Sample Papers

THE MOST AWAITED
MOST RESPECTED
BIGGEST
ADMISSION TEST OF THE YEAR FROM VMC

ViQ
Vidyamandir Intellect Quest

FOR STUDENTS
PRESENTLY IN CLASS

8th

4 Year Program **FOUNDATION**

*T&C apply

VMC Vidyamandir Classes SINCE 1986
IIT JEE | MEDICAL | FOUNDATION

Sample Paper – 4 Year Program

Vidyamandir Intellect Quest Test

Duration: 3.0 Hrs   **Maximum Marks: 350**

PAPER SCHEME :
- The paper contains **60 Objective Type Questions** divided into three sections: **Section - I, Section – II and Section – III.**
- **Section I** contains **10 Multiple Choice Questions (1-10)** 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 **35 Multiple Choice Questions (11-45)** based on **Mathematics**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE is correct**.
- **Section III** contains **15 Multiple Choice Questions (46-60)** based on **Science**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE is correct**.

MARKING SCHEME :
- **Section I** : For each question, **5 marks** will be awarded for correct answer and **–1 negative marking** for incorrect answer.
- **Section II** : For each question, **6 marks** will be awarded for correct answer and **–1 negative marking** for incorrect answer.
- **Section III** : For each question, **6 marks** will be awarded for correct answer and **–1 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.
- The use of log tables, calculator and any other electronic device is strictly prohibited.
- 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 2-3 minutes to check whether all the pages are in order and report any issues to the invigilator immediately.*
- Try to attempt the Sections in their respective order.
- Do not get stuck-up at a particular question for more than 2 to 3 minutes. Move on to a new question as there are 60 questions to solve.

SECTION – I | MENTAL APTITUDE

1. In a certain code language, if the word "REASON" is coded as TGCQML, then "MANUAL" is coded as :
   (A) OCPWCN **(B)** OCPSYJ **(C)** OCPSJY **(D)** OCPNCW

2. If "EXAMINATION" = 121 and "PAPER" = 25, then what is the value of "TREASURE" ?
   (A) 64 **(B)** 360 **(C)** 290 **(D)** 81

3. Prashant is seventeenth from the right end of the row and Vijay is fourteenth from the left end of the row. If Rajneesh is fourth to the right of Prashant and third to the left of Vijay, how many persons are there in the row?
   **(A)** 17 **(B)** 19 **(C)** 23 **(D)** 38

4.
   (A) 6 **(B)** 4 **(C)** 8 **(D)** 10
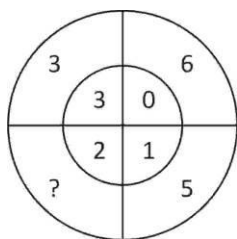
5. Shiva travels 10 *m* towards West. He turns left and travels 15 *m*. Again, he turns to his left and walks 10 *m* further. Finally, he walks 13 *m* towards North and then stops. At what vertical distance is he from his house?
   (A) 13 *m* **(B)** 15 *m* **(C)** 28 *m* **(D)** 2 *m*

6. How is my mother's mother's daughter-in-law's daughter related to me ?
   (A) Sister **(B)** Mother **(C)** Niece **(D)** Cousin

7. $\sqrt{9025} - ? = \sqrt[3]{8000} - 232$
   (A) 240 **(B)** 307 **(C)** 180 **(D)** 210

8. At what angle are the hands of a clock inclined at 20 minutes past 7 ?
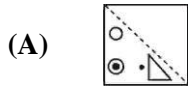   **(A)** 80° **(B)** 90° **(C)** 100° **(D)** 120°
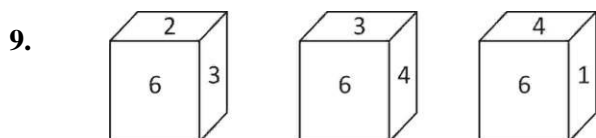
9.
   What is the number on the face opposite 6?
   (A) 5 **(B)** 4 **(C)** 3 **(D)** 1

10. Transparent Sheet :

Response Sheet :

(A) **(B)** **(C)** **(D)**
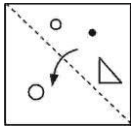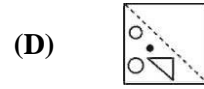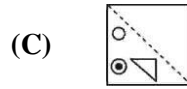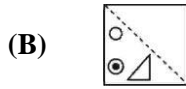
SECTION – II | MATHEMATICS

11. A rational number between $\sqrt{2}$ and $\sqrt{3}$ is :

(A) 1.5 **(B)** $\dfrac{\sqrt{2}+\sqrt{2}}{2}$ **(C)** $\sqrt{2}\times\sqrt{3}$ **(D)** 1.8

12. A number is increased by 10% and then it is decreased by 10%. The net increase or decrease percent is :

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

13. For positive x and y, the *LCM* is 225 and *HCF* is 15. There :

(A) Is exactly one such pair **(B)** Are exactly two such pairs

(C) Are exactly three such pairs **(D)** Are exactly four such pairs

14. If $x = \dfrac{1}{1+\sqrt{2}}$, then the value of $x^2 + 2x + 3$ is :

(A) 3 **(B)** 0 **(C)** 4 **(D)** 1

15. In $\triangle ABC$, segment $AD \perp BC$, if $BD = x$ units, then x is :

(A) $x = \dfrac{c^2 + a^2 - b^2}{2a}$

(B) $x = \dfrac{a^2 + b^2 - c^2}{2c}$

(C) $x = \dfrac{b^2 + c^2 - a^2}{2b}$

(D) $x = \dfrac{b^2 + c^2 - a^2}{2abc}$
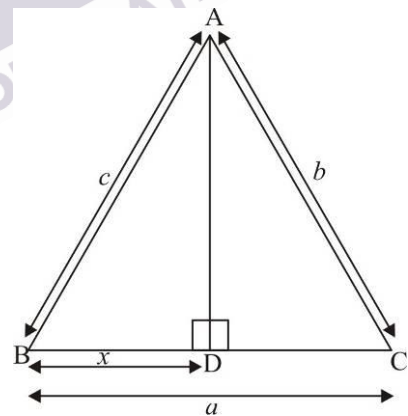
16. The average marks scored by Ajay in certain number of tests is 84. He scored 100 marks in his last test. His average score of all these tests is 86, then the total number of tests he appeared is :

(A) 8 **(B)** 7 **(C)** 9 **(D)** 10

17. If $abc = 1$, then $\left(\dfrac{1}{1+a+b^{-1}} + \dfrac{1}{1+b+c^{-1}} + \dfrac{1}{1+c+a^{-1}}\right) =$

(A) 0 **(B)** 1 **(C)** $\dfrac{1}{ab}$ **(D)** ab

18. If $a + b + c = 0$, then $\dfrac{a^2}{bc} + \dfrac{b^2}{ca} + \dfrac{c^2}{ab}$ is :

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

19. The value of $\sqrt{17 + 4\sqrt{13}} - \sqrt{17 - 4\sqrt{13}}$ is :

(A)   2   (B)   3   (C)   4   (D)   5

20. 'A' can complete a work in 120 days, 'B' can complete it in 60 days, 'C' can complete it in 40 days, 'D' can complete it in 30 days. In how many days A and B working together can complete the work ?

(A)   40   (B)   30   (C)   20   (D)   10

Paragraph for Questions 21 - 23

An article was marked at Rs.2000. After providing a discount of 45%, a profit of 10% was made. Answer the following:

21. What was the selling price of the article?

(A)   Rs.1500   (B)   Rs.1200   (C)   Rs.1400   (D)   None of these

22. What was the cost price of the article?

(A)   Rs.1000   (B)   Rs.1100   (C)   Rs.1200   (D)   Rs.1300

23. What was the amount of profit he earned?

(A)   Rs.400   (B)   Rs.200   (C)   Rs.100   (D)   Rs.50

Paragraph for Questions 24 - 25

ABCD is a square of side length 14 cm.
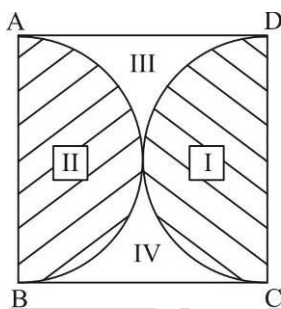
24. Find the ratio of $\dfrac{\text{ar}(IV) + \text{ar}(III)}{\text{ar}(I) + \text{ar}(II)}$.

(A) $\dfrac{2}{11}$ (B) $\dfrac{4}{11}$ (C) $\dfrac{6}{11}$ (D) $\dfrac{3}{11}$

25. Find the ratio of $\dfrac{\text{ar}(II) + \text{ar}(I)}{\text{ar of } ABCD}$.

(A) $\dfrac{11}{14}$ (B) $\dfrac{4}{14}$ (C) $\dfrac{13}{14}$ (D) $\dfrac{1}{14}$

26. The units digit of $(257)^{406}$ is :

(A)   7   (B)   9   (C)   3   (D)   1

27. The greatest number that can divide 545 and 726 by leaving remainder 5 and 6 respectively is :

(A)   90   (B)   180   (C)   45   (D)   60

28. If $a = 1 - 2x, b = 2x - 3$ and $c = 2$, then $a^3 + b^3 + c^3 =$

    (A) $3(1 - 2x)(2x - 3)$ **(B)** $6(1 - 2x)(2x - 3)$

    (C) $9(1 - 2x)(2x - 3)$ **(D)** $(2x - 3)(1 - 2x)(2)$

29. In $\triangle ACD$, $BE \parallel CD$ and $\angle A : \angle ABE : \angle D = 3 : 4 : 5$. Find $\angle A$.

    (A) $42°$ **(B)** $48°$

    (C) $45°$ **(D)** None of these
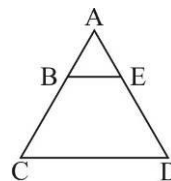
30. Simplify: $78 - \left[25 \div 5 - 5 + 3(12 - 2 \times 6) \right]$

    (A) -102 **(B)** 78 **(C)** 0 **(D)** 58

31. If $N = \dfrac{\sqrt{15} + \sqrt{35} + \sqrt{21} + 5}{\sqrt{3} + 2\sqrt{5} + \sqrt{7}}$, then $\left(2N - \sqrt{3}\right)^2 - 7$ is equal to :

    (A) 2 **(B)** 3 **(C)** 0 **(D)** 1

32. If $\left(3a^2 + 5ab + 7b^2\right) : \left(3b^2 + 5bc + 7c^2\right)$ is equal to : (a, b, c are in continued proportion)

    (A) $b : c$ **(B)** $a : c$ **(C)** $a : b$ **(D)** None of these

33. $\dfrac{1}{1 + x^{(b-a)} + x^{c-a}} + \dfrac{1}{1 + x^{(a-b)} + x^{(c-b)}} + \dfrac{1}{1 + x^{(b-c)} + x^{(a-c)}} =$

    (A) 0 **(B)** 1 **(C)** x^{a-b-c} **(D)** None of these

34. A man sells an article at a profit of 25%. If he had bought it in 20% less and sold it for Rs.10.50 less, he would have gained 30%. Then the cost price of the article is :

    (A) Rs.40   **(B)** Rs.30   **(C)** Rs.20   **(D)** Rs.50

35. The price of a jewel, passing through three hands, rises on the whole by 65%. If the first and the second seller earned 20% and 25% profit respectively, then the percentage profit earned by the third seller is :

    (A) 20 **(B)** 10 **(C)** 5 **(D)** 15

36. Which of the following numbers can be expressed as the sum of squares of two positive integers, as well as three positive integers?

    (A) 75 **(B)** 192 **(C)** 250 **(D)** 100

37. A shopkeeper blends two varieties of tea costing Rs. 18 and Rs. 13 per 100 gms in the ratio 7 : 3. He sells the blended variety at the rate of Rs 18.15 per 100 gm. His percentage gain in the transaction is:

    (A) 8%   **(B)** 12%   **(C)** 15%   **(D)** 10%

38. A says to B, I was four times as old as you were when I was as old as you are. If the sum of their present ages is 33, then the present ages of A and B respectively are:

    (A) 18 years, 15 years   **(B)** 21 years, 12 years

    (C) 24 years, 9 years   **(D)** 27 years, 6 years

39. The value of the expression $\dfrac{1}{\sqrt{11 - 2\sqrt{30}}} - \dfrac{3}{\sqrt{7 - 2\sqrt{10}}} - \dfrac{4}{\sqrt{8 + 4\sqrt{3}}}$ after simplification is :

    (A) $+\sqrt{30}$ **(B)** $2\sqrt{10}$ **(C)** 1 **(D)** 0

40. From 20L filled with milk, 2L of milk is removed and replaced with 2L water. From this mixture, again 2L of solution is removed and replaced two more times. Find the ratio of milk to total volume of container after the end of the operation.

(A) $\dfrac{9}{10}$ (B) $\dfrac{81}{100}$ (C) $\dfrac{27}{100}$ (D) $\dfrac{729}{1000}$

41. How many times in a day does hour and minute hand coincide i.e. makes zero degree between each other?

(A) 12   (B) 24   (C) 30   (D) 22

Paragraph for Questions 42 - 45

On a round track of length 2000 *m*, *A* and *B* are running in the same direction. *A* runs at a speed of 200 *m/s* and *B* at a speed of 2200 *m/s*. They start from the same point '*P*'.

42. After how much time *A* and *B* would meet for the first time ?

(A) 10 sec   (B) 3 sec   (C) 4 sec   (D) 1 sec

43. At what time from beginning would they meet at opposite (diametrically) points for the 1ˢᵗ time ?

(A) 5 sec   (B) 3 sec   (C) 1 sec   (D) 10 sec

44. At what time would they meet at the starting point *P*?

(A) 8 sec   (B) 7 sec   (C) 4 sec   (D) 10 sec

45. After how much time they will meet again for the first time, when A would have completed one round of the track ?

(A) 11 sec   (B) 9 sec   (C) 8 sec   (D) 7 sec

SECTION – III | SCIENCE

46. The residue left behind after the dry distillation of coal :

(A) coal tar   (B) coal gas   (C) coke   (D) ammoniacal liquor

47. Which of the following statements is TRUE ?

(A) A nylon thread is stronger than a steel wire

(B) Rayon is a natural fibre made from wood pulp

(C) Cotton is not a polymer

(D) Fabric made from polyester can get wrinkles easily

48. Bakelite is used in _____ .

(A) Making car windows   (B) Making non-stick utensils

(C) Making electric switches   (D) Making strong pipes

49. Which one of the following metals react vigorously with oxygen and water ?

(A) Sodium   (B) Aluminium   (C) Calcium   (D) Magnesium

50. Which of the following is not a solid fuel ?

(A) Paraffin   (B) Coal   (C) Tallow   (D) Benzene

51. Out of the following, which one is/are a protected area?

(A) Wildlife Sanctuary   (B) National Park

(C) Biosphere Reserve   (D) All of these

52. Cell wall is absent in :
   (A) Plant cell   **(B)** Animal cell   **(C)** Fungus   **(D)** All of these

53. Example of Rabi Crops are :
   (A) Pea   **(B)** Maize   **(C)** Mustard   **(D)** Both (A) and (C)

54. Micro-organism used for commercial production of wine and alcohol is :
   (A) Yeast   **(B)** Lactobacillus
   (C) Propiniobacterium   **(D)** Streptococci

55. Who discovered vaccine for small pox ?
   (A) Edward Jenner   **(B)** George Palade **(C)** Robert Koch   **(D)** W. Kuhne

56. While measuring the depth of a certain ocean, sonar received a signal after 18 seconds after it was transmitted. If velocity of sound in ocean water is $580\,ms^{-1}$, then the depth is :
   (A) 5210 m   **(B)** 5 km 220 m   **(C)** 5 km 210 m   **(D)** 5 km 200 m

57. The distance between the 3rd crest and 10th crest is approximately 18 m as observed by a fisher man. The wave length of such wave is :
   (A) 2.57 m   **(B)** 3 m   **(C)** 3.5 m   **(D)** 2.6 m

58. Spikes are provided in the shoes of athlete:
   (A) For decoration   **(B)** To increase friction
   (C) To decrease friction   **(D)** None of these

59. Friction reduces efficiency of machines due to :
   (A) Production of heat   **(B)** Wearing out of moving parts
   (C) Increase in energy consumption   **(D)** All of these

60. Which of the following is **NOT** true?
   (A) A sharp knife can easily cut due to its small cutting surface.
   (B) It is easier to walk in sand than on road.
   (C) A battle tank can move easily on soft ground because its tracks have bigger surface.
   (D) The pressure exerted by a needle is much more than the foot of an elephant.

॥ ॥ ॥ End of VIQ Sample Paper | 4 Year Foundation ॥ ॥ ॥

4 Year Foundation Sample Paper | Answer Key

Code-A Mapping	Code-A_Answer Key	Code-A Difficulty	Code-A Subject	Code-A Topic (Chapter)	Code-A Skill (Base)	Code-A +Ve Marks	Code-A -Ve Marks
1	B	Easy	Mental Aptitude	Alphabet Test	Logical	5	1
2	A	Medium	Mental Aptitude	Coding	Logical	5	1
3	C	Medium	Mental Aptitude	Analogy	Logical	5	1
4	B	Easy	Mental Aptitude	Figure Matrix	Logical	5	1
5	D	Medium	Mental Aptitude	Arithmatical Reasoning	Logical	5	1
6	D	Easy	Mental Aptitude	Blood Relation	Logical	5	1
7	B	Easy	Mental Aptitude	Analytical Reasoning	Logical	5	1
8	C	Easy	Mental Aptitude	Clock	Logical	5	1
9	A	Difficult	Mental Aptitude	Dice	Logical	5	1
10	C	Difficult	Mental Aptitude	Paper Folding	Logical	5	1
11	A	Easy	Mathematics	Fractions and Decimals	Conceptual	6	1
12	D	Easy	Mathematics	Percentage	Conceptual	6	1
13	B	Easy	Mathematics	Integer	Calculation	6	1
14	C	Easy	Mathematics	Algebraic Expression	Calculation	6	1
15	A	Medium	Mathematics	Lines and Angles	Application	6	1
16	A	Medium	Mathematics	Simple Equations	Calculation	6	1
17	B	Medium	Mathematics	Algebraic Expression	Calculation	6	1
18	C	Medium	Mathematics	Algebraic Expression	Calculation	6	1
19	C	Medium	Mathematics	Fractions and Decimals	Calculation	6	1
20	A	Difficult	Mathematics	Comparing Quantities	Calculation	6	1
21	D	Easy	Mathematics	Profit and Loss	Calculation	6	1
22	A	Easy	Mathematics	Profit and Loss	Calculation	6	1
23	C	Easy	Mathematics	Profit and Loss	Calculation	6	1
24	D	Medium	Mathematics	Perimeter and Area	Calculation	6	1
25	A	Medium	Mathematics	Perimeter and Area	Calculation	6	1
26	B	Medium	Mathematics	Exponents and Power	Calculation	6	1
27	B	Medium	Mathematics	Algebraic Expression	Calculation	6	1
28	B	Medium	Mathematics	Algebraic Expression	Calculation	6	1
29	C	Medium	Mathematics	Triangles	Conceptual	6	1
30	B	Easy	Mathematics	Integers	Calculation	6	1
31	C	Difficult	Mathematics	Fractions and Decimals	Calculation	6	1
32	B	Medium	Mathematics	Ratio	Conceptual	6	1
33	B	Easy	Mathematics	Exponents and Power	Calculation	6	1
34	D	Difficult	Mathematics	Profit and Loss	Calculation	6	1
35	B	Difficult	Mathematics	Profit and Loss	Calculation	6	1
36	C	Easy	Mathematics	Integers	Calculation	6	1
37	D	Easy	Mathematics	Percentage	Calculation	6	1
38	B	Difficult	Mathematics	Linear Equation	Calculation	6	1
39	D	Easy	Mathematics	Fractions	Calculation	6	1
40	D	Difficult	Mathematics	Linear Equation	Calculation	6	1
41	D	Easy	Mathematics	Lines and Angles	Conceptual	6	1
42	D	Medium	Mathematics	Linear Equation	Calculation	6	1
43	A	Medium	Mathematics	Linear Equation	Calculation	6	1
44	D	Medium	Mathematics	Linear Equation	Calculation	6	1
45	A	Medium	Mathematics	Linear Equation	Calculation	6	1
46	C	Medium	Science	Coal and Petroleum	Memory	6	1
47	A	Medium	Science	Synthetic Fibres and Plastics	Memory	6	1
48	C	Easy	Science	Synthetic Fibres and Plastics	Memory	6	1
49	A	Easy	Science	Metals and Non-metals	Conceptual	6	1
50	D	Easy	Science	Coal and Petroleum	Conceptual	6	1
51	D	Easy	Science	Conservation of Plants and Animals	Application	6	1
52	B	Medium	Science	Cell	Conceptual	6	1
53	D	Medium	Science	Crop Production and Management	Application	6	1
54	A	Easy	Science	Micro-organisms	Memory	6	1
55	A	Easy	Science	Micro-organisms	Memory	6	1
56	B	Medium	Science	Sound	Application	6	1
57	A	Medium	Science	Sound	Application	6	1
58	B	Easy	Science	Force and Friction	Conceptual	6	1
59	D	Easy	Science	Force and Friction	Conceptual	6	1
60	B	Easy	Science	Force and Friction	Conceptual	6	1

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