iQuest
An Initiative by IITians

ISMART
iQuest Scholastic & Mental Aptitude Reward Test

FOR MOVING TO CLASS 11TH (ASPIRE)
SAMPLE TEST

Time: 1 Hr	Max Marks : 180

The Test Consists of Four Sections : (TOTAL 45 QUESTIONS)

Section	No. of Questions
Section A : Calculation	10 Q.
Section B : Reasoning	10 Q.
Section C : Scholastic Aptitude	25 Q.

Section D : Syllabus

Physics – Electricity and Magnetism
Chemistry – Acids, Bases & Salts, Metals & Non Metals, Chemical Reactions
Biology – Life Processes, Control and Coordination
Maths – Real Numbers, Polynomials, Linear Equations, Triangles, Trigonometry, Quadratic Equations

INSTRUCTIONS TO CANDIDATE

- Each subject in this paper consists of multiple choice questions with only one correct answer. ***+4 marks*** will be awarded for correct answer and ***–1 mark*** for wrong answer.
- Please read the instructions given for each question carefully and fill the correct answer against the question numbers on the answer sheet in the respective subject.
- Use blue or black ball point pen to darken the appropriate circle & mark should completely fill the circle.
- The Question paper contains blank spaces for your rough work. No additional sheet will be provided for rough work.
- Blank papers, Clipboards, Log Tables, Slide rule, Calculators, Cellular phones, Pagers and Electronic gadgets in any form are not allowed.
- Write your Name, Student ID in the block at the top of the Answer Sheet. Also write your Name & Student ID in the space provided on this cover page of question paper.
- **This is a Sample Test Paper Actual Paper Pattern may vary.**

Name:_____Student ID_____

SECTION - A

CALCULATION

1. If $(19)^4$ is subtracted from the square of a number, the answer so obtained is 723. What is the number ?

(A) 131 (B) 362

(C) 144 (D) 364

2. 35% of 411 – ?% of 272 = 84.01

(A) 42 (B) 36

(C) 18 (D) 22

3. $48096 \div \sqrt{?} = 167 \times 9$

(A) 1646 (B) 1432

(C) 1024 (D) 1208

4. 75% of 480 + ?% of 540 = 603

(A) 35 (B) 65

(C) 45 (D) 55

5. $\frac{1287}{1645} \times \frac{235}{572} \div 3\frac{15}{16} = ?$

(A) $\frac{4}{49}$ (B) $\frac{1}{28}$

(C) $\frac{4}{7}$ (D) $\frac{1}{7}$

6. $3\frac{5}{8} \times 2\frac{4}{5} + 17\frac{1}{8} = ?$

(A) $27\frac{11}{40}$ (B) $27\frac{11}{20}$

(C) $25\frac{11}{40}$ (D) $25\frac{11}{20}$

7. $13\frac{3}{7} + 18\frac{1}{14} + 8\frac{3}{4} = ?$

(A) $39\frac{1}{2}$ (B) $39\frac{3}{4}$

(C) $40\frac{1}{7}$ (D) $40\frac{1}{4}$

8. $\frac{896 \div 56 \times 8 + 12}{5^3 - (6^2 + 19)} = ?$

(A) 130 (B) 140

(C) 6 (D) None of these

9. $3724 - 19^2 - 320 + 6^3 = ?$

(A) 3295 (B)3259

(C) 3225 (D) 3279

10. $3\frac{3}{8} \times 4\frac{4}{9} \div 3\frac{4}{7} - 3\frac{3}{5} = ?$

(A) $\frac{3}{5}$ (B) $4\frac{1}{5}$

(C) $5\frac{1}{5}$ (D) $\frac{2}{5}$

SECTION - B

REASONING

11. A block of wood in the form of a cuboid 3" × 7" × 11" has all its six faces painted pink. If the wooden block is cut into 231 cubes of 1" × 1" × 1", how many of these would have pink paint on them?

(A) 178 (B) 182

(C) 186 (D) 190

12. It was vacation time, and so I decided to visit my cousin's home. What a grand time we had! In the mornings, we both would go for a jog. The evenings were spent on the tennis court. Tiring as these activities were, we could manage only one per day, i.e., either we went for a jog or played tennis each day. There were days when we felt lazy and stayed home all day long.

Now, there were 12 mornings when we did nothing, 11 evenings when we stayed at home, and a total of 11 days when we jogged or played tennis. For how many days did I stay at my cousin's place?

(A) 14 (B) 16

(C) 17 (D) 20

13. There is a clock that has a special way of telling the time. It does not have any hands or numbers on it, but it has a chimer.

If the time is 1 o'clock, it chimes once. If the time is 2 o'clock, it chimes twice, and so forth. The time gap between any two chimes is 4 seconds.

How many seconds would it take you to know the time, after the first chime is heard, if it is 5 o'clock?

(A) 16 (B) 20

(C)25 (D)18

14. Divide $537 (in whole $ increments) into a number of bags so that I can ask for any amount between $1 and $537, and you can give me the proper amount by giving me a certain number of these bags without opening them. What is the minimum number of bags you will require?

(A) 10 (B) 20

(C)30 (D) 40

15. If you were to construct a 6 x 6 checkered square (i.e., a 6 x 6 chess board), how many squares would there be in total?

(A) 36 (B) 84

(C)91 (D)100

Directions (Q. 16, 17) – Following are the names of six batches of iQuest from class 7th to class 12th in the coded form not necessarily in the ascending order. The letters in the code are also not in order. Decode this and answer the questions that follow (name of batches can be taken from our website)

1. rznbelb 2. ngzihb 3. ahggvyu

4. lbqbr 5. xbnog 6. yzzoobv

16. code for word "CAREER" is –

(A) hbzbzq (B) lizbbz

(C) bzbzir (D) zbzbiq

17. code for word "PASSION" is –

(A) hinlghv (B) hinghev

(C) ghznhye (D) hhglvzn

18. Three piles of chips—pile I consists of one chip, pile II consists of two chips, and pile III consists of three chips—are to be used in game played by Anita and Brinda.The game requires:

(a) That each player in turn take only one chip or all chips from just one pile.

(b) That the player who has to take the last chip loses.

(c) That Anita now have her turn

From which pile should Anita draw in order to win?

(A) 1st

(B)2nd

(C) 3rd

(D) can't be determined

19. If A + D > C + E, C + D = 2B and B + E > C + D, it necessarily follows that

(A) A + B > 2D (B) B + D > C + E

(C) A + D > B + E (D) A + D > B + C

Directions :* (Q. 20) *: In the question below are given two statements followed by two conclusions numbered I and II. You have to take the two given statements to be true even if they seem to be at variance from commonly known facts and decide which of the given conclusion(s) logically follow(s) from the two given statements, disregarding commonly known facts.

Given your answer as

(A) if only conclusion I follows

(B) if only conclusion II follows

(C) if either I or II follows

(D) if neither I nor II follows

20. Statements : 1 All plants are trees.

2. No tree is green

Conclusions : I. Some plants are green.

II. Those plants which are not trees are green.

SECTION - C

SCHOLASTIC APTITUDE

21. The electrostatic force between two point charges q_1 and q_2 at separation 'r' is given by

$F = \frac{Kq_1q_2}{r^2}$. The constant K

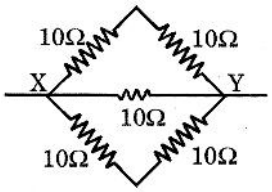
(A) depends on the system of units only.

(B) depends on the medium between the charges only.

(C) depends on both the system of units and the medium between the charges.

(D) is independent of both the system of units and the medium between the charges.

22. When the value of each resistor is $10\,\Omega$, the equivalent resistance between the terminals X and Y of the circuit is :



(A) $1\,\Omega$ (B) $3\,\Omega$

(C) $5\,\Omega$ (D) $8\,\Omega$

23. In a circuit two or more cells of the same e.m.f are connected in parallel in order to:

(A) increase the P.D across a resistance in the circuit

(B) decrease the P.D across a resistance in the circuit

(C) facilitate drawing more current from the battery system

(D) change the e.m.f. across the system of batteries

24. Two electrical bulbs have tungsten filament of same length. If one of them gives 60 watts and other 100 watts, then

(A) 100 watts bulb has thicker filament

(B) 60 watt bulb has thicker filament

(C) both filaments are of same thickness

(D) it is impossible to get different wattage unless lengths are different

25. An electric current passes through a long straight wire. At a distance 5 cm from wire, the magnetic field is B. The field at 20 cm from the wire would be:

(A) 2B (B) B/4

(C) B/2 (D) B

26. An electric charge in uniform motion produces:

(A) an electric field only

(B) a magnetic field only

(C) both electric and magnetic fields

(D) no such field at all

27. The following reaction is an example of a

$4NH_3(g) + 5O_2(g) \rightarrow 4NO(g) + 6H_2O(g)$

(i) displacement reaction (ii) combination reaction

(iii) redox reaction (iv) neutralisation reaction

(A) (i) and (iv) (B) (ii) and (iii)

(C) (i) and (iii) (D) (iii) and (iv)

28. Which of the following are exothermic processes?

(i) Reaction of water with quick lime

(ii) Dilution of an acid

(iii) Evaporation of water

(iv) Sublimation of camphor (crystals)

(A) (i) and (ii) (B) (ii) and (iii)

(C) (i) and (iv) (D) (iii) and (iv)

29. What happens when a solution of an acid is mixed with a solution of a base in a test tube?

(i) The temperature of the solution increases

(ii) The temperature of the solution decreases

(iii) The temperature of the solution remains the same

(iv) Salt formation takes place

(A) (i) only (B) (i) and (iii)

(C) (ii) and (iii) (D) (i) and (iv)

30. During the preparation of hydrogen chloride gas on a humid day, the gas is usually passed through the guard tube containing calcium chloride. The role of calcium chloride taken in the guard tube is to

(A) absorb the evolved gas

(B) moisten the gas

(C) absorb moisture from the gas

(D) absorb I^- ions from the evolved gas

31. Aluminium is used for making cooking utensils. Which of the following properties of aluminium are responsible for the same?

(i) Good thermal conductivity

(ii) Good electrical conductivity

(iii) Ductility

(iv) High melting point

(A) (i) and (ii) (B) (i) and (iii)

(C) (ii) and (iii) (D) (i) and (iv)

32. What happens when calcium is treated with water?

(i) It does not react with water

(ii) It reacts violently with water

(iii) It reacts less violently with water

(iv) Bubbles of hydrogen gas formed stick to the surface of calcium

(A) (i) and (iv) (B) (ii) and (iii)

(C) (i) and (ii) (D) (iii) and (iv)

33. In which of the following groups of organisms, food material is broken down outside the body and absorbed?

(A) Mushroom, green plants, *Amoeba*

(B) Yeast, mushroom, bread mould

(C) *Paramecium*, *Amoeba*, Cuscuta

(D) Cuscuta, lice, tapeworm

34. Select the correct statement

(A) Heterotrophs do not synthesise their own food

(B) Heterotrophs utilise solar energy for photosynthesis

(C) Heterotrophs synthesise their own food

(D) Heterotrophs are capable of converting carbon dioxide and water into carbohydrates

35. Which is the correct sequence of parts in human alimentary canal?

(A) Mouth $\rightarrow$ stomach $\rightarrow$ small intestine $\rightarrow$ oesophagus $\rightarrow$ large intestine

(B) Mouth $\rightarrow$ oesophagus $\rightarrow$ stomach $\rightarrow$ large intestine $\rightarrow$ small intestine

(C) Mouth $\rightarrow$ stomach $\rightarrow$ oesophagus $\rightarrow$ small intestine $\rightarrow$ large intestine

(D) Mouth $\rightarrow$ oesophagus $\rightarrow$ stomach $\rightarrow$ small intestine $\rightarrow$ large intestine

36. Which of the following statements is correct about receptors?

(A) Gustatory receptors detect taste while olfactory receptors detect smell

(B) Both gustatory and olfactory receptors detect smell

(C) Auditory receptors detect smell and olfactory receptors detect taste

(D) Olfactory receptors detect taste and gustatory receptors smell

37. Electrical impulse travels in a neuron from

..... $\rightarrow$ axon $\rightarrow$ axonal end $\rightarrow$ cell body

(B) Cell body $\rightarrow$ dendrite $\rightarrow$ axon $\rightarrow$ axonal end

(C) Dendrite $\rightarrow$ cell body $\rightarrow$ axon $\rightarrow$ axonal end

(D) Axonal end $\rightarrow$ axon $\rightarrow$ cell body $\rightarrow$ dendrite

38. In a synapse, chemical signal is transmitted from

(A) dendritic end of one neuron to axonal end of another neuron

(B) axon to cell body of the same neuron

(C) cell body to axonal end of the same neuron

(D) axonal end of one neuron to dendritic end of another neuron

39. Three bells, toll at intervals of 36 sec, 40 sec and 48 sec respectively. They start ringing toll at particular time. They next toll together after -

(A) 18 minutes (B) 12 minutes

(C) 6 minutes (D) 24 minutes

40. Find the remainder obtained when x^{2007} is divisible by $x^2 - 1$.

(A) x^2 (B) x

(C) $x + 1$ (D) $-x$

41. The fare of 3 full tickets and 2 half tickets is Rs 204 and the fare of 2 full tickets and 2 half tickets is Rs. 186. Find the fare of a full ticket and a half ticket.

(A) Rs 94 (B) Rs 93

(C) Rs 86 (D) Rs 62

42. Quadratic equation whose one of the roots is $4 + \sqrt{5}$ is :

(A) $x^2 + 8x - 1 = 0$ (B) $x^2 + 8x + 18 = 0$

(C) $x^2 - 8x + 1 = 0$ (D) $x^2 - 8x + 11 = 0$

43. If $\sin^{-}s + \sin^{2-} = 1$ then $\cos^{2-} + \cos^{4-} =$

(A) 1 (B) $\frac{\sin\theta}{\cos^2\theta}$

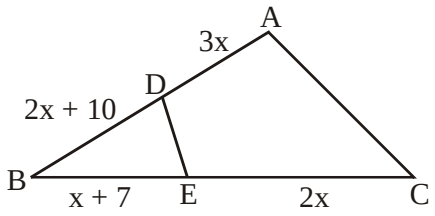
(C) $\frac{\cos^2\theta}{\sin\theta}$ (D) one

44. The area of a rhombus is 2016 cm^2 and its side is 65 cm. The lengths of the diagonals (in cm) respectively are :

(A) 125, 35 (B) 126,32

(C) 132, 26 (D) 135, 25

45. In the given figure, $\overline{DE} \| \overline{AC}$. Find the value of x.



(A) 1 (B) 2

(C) 3 (D) 4

ANSWER KEY

SECTION - A CALCULATION

1.	(B)	**2.**	(D)	**3.**	(C)	**4.**	(C)	**5.**	(A)	**6.**	(A)
7.	(D)	**8.**	(D)	**9.**	(B)	**10.**	(A)				

SECTION - B REASONING

11.	(C)	**12.**	(C)	**13.**	(B)	**14.**	(A)	**15.**	(C)	**16.**	(D)
17.	(B)	**18.**	(B)	**19.**	(D)	**20.**	(D)				

SECTION - C SCHOLASTIC APTITUDE

21.	(C)	**22.**	(C)	**23.**	(C)	**24.**	(A)	**25.**	(B)	**26.**	(C)
27.	(C)	**28.**	(A)	**29.**	(D)	**30.**	(C)	**31.**	(B)	**32.**	(D)
33.	(B)	**34.**	(A)	**35.**	(D)	**36.**	(A)	**37.**	(C)	**38.**	(D)
39.	(C)	**40.**	(B)	**41.**	(B)	**42.**	(D)	**43.**	(A)	**44.**	(B)
45.	(A)										