

FIITJEE ADMISSION TEST

TWO YEAR Classroom Program
PINNACLE – Two Year Integrated School Program
USA UnivQuest – Two Year Classroom Program
USA UnivQuest–Two Year Integrated School Program

IQ, PHYSICS, CHEMISTRY & MATHEMATICS

Time: 3 Hours

Maximum Marks: 346

Instructions:

1. **Caution: Question Paper CODE as given above MUST be correctly marked in the answer OMR sheet before attempting the paper. Wrong CODE or no CODE will give wrong results.**
2. This Questions paper consists of 4 Sections:
Section I – IQ (Q. 1 to 30), Section II – Physics (Q. 31 to 50),
Section III – Chemistry (Q. 51 to 70), Section IV – Mathematics (Q. 71 to 90).
3. All the questions are multiple choice questions having only **one correct answer**.
Each Double star (**) marked question carries **+8 marks** for correct answer and **-3 marks** for wrong answer. Each Single star (*) marked question carries **+5 marks** for correct answer and **-2 marks** for wrong answer. Each of the rest of questions carries **+3 marks** for correct answer and **-1 mark** for wrong answer.
4. **You are advised to devote around 45 Minutes on each Section as there will be minimum cutoff marks in each Section for qualifying.**
5. Answers have to be marked on the OMR sheet.
6. The Question Paper contains blank spaces for your rough work. No additional sheets will be provided for rough work.
7. Blank papers, clip boards, log tables, slide rule, calculator, cellular phones, pagers and electronic devices, in any form, are not allowed.
8. Write your **Name, Registration Number and Test Centre** in the space provided below.

Registration Number :

Name of the Candidate : _____

Test Centre : _____

IQ**SECTION – I****Straight Objective Type**

*This Section contains 30 multiple choice questions numbered 1 to 30. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

1. If $7 \times 5 \times 4 = 57354$ and $8 \times 7 \times 3 = 78563$ then $6 \times 8 \times 5 = ?$
 (A) 86585 (B) 86855
 (C) 68485 (D) 86485
2. Find the odd one out from the given alternatives:
 (A) $94 - 7$ (B) $42 - 6$
 (C) $35 - 5$ (D) $56 - 8$
3. Find the related word/number:
 Suggest : Demand :: Take : ?
 (A) Give (B) Grab
 (C) Receive (D) Gift
- **4. Which is the odd number in the pattern given below?
- | | | | |
|-----|-----|-----|----|
| 4 | 32 | 144 | 17 |
| 28 | 122 | 18 | 64 |
| 322 | 14 | 602 | 24 |
- (A) 4 (B) 17
 (C) 28 (D) None of these
5. If 87654 stands for 'GREAT', then 754 stands for
 (A) GET (B) TEA
 (C) EAT (D) RAT
- *6. 1, 1, 2, 3, 5, 8, 13, ?
 (A) 18 (B) 21
 (C) 23 (D) None of these
7. 3, 4, 8, 17, 33, ?
 (A) 58 (B) 45
 (C) 49 (D) None of these

Space For Rough Work

**8. Find the missing number

1	4	9	?
1	2	3	4
2	4	6	?

- (A) 36 and 4
(C) 16 and 8

- (B) 25 and 5
(D) 49 and 7

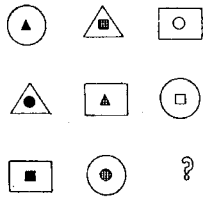
*9. $\frac{?}{-} \frac{?}{-} ab$ a $\frac{?}{-} \frac{?}{-} ba$ $\frac{?}{-} ab$

- (A) abbba
(C) baabb

- (B) abbab
(D) bbaba

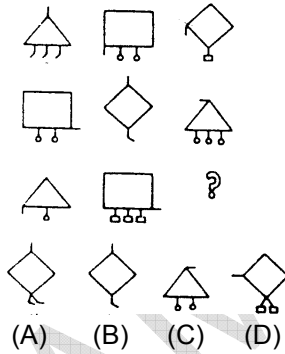
Directions (10-14): Each of the following questions has three rows of figures. From the third row, one figure is missing. The missing figure is one of the five alternative figures given at the end of each question. Find the missing figure.

10.



- (A) (B) (C) (D)

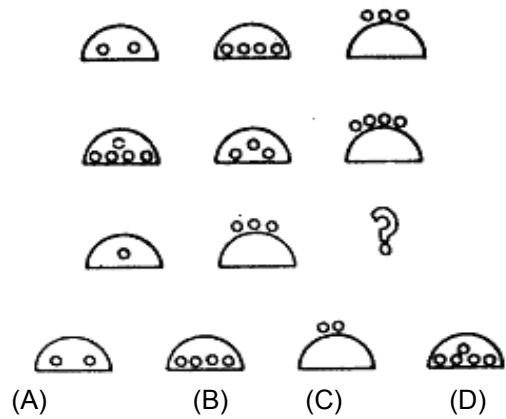
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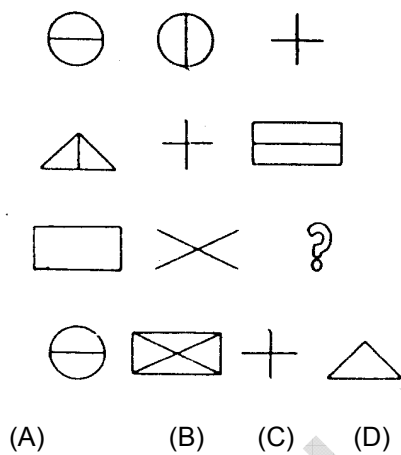
- (A) (B) (C) (D)

Space For Rough Work

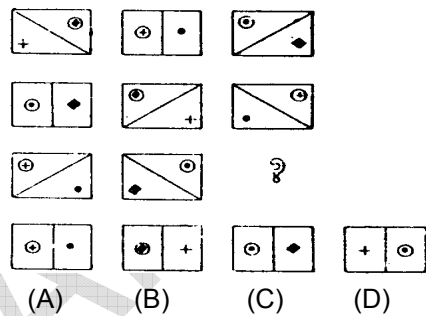
12.



*13.



**14.

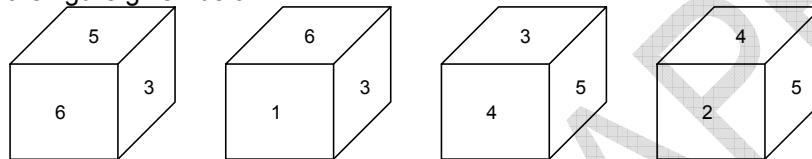


Space For Rough Work

Directions (15–16): In each of the following questions one or more statements have been given followed by four inferences, A, B, C and D. Find out the inference that definitely follows from the given statement.

15. "Soldiers serve their country".
 (A) Those who serve their country are soldiers
 (B) Women do not serve their country because they are not soldiers
 (C) Men generally serve their country
 (D) Some men who are soldiers serve their country.
16. "Most of the pens in that shop are expensive".
 (A) There are no cheap pens in that shop
 (B) Some of the pens in that shop are expensive
 (C) There are cheap pens also in that shop
 (D) Camlin pens in that shop are expensive.

17. Look at the figure given below:



Which number is on the face opposite to 6?

- (A) 5
 (B) 3
 (C) 1
 (D) 4
18. The next digit in the series 6, 4, 3, $12/5$, will be:
 (A) $7/3$
 (B) $9/4$
 (C) $13/5$
 (D) 2
- **19. In the following question, the wrong term and its substitution by the correct term are indicated as a pair in the four options to each question. Identify the correct pair.
 24, 49, 99, 94, 15, 31, 59, 58
 (A) (49, 47)
 (B) (99, 95)
 (C) (94, 101)
 (D) None of these.

Directions (20–22): In each of the questions given below, there is a letter group series with one term missing as shown by (?). This term is given as one the alternatives among the groups of letters given under it. Find this term.

- *20. (?), PSVYB, EHKNQ, TWZCF, ILORU
 (A) BEHKN
 (B) ADGJM
 (C) ZCFIL
 (D) IMPSV

Space For Rough Work

- *21. ACMYA, FHND, (?) PRNNP, UWMSU, ZBNXZ
(A) INMKI (B) KMNK
(C) IMNKI (D) KMMK
- **22. BASTU, (?) DCQVW, DEPXW, FEOXY, FGNZY
(A) CBTUT (B) CBRUV
(C) BCRVU (D) BCTVU

Directions (23–25): In the questions given below there are four terms, one of which is missing as shown by (?). Two terms to the left of :: bear the same relationship as the two terms to its right. Find the missing term from among the five alternatives given at the end of each question.

- **23. ? : JKHI :: TURS : OPMN
(A) MNOP (B) LMNO
(C) OPMN (D) NLMO
24. AEFJ : KOPT :: ? : QUVZ
(A) GLKP (B) GKLP
(C) HKLP (D) HKQL
25. ACEG : ? :: BDFH : KMOQ
(A) NLPR (B) LMNO
(C) JLNP (D) JNLO
26. A rat runs 20 m towards east and turns to right, runs 10 m and turns to right, runs 9 m and again turns to left, turns to left, runs 5 m and then turns to left, runs 12 m and finally turns to left and runs 6 m. Now which direction is the rat facing?
(A) East (B) North
(C) West (D) South
- *27. Mehrunisa is the 11th from the either end of the row of girls, how many girls are there in that row?
(A) 19 (B) 20
(C) 21 (D) 22

Directions (28–30): Choose the correct alternative.

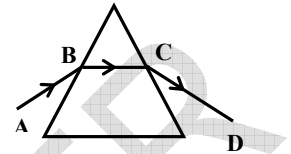
28. If 'PAINTER' is coded as '3528617' which is the correct code for 'TANRPEI'?
(A) 6587312 (B) 6583721
(C) 6587132 (D) 6583712
29. 'PLANETS' is coded as '4823579'. Which is the correct code for 'SNLEPAT'?
(A) 9385247 (B) 9384527
(C) 9385427 (D) 9385742
30. If 'MADRAS' is coded as '56', how can 'CALCUTTA' be coded
(A) 8 (B) 38
(C) 81 (D) 76

Space For Rough Work

Physics**SECTION – II****Straight Objective Type**

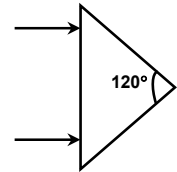
This Section contains 20 multiple choice questions numbered 31 to 50. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

- **31. A light beam AB when incident on a prism, passed through path BCD. Now, if the light is incident along DC, then
 (A) it will pass through CBA.
 (B) it will be less deflected.
 (C) it will be more deflected
 (D) can't be predicted .



32. The point of the lens through which the light goes undeviated after refraction is known as
 (A) Focus (B) Locus
 (C) Centre of curvature (D) Optical centre.

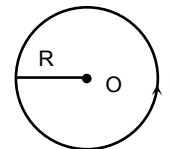
- **33. An isosceles prism of angle 120° has a refractive index 1.44. Two parallel monochromatic rays enter the prism parallel to each other in air as shown. The rays emerge from the opposite faces
 (A) are parallel to each other
 (B) are diverging
 (C) make an angle $2 [\sin^{-1}(0.72) - 30^\circ]$ with each other
 (D) make an angle $2 \sin^{-1}(0.72)$ with each other



34. A pond is 5 m deep. A person standing on its bank will find/observe its depth, as
 (A) less than 5 m (B) equal to 5 m
 (C) greater than 5 m (D) can't be predicted
- *35. The size of the image formed by a convex mirror of focal length 30 cm is a quarter of the size of a real object. Then the distance of the object from the mirror is
 (A) 30 cm (B) 90 cm
 (C) 120 cm (D) 60 cm

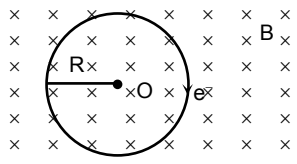
Space for Rough Work

36. Two electric bulbs whose resistances are in the ratio of 1 : 2 are connected in parallel to a constant voltage source. The powers dissipated in them have the ratio
 (A) 1 : 2 (B) 1 : 1
 (C) 2 : 1 (D) 1 : 4
37. Which of following causes the least pollution when burnt?
 (A) petrol (B) diesel
 (C) coal (D) natural gas
38. Which of the following mirrors has the widest field of view?
 (A) convex mirror (B) concave mirror
 (C) plane mirror (D) none of these
39. Which of the following colour scatters minimum?
 (A) violet (B) blue
 (C) red (D) yellow
40. Find speed of light in water? (Refractive index of water is $\frac{4}{3}$)
 (A) 2×10^8 m/s (B) 3×10^8 m/s
 (C) 2.25×10^8 m/s (D) 4×10^8 m/s
41. A ray of light travelling in air falls on the surface of a transparent slab at an angle. If the angle of refraction is 30° , and refractive index of the slab is $\sqrt{3}$, find angle of incidence.
 (A) 45° (B) 30°
 (C) 60° (D) none of the above
- **42. Current is flowing in a ring of radius R in the anti-clockwise direction. An electron is moving towards the centre of the ring in the downward direction inside the plane with velocity v. Its velocity will
 (A) increase (B) remain same
 (C) decrease (D) become zero.



- *43. The potential at a point is 20 V. The work done in bringing a charge of 2 C from infinity to this point will be
 (A) 10 J (B) 40 J
 (C) 5 J (D) 20 J

Space for Rough Work

44. You can provide charge to a body by
 (A) friction. (B) induction.
 (C) contact. (D) all of the above.
- **45. An electron is moving in a circle of radius R in a uniform magnetic field. The direction of magnetic field lines is in the downward direction inside the plane. If instantly we change the direction of magnetic field lines in the upward direction out of the plane. The electron
 (A) will start moving in a straight line.
 (B) will move in a circle of radius R in the same direction.
 (C) will move in a circle of radius R but in the anticlockwise direction.
 (D) will move in the same direction but in a circle of radius greater than R .
- 
46. A positively charged particle placed on a frictionless table by attaching it to a string fixed at one point of magnetic field is switched on in the vertical direction, the tension in the string
 (A) will increase (B) will decrease
 (C) will remain same (D) may increase or decrease
47. A charged particle is moving along a magnetic field line. The magnetic force on the particle is
 (A) along its velocity (B) opposite to its velocity
 (C) perpendicular to its velocity (D) zero
- *48. A charged particle is moving in a magnetic field and does not experience any force. The particle is moving
 (A) perpendicular to magnetic field
 (B) along the magnetic field lines
 (C) in the direction making an angle 60° with magnetic field lines.
 (D) in the direction making an angle 30° with magnetic field lines.
49. When a particle moves in a circle with a uniform speed
 (A) its velocity and acceleration are both constant
 (B) its velocity is constant but acceleration changes
 (C) its acceleration is constant but velocity changes
 (D) its velocity and acceleration both change
- *50. A block of mass M is pulled along a horizontal frictionless surface by a rope of mass m . If a force F is applied at one end of the rope, the force which the rope exerts on the block is:
 (A) $\frac{FM}{m+M}$ (B) $\frac{Fm}{m+M}$
 (C) $\frac{FM}{M-m}$ (D) $\frac{FM}{m-M}$

Space for Rough Work

Chemistry**SECTION – III****Straight Objective Type**

This Section contains 20 multiple choice questions numbered 51 to 70. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

51. Acid present in tomato is
(A) oxalic acid (B) acetic acid
(C) tarataric acid (D) citric acid
52. At room temperature, acetic acid is
(A) sweet smelling solid (B) pungent smelling liquid
(C) odourless liquid (D) odourless solid
53. A piece of granulated Zn was dropped in CuSO_4 solution, after sometime, the colour of the solution changed from
(A) light green to blue (B) blue to colourless
(C) light green to colourless (D) blue to yellow
54. Which of the following is most reactive metal?
(A) Cu (B) Fe
(C) Al (D) Zn
- **55. Copper container can be used to store
(A) $\text{Al}_2(\text{SO}_4)_3$ solution (B) ZnSO_4 solution
(C) FeSO_4 solution (D) All of these
- **56. Which of the following has the highest pH value?
(A) dilute NaHCO_3 solution (B) dilute NaOH solution
(C) Water (D) Lemon juice
- *57. Which of the following has the smallest size?
(A) Al (B) F
(C) Cl (D) K
- *58. The atomic number of the following elements which represents a metal
(A) 17 (B) 2
(C) 19 (D) 33

Space for Rough Work

59. Which of the following element has 3 valence electrons?
(A) Cs (B) Ca
(C) Al (D) S
- *60. Which among the following is the least reactive metal?
(A) Cu (B) Na
(C) K (D) Rb
- **61. Benzene with molecular formula, C_6H_6 has
(A) 6 single bonds and 6 double bonds (B) 12 single bonds and 3 double bonds
(C) 18 single bonds only (D) 12 double bonds only
62. Catalysts are substances which can
(A) can increase the speed of a chemical reaction
(B) can decrease the speed of a chemical reaction
(C) can either increase or decrease the speed of a chemical reaction
(D) do not change the speed of a chemical reaction
63. Members of homologous series have
(A) same functional group
(B) similar chemical properties
(C) difference of CH_2 unit in successive members
(D) all of these
64. Non-metal which is good conductor of heat
(A) graphite (B) diamond
(C) both (A) and (B) (D) None
65. Metals which are found in nature in free state?
(A) Au (B) Pt
(C) Ag (D) All of these
- **66. To obtain a metal from its metal oxide, which method is used?
(A) Oxidation (B) Reaction with coke
(C) Reaction with Al (D) Both (B) and (C)

Space for Rough Work

67. Which of the following metals is protected from oxygen and moisture by immersing in kerosene oil?
(A) K (B) Mg
(C) Al (D) Ag
68. For making jewellery, gold is mixed with
(A) Fe (B) Cu
(C) Al (D) Zn
69. Most abundant metal on earth's crust is
(A) Cu (B) Al
(C) Fe (D) Zn
- *70. Which of the following form amphoteric oxide?
(A) B (B) Si
(C) Ge (D) All of these

Space for Rough Work

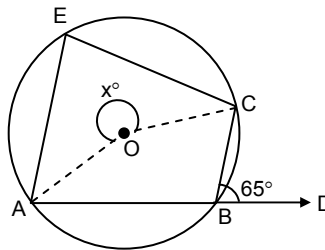
Mathematics**SECTION - IV****Straight Objective Type**

This Section contains 20 multiple choice questions numbered 71 to 90. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

71. The Value of $(2^{55} \times 2^{60} - 2^{97} \times 2^{18})$ is
 (A) 0 (B) 2
 (C) 2^4 (D) none of these
- **72. The solution of the following equation $5^{x-3} \cdot 3^{2x-8} = 225$ is
 (A) 4 (B) 5
 (C) 1 (D) none of these
73. If $x = 2^{1/3} + 2^{2/3}$, then the value of $x^3 - 6x$ is
 (A) 4 (B) 6
 (C) 12 (D) none of these
- **74. If $a^2 + b^2 + c^2 = 250$ and $ab + bc + ca = 3$, then $a + b + c$ is
 (A) - 16 (B) 18
 (C) 25 (D) none of these
75. If an angle is equal to one third of its supplement, then the angle is
 (A) 60° (B) 45°
 (C) 30° (D) none of these
76. If the angles of a triangle are in the ratio 2 : 3 : 4, the one of the angle is
 (A) 30° (B) 45°
 (C) 80° (D) none of these
77. In a triangle ABC if $\angle A = 45^\circ$, $\angle B = 65^\circ$, then the shortest side of the triangle is
 (A) AB side (B) BC side
 (C) CA side (D) can't say
- *78. The length of a chord which is at a distance of 5 cm from the centre of a circle of radius 13 cm is
 (A) 12 cm (B) 24 cm
 (C) 10 cm (D) none of these

Space for Rough Work

- **79. The value of x in the following figure is
 (A) 130°
 (B) 230°
 (C) 135°
 (D) none of these



80. Area of triangle, having sides as 8, 11 and the perimeter 32 is
 (A) $8\sqrt{30}$ (B) $4\sqrt{30}$
 (C) 16 (D) none of these
- *81. The area of quadrilateral ABCD whose sides are 9 m, 40 m, 28 m and 15 m is
 (A) 300 m^2 (B) 306 m^2
 (C) 296 m^2 (D) none of these
82. The radius and the slant height of a cone are in the ratio of 4 : 7. If its curved area is 792 cm^2 , then its radius will be
 (A) 9 cm (B) 6 cm
 (C) 12 cm (D) none of these
- *83. If the diameter of a sphere is decreased by 25%, then by what percent its curved area would decrease?
 (A) 43.75% (B) 50%
 (C) 37% (D) none of these
84. A coin is tossed 10 times, the chances of head outcome in each trial is
 (A) $\frac{1}{2}$ (B) $\frac{1}{2^{10}}$
 (C) $\frac{10}{2^{10}}$ (D) none of these
- **85. Which of the following statement is true
 (A) $0 \leq P(A) \leq 1$
 (B) number of trials in which the event happens are always less than the total number of trials
 (C) $P(E_1) + P(E_2) + \dots + P(E_n) = 1$, where E_1, E_2 are all total random events of an experiment
 (D) all of the above
86. The median of the following data (19, 25, 59, 48, 35, 31, 30, 32, 51) is
 (A) 31 (B) 32
 (C) 35 (D) 48

Space for Rough Work

87. The mean of 10 numbers is 20. If 5 is subtracted from every number, what will be the new mean?
(A) 15 (B) 20
(C) 25 (D) none of these
88. The mean of 5 number is 18. If one number is excluded, their mean is 16. Then the excluded number is
(A) 22 (B) 26
(C) 64 (D) none of these
89. When $f(x) = 4x^3 - 12x^2 + 14x - 3$ is divided by $g(x) = x - 1/2$, then the remainder is
(A) $1/2$ (B) $3/2$
(C) 3 (D) none of these
- *90. If $2x + 3y = 13$ and $xy = 6$, then the value of $8x^3 + 27y^3$ is
(A) 793 (B) 2197
(C) 1404 (D) none of these

Space for Rough Work

FIITJEE ADMISSION TEST

for students presently in

Class- X

IQ+PHYSICS, CHEMISTRY & MATHS ANSWERS

SECTION – I (IQ)

1. D	2. A	3. B	4. B
5. D	6. B	7. A	8. C
9. B	10. D	11. A	12. A
13. B	14. B	15. A	16. C
17. D	18. D	19. B	20. B
21. D	22. C	23. C	24. B
25. C	26. B	27. C	28. A
29. C	30. C		

SECTION – II (Physics)

31. A	32. D	33. C	34. A
35. B	36. C	37. D	38. A
39. C	40. C	41. C	42. B
43. B	44. D	45. C	46. C
47. D	48. B	49. D	50. A

SECTION – III (Chemistry)

51. A	52. B	53. B	54. C
55. D	56. B	57. B	58. C
59. C	60. A	61. B	62. C
63. D	64. A	65. D	66. D
67. A	68. B	69. B	70. D

SECTION – IV (Mathematics)

71. A	72. B	73. B	74. A
75. B	76. C	77. B	78. B
79. B	80. A	81. B	82. C
83. A	84. B	85. D	86. B
87. A	88. B	89. B	90. A