SAMPLE PAPERS

VIN IT
Vidyamandir Intellect National Incentive Test

JEE
(MAIN & ADVANCED)

For Students

Currently In Class 10th

2 Year Program

Head Office: Aggarwal Corporate Heights, 1st Floor, Netaji Subhash Place, Opp. Wazirpur Depot, Pitampura, Delhi.

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Sample Paper – 2 Year JEE Program

Vidyamandir Intellect Quest Test

Duration: 2.5 Hrs **Maximum Marks: 230**

For Students Currently in Class 10th (Stream: Engineering)

PAPER SCHEME:

- The paper contains **45** Objective Type Questions divided into four sections: **Section - I, Section – II, Section - III** and **Section - IV**
- **Section I** contains **5 Multiple Choice Questions (1-5)** based on **Mental Aptitude**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE is correct**.
- **Section II** contains **10 Multiple Choice Questions (6-15)** based on **Science**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE is correct**.
- **Section III** contains **20 Multiple Choice Questions (16-35)** based on **Mathematics**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE is correct**.
- **Section IV** contains **10 Numerical Value Type Questions (1-10).** The answer to each of these questions ranges from 0 to 99.

MARKING SCHEME:

- **Section I**: For each question, **4 marks** will be awarded for correct answer and **–1 negative marking** for incorrect answer.
- **Section II & III**: For each question, **5 marks** will be awarded for correct answer and **–1 negative marking** for incorrect answer.
- **Section IV:** For each question, **6 marks** will be awarded for correct answer and **No negative marking** for incorrect answer.

GENERAL INSTRUCTIONS:

- For answering a question, an **ANSWER SHEET (OMR SHEET)** is provided separately. Please fill your **Name, Roll Number, Seat ID, Date of Birth** and the **PAPER CODE** properly in the space provided in the **ANSWER SHEET.** IT IS YOUR OWN RESPONSIBILITY TO FILL THE OMR SHEET CORRECTLY.
- A blank space has been provided on each page for rough work.
- Violating the examination room discipline will immediately lead to the cancellation of your paper and no excuses will be entertained.
- No one will be permitted to leave the examination hall before the end of the test.
- **Please submit both the question paper and the answer sheet to the invigilator before leaving the examination hall.**

SUGGESTIONS:

- *Before starting the paper, spend 2-2.5 minutes to check whether all the pages are in order and report any issue to the invigilator immediately.*

- Try to attempt the Sections in their respective order.

- Do not get stuck on a particular question for more than 2-2.5 minutes. Move on to a new question as there are 45 questions to solve.

SECTION - I [MENTAL APTITUDE]

Direction for (1 – 2)

Some groups of letters are given, all of which except one, share a common similarly while one is different. Choose the odd one out.

1. Choose the odd one out.

   (A) HSRI   **(B)** MVUN   **(C)** OLKP   **(D)** PJQX

2. Choose the odd one out.

   (A) YDWB   **(B)** TKRI   **(C)** QNOM   **(D)** HLFJ

3. ABCDEFGHIJLKLMNOPQRSTUVWXYZ

   If 1st half of the English alphabet is written in backward order, then what will be the 7th letter to the left the 10th letter from your right?

   (A) C   **(B)** E   **(C)** D   **(D)** J

4. One morning Udai and Vishal were talking to each other face to face at a crossing. If Vishal's shadow was exactly to the left of Udai, which direction was Udai facing?

   (A) East   **(B)** West   **(C)** North   **(D)** South

5. If $-$ means $\div, +$ means $\times, \div$ means $-, \times$ means $+$, then which of the following is correct?

   (A) $36 - 12 \times 6 \div 3 + 4 = 60$ **(B)** $52 \div 4 + 5 \times 15 - 3 = 37$

   **(C)** $36 \times 4 - 12 + 5 \div 3 = 420$ **(D)** $43 \times 7 + 5 + 4 - 8 = 25$

SECTION - II [SCIENCE]

6. The rate of change of displacement is called:

   (A) Momentum   **(B)** Speed   **(C)** Velocity   **(D)** Acceleration

7. The SI unit of momentum is:

   (A) Newton   **(B)** Newton - Second   **(C)** Dyne   **(D)** Dyne - Second

8. When unbalanced forces act on a body, the body?

   (A) Must move with uniform velocity   **(B)** Must remain at rest

   (C) Must experience acceleration   **(D)** Must move in a curved path

9. Work done is always:

   (A) Scalar quantity   **(B)** Vector quantity   **(C)** Positive   **(D)** Negative

10. The unit of relative density is:

   (A) $g\,cm^{-3}$ **(B)** $kg\,m^{-3}$ **(C)** $kgF\,m^{-3}$ **(D)** No unit

11. When magnesium ribbon is burnt in air, the ash formed is:

   (A) White   **(B)** Green   **(C)** Yellow   **(D)** Black

12. Baking powder contains sodium hydrogen carbonate &

   (A) Tartaric acid   **(B)** Washing soda   **(C)** Calcium chloride   **(D)** Acetic acid

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13. $Cu + HCl(aq) \rightarrow$

   (A) React vigorously   **(B)** No reaction
   (C) React moderately   **(D)** React slowly

14. How many moles of hydroxyl ion present in a sample of 3 moles of aluminium hydroxide?
   (A) 1 mole   **(B)** 3 moles   **(C)** 6 moles   **(D)** 9 moles

15. Which of the following shows the electronic configuration of Ca^{2+} ?

   (A) He   **(B)** Ne   **(C)** Ar   **(D)** F^-

SECTION - III [MATHEMATICS]

16. If $x, x+2$ and $x+4$ are positive prime numbers then $10x$ is equal to:

   (A) 30   **(B)** 50   **(C)** 70   **(D)** Can have many values

17. Select the correct order:

   (A) $\dfrac{7}{8} < \dfrac{15}{16} < \dfrac{9}{10} < \dfrac{39}{40}$ **(B)** $\dfrac{7}{8} < \dfrac{39}{40} < \dfrac{9}{10} < \dfrac{15}{16}$

   (C) $\dfrac{7}{8} < \dfrac{9}{10} < \dfrac{15}{16} < \dfrac{39}{40}$ **(D)** $\dfrac{7}{8} < \dfrac{9}{10} < \dfrac{39}{40} < \dfrac{15}{16}$

18. $2^{x+3} - 2^x = 56$ then $(x+5) =$

   (A) 3   **(B)** 8   **(C)** 7   **(D)** 10

19. A person sells a T.V. at Rs. 10000 making a profit of 25% and a fridge at Rs. 20000 making a loss of 20%, then overall.

   (A) Profit is Rs. 3000   **(B)** Loss is Rs. 5000
   (C) Loss is Rs. 3000   **(D)** Profit is Rs. 5000

20. A successive discount of 70% and 20% is equal to an overall discount of:

   (A) 90%   **(B)** 24%   **(C)** 74%   **(D)** 76%

21. If $(x-1)$ divides $ax^2 + x + 3$ completely then 'a' is equal to:

   (A) 4   **(B)** –4   **(C)** 3   **(D)** –3

22. If $x + y - 1 = 0$ and $\alpha x + 2\beta y - 3 = 0$ represent coincident lines then $6(\alpha + \beta)$ is equal to:

   (A) 18   **(B)** 54   **(C)** 27   **(D)** 9

23. The sum of interior angles of a hexagon is equal to:

   (A) 1080°   **(B)** 540°   **(C)** 360°   **(D)** None of these

24. Select the incorrect statement for two congruent triangles.

   (A) Areas are equal   **(B)** Corresponding altitudes are not equal
   (C) Corresponding angles are equal   **(D)** Corresponding medians are equal

25. D and E are mid points of sides AB and AC respectively as $(DECB) = 6A$ then $ar(ABC)$ is equal to:
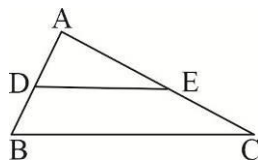
   (A) 8A   **(B)** 12A   **(C)** 10A   **(D)** 9A

26. The length of the altitudes from a vertex of the parallelogram to the other two sides are 10 and 12. If the parallelogram has a perimeter of 176, find the area.

   (A) 240   **(B)** 600   **(C)** 300   **(D)** 480

27. AP and AQ are tangents to a circle and 'B' is the centre. $\angle PAB = 30°$ then $\angle QPB$ is equal to:
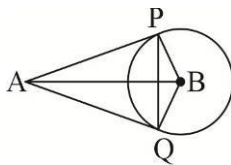
(A) 60° **(B)** 45° **(C)** 30° **(D)** 15°

28. Sides of a triangle are 13, 14 and 15 then altitude on side of length 13 is equal to:

(A) $\dfrac{168}{13}$ **(B)** $\dfrac{84}{13}$ **(C)** 7 **(D)** $\dfrac{126}{13}$

29. Sphere and cylinder have equal curved surface areas and equal heights then ratio of radii is equal to:

(A) 1:1 **(B)** 2:1 **(C)** 1:2 **(D)** 1:4

30. The volume of a cube is V and diagonal is 'd' then:

(A) $d^3 = 27V$ **(B)** $d^3 = 9\sqrt{3}V$ **(C)** $d^3 = 6\sqrt{3}V$ **(D)** $d^3 = 3\sqrt{3}V$

31. The average of five numbers is 10, one of them is doubled then average is 12.4. The number which was doubled is equal to:

(A) 10 **(B)** 12 **(C)** 14 **(D)** 8

32. $\sin\theta + \cos\theta = \sqrt{2}$ then $\tan\theta$ is equal to: [$0° < \theta < 90°$]

(A) $\sqrt{3}$ **(B)** $\dfrac{1}{\sqrt{3}}$ **(C)** 1 **(D)** None of these

33. A bag has 3 red balls and x blue balls. The probability of getting blue ball is $\dfrac{3}{4}$ then 'x' is equal to:

(A) 3 **(B)** 6 **(C)** 9 **(D)** None of these

34. Which of the following statements must be true for a kite?

(A) Diagonals bisect each other **(B)** Diagonals are perpendicular to each other

(C) Each pair of adjacents sides are equal **(D)** Both pair of opposite sides are equal

35. The distance of line $6x + 8y = 10$ from origin is equal to:

(A) 2 **(B)** 1 **(C)** 3 **(D)** 4

SPACE FOR ROUGH WORK

SECTION - IV [NUMERICAL VALUE TYPE QUESTION]

This Section contains 10 Integer-Type Questions. Each question has an integer answer between 0 and 99. Enter the correct Numerical Value.

1. Let $P(x) = x^4 + ax^3 + bx^2 + cx + d$. $P(1) = 1, P(2) = 2, P(3) = 3$ and $P(4) = 4$ then $P(5)$ is equal to:

2. If a, b and c are positive numbers such that $x^3 - 6x^2 - 37x - 30 = (x+a)(x+b)(x-c)$ then value of $a + b + c$ is equal to:

3. The value of $\sqrt{20 + \sqrt{20 + \sqrt{20 + \ldots}}}$ is equal to:

4. If $5 \le x \le 10$ then the value of $\sqrt{x + 3 - 4\sqrt{x-1}} + \sqrt{x + 8 - 6\sqrt{x-1}}$ is equal to:

5. As shown in the diagram above, there lie 3 squares between 2 parallel lines such that each pair (line, square) or (square, square) just meet at a vertex. Find the measure of angle x in degrees.
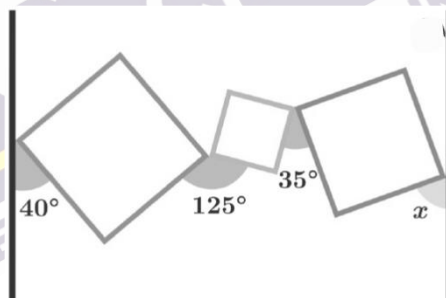

6. The perimeter and area of an isosceles triangle are 50 cm and 60 cm². If equal sides of triangle are smaller than the third side then largest side of triangle is equal to: (all sides of triangle are integers)

7. ABCD is a square of side length 20 m. P, Q, R and S are mid points of sides of ABCD as shown. Joining PC, QD, RA and SB we get a new quadrilateral EFGH, then the area of EFGH is equal to:
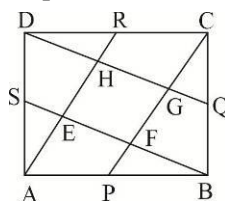
8. If $\dfrac{\sin^4 x}{3} + \dfrac{\cos^4 x}{2} = \dfrac{1}{5}$ then $6(\text{cosec}^2 x + \sec^2 x)$ is equal to:

9. ABCD is a square with AB = 13. Points E and F are exterior to ABCD such that BE = DF = 5 and AE = CF = 12. If the length EF can be represented as $a\sqrt{b}$, where a and b are positive integers and b is not divisible by the square of any prime, then find ab.
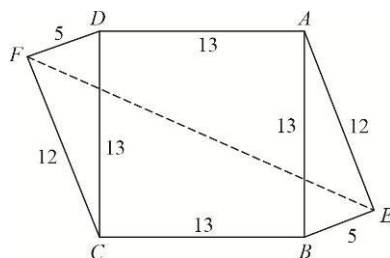
10.   In the diagram, line segment PT is tangent to both circle O and circle O'. Given the following three lengths: $AB = 35, PC = 30, CD = 20$, what is PA?
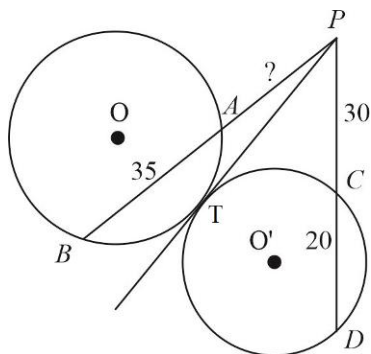
SPACE FOR ROUGH WORK

❦ ❦ ❦ **End of VIQ | 2 Year [IITJEE]** ❧ ❧ ❧

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2 Year JEE Sample Paper | Answer Key							
Code - A	Code - A Answer Key	Code A Difficulty	Code-A Subject	Code-A Topic	Code-A Skill	Code-A +ve marks	Code-A -ve marks
1	D	Medium	Mental Aptitude	Verbal Classification	Application	4	1
2	C	Difficult	Mental Aptitude	Classification	Application	4	1
3	C	Medium	Mental Aptitude	Coding Decoding	Application	4	1
4	C	Medium	Mental Aptitude	Analytical Reasoning	Conceptual	4	1
5	B	Medium	Mental Aptitude	Arithmetical Reasoning	Calculation	4	1
6	C	Easy	Science	Motion	Conceptual	5	1
7	B	Easy	Science	Force and Laws of Motion	Conceptual	5	1
8	C	Easy	Science	Force and Laws of Motion	Conceptual	5	1
9	A	Easy	Science	Work Power Energy	Conceptual	5	1
10	D	Easy	Science	Gravitation	Conceptual	5	1
11	A	Easy	Science	Chemical Reaction and Equations	Memory Based	5	1
12	A	Easy	Science	Acids, Bases and Salts	Memory Based	5	1
13	B	Easy	Science	Metals and Non-Metals	Memory Based	5	1
14	D	Easy	Science	Acids, Bases and Salts	Conceptual	5	1
15	C	Easy	Science	Structure of Atom	Application	5	1
16	A	Easy	Maths	Real Numbers	Application	5	1
17	C	Easy	Maths	Rational Numbers	Calculation	5	1
18	B	Easy	Maths	Number System	Conceptual	5	1
19	C	Medium	Maths	Profit and Loss	Calculation	5	1
20	D	Easy	Maths	Percentage	Calculation	5	1
21	B	Easy	Maths	Polynomials	Application	5	1
22	C	Easy	Maths	Liner Equations in two variables	Conceptual	5	1
23	D	Easy	Maths	Lines and Angles	Memory Based	5	1
24	B	Easy	Maths	Triangles	Memory Based	5	1
25	A	Medium	Maths	Quadrilaterals	Application	5	1
26	D	Easy	Maths	Parallelogram	Application	5	1
27	C	Easy	Maths	Circles	Application	5	1
28	A	Easy	Maths	Heron's Formula	Application	5	1
29	A	Easy	Maths	Surface Areas	Conceptual	5	1
30	D	Medium	Maths	Volumes	Conceptual	5	1
31	B	Easy	Maths	Statistics	Calculation	5	1
32	C	Medium	Maths	Trigonometry	Application	5	1
33	C	Easy	Maths	Probability	Application	5	1
34	B	Easy	Maths	Quadrilaterals	Memory Based	5	1
35	B	Easy	Maths	Linear Equations	Application	5	1
1	29	Difficult	Maths	Polynomials	Conceptual	6	0
2	14	Medium	Maths	Polynomials	Calculation	6	0
3	05	Easy	Maths	Number System	Conceptual	6	0
4	01	Difficult	Maths	Number System	Application	6	0
5	70	Difficult	Maths	Lines and Angles	Conceptual	6	0
6	24	Difficult	Maths	Herons Formula	Calculation	6	0
7	80	Difficult	Maths	Quadrilaterals	Application	6	0
8	25	Medium	Maths	Trigonometry	Application	6	0
9	34	Difficult	Maths	Trigonometry	Application	6	0
10	25	Easy	Maths	Circles	Conceptual	6	0

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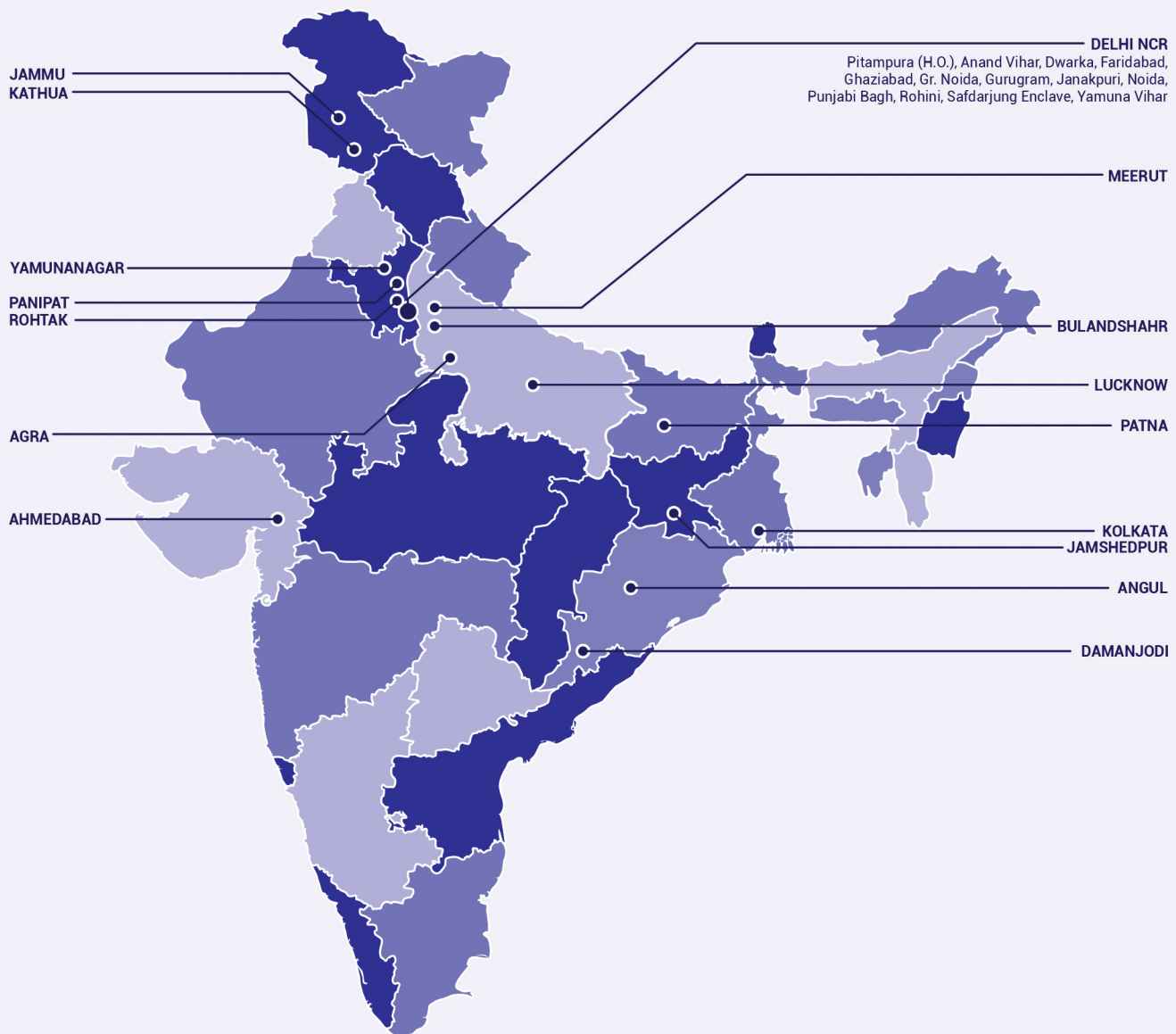
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