face to face. If Mohan shadow was exactly to the right of Shekhar, which direction Mohan was facing?

a) West	b) East
c) North	d) South

4. Here are some words translated from an artificial language.
   - gorblflur means fan belt
   - pixngorbl means ceiling fan
   - arthtusl means tile roof

   Which word could mean "ceiling tile"?

   a) Pixnarth
   b) Flurgorbl
   c) arthflur
   d) gorbltusl

5. Six students A, B, C, D, E and F are sitting in the field. A and B are from Ranchi while the rest are from Mumbai. D and F are tall while others are short. A, C and D are girls while others are boys.

   Who is the tall girl from Mumbai?

   a) F
   b) D
   c) E
   d) C

6. Shekhar, Mohan, Dhawan, Survesh and Ajay are sitting around a circular table. Dhawan is to the right of Shekhar and is second to the left of Survesh. Ajay is not between Shekhar and Survesh. Who is second to the left of Dhawan?

   a) Survesh
   b) Can't be determined
   c) Mohan
   d) Ajay

7. Find out the two signs to be interchanged for making the following equation correct

   $$5 + 3 \times 8 - 12 \div 4 = 3$$

   a) + and x
   b) - and ÷
   c) + and ÷
   d) + and –

8. Ravi starts from his house and moves towards south. He walks 100 m, then turns left and walks 200 m, turns right and walks 500 m. How far is he from his house?

   a) 800 m
   b) 200 m
   c) 400 √5 m
   d) 200 √10 m

9. Rahul started at the intersection of roads number 7 and 8. he drove 3 km North, 3 km West and 4 km South. Which further route could bring him back to his starting point?

   I.   3 km East, then 2 km South
   II.   1 km North, then 3 km East
   III. 1 km North, then 2 km West

   a) I and II only
   b) II only
   c) II and III only
   d) I only

Section-2, Mathematics
(2 marks for correct answer. 0.50 mark will be deducted for wrong answer)

10. If $\sin x + \sin^2 x + \sin^3 x = 1$ then
    $\cos^6 x - 4\cos^4 x + 8\cos^2 x$ is equal to

    a) 2
    b) 4
    c) 1
    d) 3

11. Find the value of x in

$$\sqrt{x + 2\sqrt{x + 2\sqrt{x + 2\sqrt{3x}}}} = x$$

    a) 6
    b) 3
    c) 12
    d) 1

12. From a solid cylinder of height 36 cm and radius 14 cm, a conical cavity of radius 7 cm and height 24 cm is drilled out. Find the volume and the total surface area of the remaining solid.
    a) $20944 \ cm^3 \ 4796 \ cm^2$
    b) $36954 \ cm^3 \ 5596 \ cm^2$
    c) $32954 \ cm^3 \ 2743 \ cm^2$
    d) None of these

13. If $(a + b + c)^2 = 3(ab + bc + ca)$, then which one of the following is true?
    a) $a < b < c$
    b) $a = b = c$
    c) $a \neq b \neq c$
    d) $a > b > c$

14. Three partners shared the profit in a business in the ratio 5: 7: 8. They had partnered for 14 months, 8 months and 7 months respectively. What was the ratio of their investments?
    a) 5: 7: 8
    b) 20: 49: 64
    c) 38: 28: 21
    d) None of these

15. Sohan can be paid under two schemes as given below:
    - Scheme I: Rs. 500 and Rs. 70 per hour.
    - Scheme II: Rs. 120 per hour.

    If the job takes x hours, for what value of x does the scheme I give the Sohan better wages?

    a) 22
    b) 14
    c) 5
    d) 12

16. The value of '2x' if the Mean of x, x + 2, x + 7, x + 11 and 2x is 16
    a) 45
    b) 40
    c) 20
    d) 25

17. An AP consists of 50 terms of which 3rd term is 12 and the last term is 106. Its 29th term is
    a) 60
    b) 61
    c) 64
    d) 58

18. An observer on the top of a cliff; 200 m above the sea-level, observes the angles of depression of the two ships to be 45° and 30° respectively. Find the distance between the ships, if the ships are:
    i. on the same side of the cliff,
    ii. on the opposite sides of the cliff.

a)	146.4m 546.4m	b)	236.4m 336.4m
c)	146.3m 656.4m	d)	154.5m 556.4m

19. Each of the 6 friends - A, B, C, D, E, and F wears a different brand shirt among Armani, Zodiac, Peter England, Gap, Milan and Allen Solly of six different colours among Red, Blue, Green, White, Pink and Black not necessarily in the same order. C wears a red colour shirt which is neither Armani nor Allen Solly. A wears Zodiac shirt which is neither black nor pink in colour. Either E or F wears a white shirt. B wears

    Gap shirt which is not pink in colour. D wears either Peter England or blue shirt. E wears a blue shirt which is not Allen Solly.

    Of which brand is F's shirt?

a)	Allen Solly	b)	Milan
c)	Armani	d)	Peter England

20. If a, b, c are three real numbers such that
    - $a + b + c = 7$
    - $a^2 + b^2 + c^2 = 35$ and
    - $a^3 + b^3 + c^3 = 151$

    Find the value of abc

a)	-11	b)	14
c)	16	d)	-15

21. From a well shuffled pack of 52 cards, three cards are drawn at random. Find the probability of drawing an ace, a king and a jack.

a) $\dfrac{16}{3125}$	b) $\dfrac{16}{625}$
c) $\dfrac{16}{5525}$	d) None of these

Section-3, Science
(2 marks for correct answer. 0.50 mark will be deducted for wrong answer)

22. A boat having a length of 3 m and breadth 2 m is floating on a lake. The boat sinks by one cm when a person gets on it. The mass of the person is
    a) 120 kg
    b) 60 kg
    c) 140 kg
    d) None of these

23. A certain tissue in a green plant somehow get blocked and the leaves wilted.

    What was the tissue that got blocked?

    a) Xylem
    b) Both xylem and phloem
    c) Phloem
    d) None of these

24. Which one of the following is used for removing permanent hardness of water?

    a) $Na_2CO_3.10_2O$
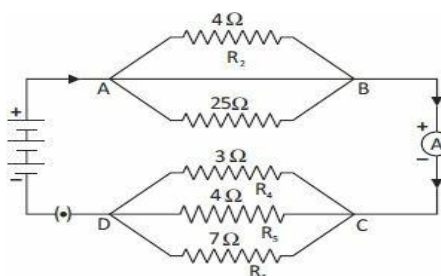   b) $CaOCl_2$
    c) NaCI
    d) NaOH

25. What would happen when pH of blood decreases?

    a) Binding of oxygen with haemoglobin decreases
    b) Red blood corpuscles are formed in higher number
    c) Binding of oxygen with haemoglobin increases
    d) There is no change in oxygen binding nor in number of RBCs

26. A current carrying wire is placed in a magnetic field. If direction of the current in the wire is from north to south and direction of magnetic field is from west to east, then in which direction force will be exerted on the wire?

    a) In downward direction
    b) Toward south
    c) Toward north
    d) In upward direction

27. In the circuit diagram given below calculate the total resistance of the circuit.

a) $7.52 \ \Omega$	b) $4.825 \ \Omega$
c) $2.03 \ \Omega$	d) $3.21 \ \Omega$

28. The sequence of events by which a cell duplicates its genome, synthesizes the other constituents of the cell and eventually divides into two daughter cells is termed a

    a) Cell cycle
    b) Cell duplication
    c) Regeneration
    d) Cell growth

29. Mayank wants to find out whether soft drinks contribute to tooth decay. He knows that human teeth and eggshells are made of similar substances, so he set up an investigation using eggshells. Mayank found that the mass of the eggshells in beakers W and X decreased, but the mass of the eggshells in beakers Y and Z did not.
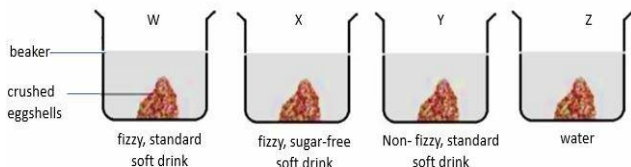
    Why did Mayank crush the eggshells?

a) to make it easier to compare the amounts of eggshells in the beaker
b) to make sure the eggshells were completely covered by liquid
c) to increase the surface area of eggshells in contact with the liquid
d) none of these

30. The most characteristic property of liquids is
    a) fluidity
    b) formlessness
    c) elasticity
    d) volume conservation

31. Soda ash is a salt of
    a) Weak acid and strong base
    b) Strong acid and strong base
    c) Weak acid and weak base
    d) Strong acid and weak base

32. **Assertion**: Magnesium is extracted from its ore by electrolytic reduction.
    Reason: All metals are extracted by electrolytic reduction.
    a) Both assertion and reason are Incorrect.
    b) Both assertion and reason are correct, and reason is the correct explanation of the assertion
    c) Assertion is incorrect, but reason is correct.
    d) Assertion is correct, but reason is incorrect.

33. Match the following:

1.	$CH_3 CHO$	A.	Propanoic acid
2.	$CH_3 COCH_3$	B.	Ethanal
3.	$CH_3 COOH$	C.	Propanone
4.	$CH_3 CH_2 COOH$	D.	Carboxylic acid group

a) 1 - D, 2 - B, 3 - A, 4 - C
b) 1 - D, 2 - C, 3 - A, 4 - B
c) 1 - B, 2 - A, 3 - D, 4 - C
d) 1 - B, 2 - C, 3 - D, 4 - A

Section-4, English
(1.5 marks for correct answer. 0.25 mark will be deducted for wrong answer)

---

34. CHOOSE THE CORRECT OPTION TO COMPLETE THE SENTENCE.

    I decided to _____ for John now he's joined this school because I knew him well last year.

    a) vouch
    b) subdue
    c) too
    d) taunt

35. CHOOSE THE CORRECT ANTONYM OF THE GIVEN WORD.
    Distraught
    a) Peaceful
    b) Distrait
    c) Frantic
    d) Wild

36. CHOOSE THE CORRECT WORD FOR THE FOLLOWING SENTENCE.

    A position requiring little or no work but giving the holder status or financial benefit

    a) Sinecure
    b) Silecure
    c) Simecure
    d) None of these

37. Find the kind of adverb for the underlined word in the following sentence:

    We can stop here for lunch.

    a) Adverb of time
    b) Adverb of manner
    c) Adverb of place
    d) Adverb of degree

38. Complete the following sentence.

    My cousin has a _____ bike

    a) Sports, red, Italian, small color
    b) Italian, red, small, sports
    c) Small, red, Italian sports
    d) Red, Italian, sports, small

39. Choose the correct answer:

    Which demonstrative adjective is used as a determiner with the things or person near and hand?

    a) this
    b) that
    c) this and these both
    d) these

40. Find the meaning of the idioms/phrases underlined in the following sentence:

    People of this village always call a spade.

    a) Speak in a straightforward manner
    b) Make a joke
    c) Hesitate to speak something
    d) Speak ill about someone

41. CHOOSE THE CORRECT SYNONYM FOR THE FOLLOWING BOLD WORD.

    Mr Patterson was **exasperated** by the salesman's persistence.

    a) elated
    b) sad
    c) irritated
    d) none of these

42. Find the kind of noun for the word underlined in the following sentence:

    Rita had pain in her stomach.

    a) Common Noun
    b) Proper Noun
    c) Abstract Noun
    d) Collective Noun

43. Identify the kind of pronoun of the word underlined in the following sentence:

    Anyone can play this game.

    a) Distributive pronoun
    b) Personal pronoun
    c) Indefinite pronoun
    d) Demonstrative pronoun

44. Change the narration.

    'English is easy to learn', he said.

    a) He said English was easy to learn
    b) He said English had been easy to learn
    c) He said English is easy to learn
    d) None of these

45. Choose the exact meaning of idiomatic expression/phrase

    Between the devil and the deep sea

    a) to be in a temper
    b) to choose correctly
    c) to be in a dilemma
    d) to live dangerously

    Section-5, Scholars Section
    (5 marks for correct answer. 2 marks will be deducted for wrong answer)

46. A, B, C enter into partnership and their capitals are in the proportion 1/3 : 1/4 : 1/5. A withdraws half his capital at the end of 4 months. Out of a total annual profit of Rs. 8470, A's share is

a) Rs. 3150	b) Rs. 4120
c) Rs. 2520	d) Rs. 2800

47. Reaction between X & Y, forms compound Z.

    X loses electron and Y gains electron which of the following properties is not shown by Z?

    a) Has low melting point
    b) Has high melting point
    c) Occurs as solid
    d) Conducts electricity in molten state

48. Find the value of x in

$$\frac{1}{1+\sqrt{2}}+\frac{1}{\sqrt{2}+\sqrt{3}}+\frac{1}{\sqrt{3}+\sqrt{4}}+\frac{1}{\sqrt{4}+\sqrt{5}}.$$
$$+\frac{1}{\sqrt{5}+\sqrt{6}}+\frac{1}{\sqrt{6}+\sqrt{7}}+\frac{1}{\sqrt{7}+\sqrt{8}}+\frac{1}{\sqrt{8}+\sqrt{9}}$$

a) 0	b) 1
c) 2	d) 4

49. Find the value of

$$\frac{cos60^o + sin45^o - cot30^o}{tan60^o + sec45^o - cosec30^o} \div \frac{sin30^o + sin45^o - tan60^o}{cot30^o + cosec45^o - sec60^o}$$

a) 1	b) $\dfrac{2+\sqrt{2}-2\sqrt{6}}{2+\sqrt{6}+4-4\sqrt{2}}$
c) $\dfrac{2-\sqrt{2}-2\sqrt{6}}{2+\sqrt{6}+4+4\sqrt{2}}$	d) 0

50. Sodium hydroxide cannot be stored in aluminium container as aluminium reacts with sodium hydrogen to form

    a) Sodium aluminate
    b) Sodium octa aluminate
    c) Sodium meta lauminate
    d) Sodium hexa aluminate

Answer Key									
1-C	2-C	3-C	4-A	5-B	6-C	7-B	8-D	9-B	10-B
11-B	12-A	13-B	14-B	15-C	16-C	17-C	18-A	19-A	20-D
21-C	22-B	23-A	24-A	25-A	26-D	27-B	28-A	29-C	30-D
31-A	32-D	33-D	34-A	35-A	36-A	37-C	38-C	39-C	40-A
41-C	42-C	43-C	44-C	45-C	46-D	47-A	48-C	49-A	50-A