

ALLEN

ALLEN DIGITAL

SCHOLARSHIP

ADMISSION TEST (ADSAT)



SYLLABUS & PATTERN CLASS-X (MOVING TO CLASS XI JEE)

PHYSICS

1. Reflection of Light
2. Refraction of Light
3. Human Eye and the Colourful World
4. Electricity
5. Magnetic Effects of Electric Current

CHEMISTRY

1. Chemical Reactions and Equations
2. Acids, Bases and Salts
3. Metals and Non-metals
4. Carbon and its Compounds

MATHS

1. Arithmetic Progressions
2. Trigonometry
3. Mensuration
4. Linear Equations in Two Variables
5. Quadratic equations
6. Statistics
7. Number System
8. Probability
9. Polynomials
10. Similar Triangles
11. Circles
12. Co-ordinate geometry

IQ

1. Blood Relation
2. Series
3. Non-Verbal Series
4. Analogy
5. Coding-Decoding
6. Counting of Figure
7. Cube and Dice
8. Direction Sense
9. Embedded Figure
10. Mathematical Operation
11. Insert the Missing Character
12. Number Ranking
13. Puzzle Test
14. Sitting Arrangement
15. Syllogism
16. Calendar
17. Clock
18. Non-Verbal Analogy

EXAM PATTERN

PAPER MODE: ONLINE

Part-1 Subject: IQ
Part-2 Subjects: Physics; Chemistry; Mathematics

MARKING SCHEME

+4 for correct answer, -1 for wrong answer
No negative marking in Part-1

QUESTION DISTRIBUTION

IQ: 30, Physics: 30, Chemistry: 30, Mathematics: 30

QUESTION TYPE: Single Choice Questions

DURATION OF EXAM: 120 Minutes

CORPORATE OFFICE:

ALLEN DIGITAL, One Biz Square, A-12(a), Road No. 1, Indraprastha Industrial Area, Kota, Rajasthan-324005

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SAMPLE QUESTIONS

ADSAT

(Allen Digital Scholarship Admission Test)

Pre-Nurture and Career Foundation Division

CLASS X (JEE)

(For Class X moving to Class XI)


READ THE INSTRUCTIONS CAREFULLY





Paper Instructions:

1. This paper is divided into two sections: **Section-A & Section-B**.
2. The questions appearing in **Section-A** are based on **Mental Ability**.
The questions appearing in **Section-B** are based on **Physics, Chemistry and Mathematics**.
3. In **Section-A**, there are **4 marks** for each correct answer and **no negative marking**. There are **4 marks** for each correct answer and **-1 negative marking** for each wrong answer in **Section-B**.
4. Use of Calculator is Not Allowed.

Your Hard Work Leads to Strong Foundation

ALLEN Digital

 Corporate Address : One Biz Square, A-12 (a), Road No. 1, Indraprastha Industrial Area, Kota - 324005 (Raj.)

 +91-9513736499 |  +91-7849901001 |  wecare@allen.in |  www.allen.in

IMPORTANT INSTRUCTIONS

A. Mandatory for the student to ensure the following for taking the test:

1. Keep your camera switched on at all times while you take the test. Failing to keep the camera on will lead to disqualification.
2. Face the camera while taking the exam and ensure your front profile, up till your shoulder at least is visible. The background should be plain with no photo frames or designs.
3. Ensure your microphone is on and there is no disturbance in the surrounding and you're sitting in a quiet room.
4. Other than one blank sheet of paper and a pen, there should not be any book or stationery in the area where exam is being attempted.

B. Ensure the following for a smooth exam taking experience

1. You have good internet speed- 521 kbps at least for a smooth network. In case of internet issues, the timer will not be paused. ADSAT is not responsible for any such issues.
2. Keep your device connected and ensure there is enough charge.
3. In case of a power outage, ensure the internet and device can still operate and not disconnect from the exam taking experience.

C. You can be disqualified if

1. Your microphone or camera is switched off.
2. The candidate appearing for the exam is not the same as the one registered.
3. Other than the candidate there are other people in the vicinity.
4. There is excessive background noise.
5. Student tries to connect a pen-drive or similar devices while taking the exam.
6. Student tries to browse other site or uses other devices.

D. General Instructions

1. Join the test link 30 mins prior to the exam time to avoid any technical issues and to read the instructions. Test link will be shared via Email and SMS.
2. Remember to submit the test at the end of the exam.
3. The test will be conducted in proctored mode. Ensure that all the above rules are strictly followed.

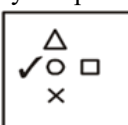
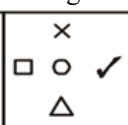
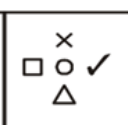
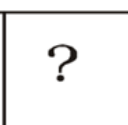
HAVE CONTROL → HAVE PATIENCE → HAVE CONFIDENCE ⇒ 100% SUCCESS


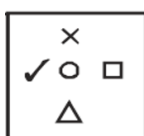
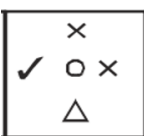

SECTION-A

MENTAL ABILITY

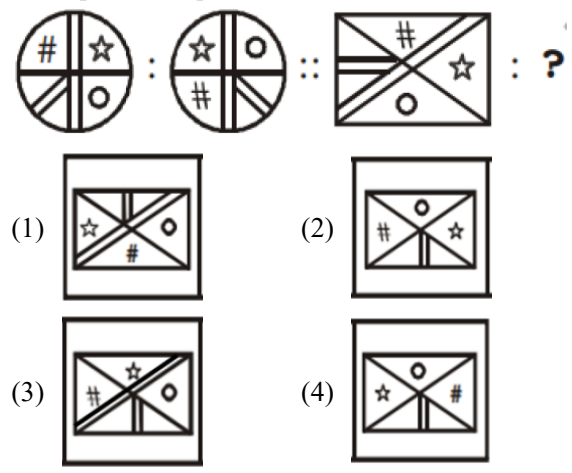
This section contains 18 multiple choice questions. Each question has 4 choices (1), (2), (3) and (4) out of which ONLY ONE is correct. There are 4 marks each for correct answer and there is NO negative marking.

- B is father of Q. B has only two children. Q is the brother of R. R is the daughter of P. A is the granddaughter of P. S is the father of A. How is S related to Q?
 - Son
 - Son-in-law
 - Brother
 - Brother-in-law
- Find the missing term.
5, 6, 9, 15, ?, 40,
 - 2
 - 25
 - 27
 - 33
- Select a figure from among the answer figures which will continue the same series as established by the problem figure.

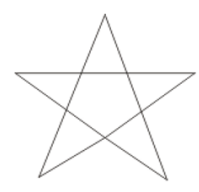
			
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 - | | |
|---|---|
|  |  |
|---|---|
 - | | |
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|  |  |
|---|---|
- Choose the correct option which shows the same relation.
Reading : Knowledge :: Work : ?
 - Experience
 - Engagement
 - Employment
 - Experiment

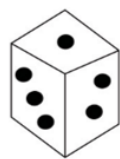


- From the given figures find the suitable figure that can replace the question mark.



- In a certain language, CAT = 12, MAT = 17, then what is the value of JAM = ?
 - 15
 - 16
 - 17
 - 12
- How many triangles are there in the following figure ?



- 5
 - 6
 - 8
 - 10
- A cube is cut in two equal parts along a plane parallel to one of its faces. One piece is then coloured red on the two larger faces and green on the remaining, while the other is coloured green on two smaller adjacent faces and red on the remaining. Each is then cut into 32 cubes of same size and mixed up. How many cubes have only one coloured face each ?
 - 32
 - 8
 - 16
 - 0
- Below there are three different positions of a dice. Find the number of dots on the face opposite to the face with one dot.

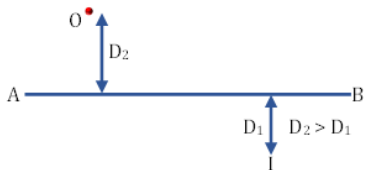
		
(i)	(ii)	(iii)

 - 2
 - 3
 - 4
 - 6

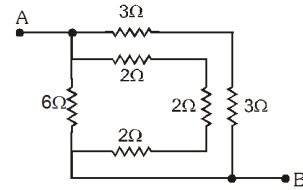
SECTION-B

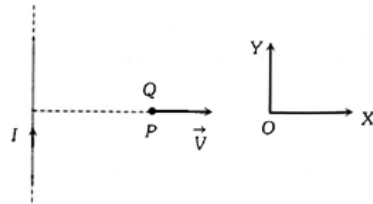
PHYSICS

This section contains 10 multiple choice questions. Each question has 4 choices (1), (2), (3) and (4) out of which ONLY ONE is correct. There are 4 marks each for correct answer and -1 for each incorrect answer.

- 19 Which of the following statements is correct?
- (1) A person with myopia can see nearby objects clearly.
 - (2) A person with hypermetropia can see nearby objects clearly.
 - (3) A person with myopia can see distant objects clearly.
 - (4) A person with hypermetropia cannot see distant objects clearly.
- 20 In the figure shown, the image of a real object is formed at point I. AB is the principal axis of the mirror. The mirror must be :
- 
- (1) concave & placed towards right of I
 - (2) concave & placed towards left of I
 - (3) convex and placed towards right of I
 - (4) convex & placed towards left of I.
- 21 Where should an object be placed before a convex lens of focal length 10 cm be placed to get a virtual image at a distance of 30 cm from the lens?
- (1) at 15 cm from the lens
 - (2) at 7.5 cm from the lens
 - (3) at 22.5 from the lens
 - (4) at 30 cm from the lens
- 22 A beam of light is incident at 60° on a plane surface. The reflected and refracted rays are perpendicular to each other, then refractive index of the surface is:
- (1) $\sqrt{3}$
 - (2) $\frac{1}{\sqrt{3}}$
 - (3) $\frac{1}{2\sqrt{3}}$
 - (4) None of these

- 23 Equivalent resistance between two points A and B in circuit will be :



- (1) 2 Ω
 - (2) 6 Ω
 - (3) 3 Ω
 - (4) 8 Ω
- 24 A bulb rated 240 V, 100 Ω is connected to a 20 V supply. What can be inferred?
- (1) The bulb fuses.
 - (2) The bulb lights up but it is dim.
 - (3) The bulb lights up to normal brightness.
 - (4) The bulb lights up initially and then it fuses.
- 25 A very long straight wire carries a current I. At the instant when a charge +Q at point P have velocity \vec{v} , as shown, the force on the charge is :-
- 
- (1) Opposite to OX
 - (2) Along OX
 - (3) Opposite to OY
 - (4) Along OY
- 26 Magnetic field due to current through a is similar to magnetic field produced by a bar magnet.
- (1) circular loop of conducting wire.
 - (2) rectangular loop of conducting wire.
 - (3) solenoid.
 - (4) thick copper wire.
- 27 A hunter wants to shoot a fish whose image can be seen through clear water. It is to be aimed
- (1) above the image of fish
 - (2) below the image of fish
 - (3) directly towards the image
 - (4) in any direction
- 28 The speed of light in diamond is $\frac{2}{5}$ of its speed in air. The refractive index of diamond is
- (1) 1.4
 - (2) 2.5
 - (3) 5
 - (4) 1.2

CHEMISTRY

This section contains 10 multiple choice questions. Each question has 4 choices (1), (2), (3) and (4) out of which ONLY ONE is correct. There are 4 marks each for correct answer and -1 for each incorrect answer.

- 29 Complete the following analogy with respect to the change of colour of indicators in different mediums.
Methyl orange : Changes from orange to yellow ::
Phenolphthalein :
- (1) Remains pink
 - (2) Remains colourless
 - (3) Changes from colourless to pink
 - (4) Changes from pink to colourless
- 30 Nature of a solution depends on its H_3O^+ but pH notation is used to express the nature of solution because
- (1) H_3O^+ value is very high in order to express it as simple number
 - (2) H_3O^+ and OH^- values are same to overcome confusion.
 - (3) H_3O^+ value is extremely small, in order to express the nature of solution as a simple whole number
 - (4) None of above
- 31 Formation of carbon disulphide from carbon and sulphur takes place by
- (1) absorption of heat
 - (2) evolution of heat
 - (3) no change in heat content
 - (4) none of the above
- 32 Which of the statements about the reaction below are incorrect ?
 $2PbO(s) + C(s) \rightarrow 2Pb(s) + CO_2(g)$
- (i) Lead is getting reduced .
 - (ii) Carbon dioxide is getting oxidised.
 - (iii) Carbon is getting oxidised.
 - (iv) Lead oxide is getting reduced.
- (1) (i) and (ii) (2) (i) and (iii)
 - (3) (i), (ii) and (iii) (4) All of the above

- 33 Which of the following pairs will give displacement reactions ?
- (1) $ZnSO_4$ solution and Aluminium metal
 - (2) $MgCl_2$ solution and Aluminium metal
 - (3) $FeSO_4$ solution and Silver metal
 - (4) $NaNO_3$ solution and Copper metal
- 34 Match column A with column B and select the correct option.

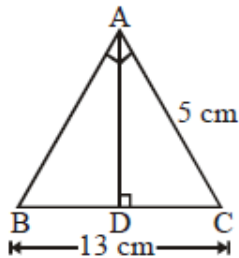
Column-A		Column-B	
[Ore]		[Nature of ore]	
(a)	Copper glance	(i)	Sulphate ore
(b)	Calamine	(ii)	Halide ore
(c)	Rock salt	(iii)	Sulphide ore
(d)	Epsom salt	(iv)	Carbonate ore

- (1) a → i; b → ii; c → iii; d → iv
 - (2) a → iv; b → ii; c → iii; d → i
 - (3) a → iii; b → iv; c → ii; d → i
 - (4) a → iv; b → i; c → ii; d → iii
- 35 The name of the compound, $CH_3 - CH_2 - CHO$ is
- (1) Propanal
 - (2) Propanone
 - (3) Ethanol
 - (4) Ethanal
- 36 Oxidation product of methyl alcohol is _____.
- (1) Acetic acid
 - (2) Methyl amine
 - (3) Formic acid
 - (4) Ethyl acetate
- 37 Carbon forms four covalent bonds by sharing its four valence electrons with four univalent atoms. eg: hydrogen. After the formation of four bonds, the carbon attains the electronic configuration of
- (1) Lithium (2) Neon
 - (3) Argon (4) Krypton
- 38 Which of the following metals exist in their native state in nature?
- (i) Cu (ii) Au (iii) Zn (iv) Ag
 - (1) (i) and (ii) (2) (ii) and (iii)
 - (3) (ii) and (iv) (4) (iii) and (iv)

MATHEMATICS

This section contains 12 multiple choice questions. Each question has 4 choices (1), (2), (3) and (4) out of which ONLY ONE is correct. There are 4 marks each for correct answer and -1 for each incorrect answer.

- 39 In how many ways can 576 be expressed as product of two distinct factors?
 (1) 10 (2) 9 (3) 12 (4) 8
- 40 If two of the zeros of the cubic polynomial $ax^3 + bx^2 + cx + d$ are each equal to zero, then the third zero is
 (1) $-\frac{d}{a}$ (2) $-\frac{b}{a}$
 (3) $\frac{c}{a}$ (4) $\frac{b}{a}$
- 41 If $\sec \theta - \tan \theta = k$, then the value of $\sec \theta + \tan \theta$ is
 (1) $(1 - k)$ (2) $(1 + k)$
 (3) $\frac{1}{k}$ (4) $1 - \frac{1}{k}$
- 42 ΔABC is right angled at A and $AD \perp BC$. If $BC = 13$ cm and $AC = 5$ cm, the ratio of the areas of ΔABC and ΔADC is



- (1) 25 : 169 (2) 169 : 25
 (3) 5 : 13 (4) 13 : 5
- 43 A bag contains 5 red balls and some blue balls. If the probability of drawing a blue balls is double that of red ball, how many balls are there in the bag?
 (1) 15 (2) 10 (3) 8 (4) 4
- 44 Find the median of the following data :

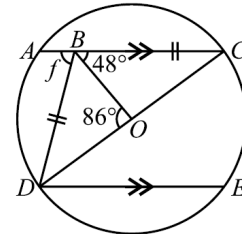
Marks	0-10	10-20	20-30	30-40	40-50
No. of students	10	18	40	20	12

- (1) 51.5 (2) 25.5 (3) 28.5 (4) 31

- 45 If A(2, 2), B(-4, -4), C(5, -8) are the vertices of any triangle, the length of median passing through C will be :

- (1) $\sqrt{65}$ units (2) $\sqrt{117}$ units
 (3) $\sqrt{85}$ units (4) $\sqrt{113}$ units

- 46 In figure O is the centre of the circle. Find f.



- (1) 76° (2) 43° (3) 48° (4) 78°

- 47 ABCD is a trapezium in which $AB \parallel CD$; BC and AD are non-parallel sides. It is given that $AB = 75$ cm, $BC = 42$ cm, $CD = 30$ cm and $AD = 39$ cm. Find the area of the trapezium.

- (1) 1764 cm^2
 (2) 1760 cm^2
 (3) 1500 cm^2
 (4) 1700 cm^2

- 48 The height of a cone is 30 cm. A small cone is cut off at the top by a plane parallel to the base. If its volume is $\frac{1}{27}$ of the given cone, then the height of the smaller cone is

- (1) 13.5 cm
 (2) 11 cm
 (3) 10 cm
 (4) 12 cm

- 49 For what value of p, the equation $(3p + 5)x^2 - px + 6 = 0$ will not be a quadratic equation?

- (1) 5 (2) $-\frac{5}{3}$ (3) 0 (4) 1

- 50 Which of the following options is INCORRECT ?

- (1) The number of terms in the A.P. 3, 6, 9, 12, ..., 111 is 37.
 (2) If the first three terms of an A.P. are $x - 1$, $x + 1$ and $2x + 3$, then the value of x is 0.
 (3) The sum of first 'n' natural numbers is $\left[\frac{n(n+1)}{2} \right]^2$.
 (4) None of these

**ALLEN DIGITAL
OBJECTIVE****ANSWER KEY**

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

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