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IIT JEE | MEDICAL | FOUNDATION

SAMPLE PAPERS

VIN IT
Vidyamandir Intellect National Incentive Test

For Students

Currently In Class 9th

3 Year Program

JEE/

NEET

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

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Sample Paper – 3 Year Program

Vidyamandir Intellect Quest Test

Duration: 2.5 Hrs | **Maximum Marks: 265**

CODE > A

PAPER SCHEME:

- The paper contains **45 Objective Type Questions** divided into three sections: **Section - I, Section – II and Section – III.**
- **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 **25 Multiple Choice Questions (6-30)** 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 (31-45)** 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 2-2.5 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 on a particular question for more than 2 to 2.5 minutes. Move on to a new question as there are 45 questions to solve.

SECTION – I | MENTAL APTITUDE

1. In a certain code language, if the word "ADDRESS" is coded as ZCCQDRR, then how will you code the word "BUILDING" in that language ?

(**A**)   ATHKCHMF   (**B**)   ATHLCHMF   (**C**)   ATHKDHMF   (**D**)   ATHLDHNF

2. If "SQUARE" = 87 and "RECTANGLE" = 94, then what is the value of "ROMBUS" ?

(**A**)   96   (**B**)   94   (**C**)   89   (**D**)   97

3. 5 children - *P*, *Q*, *R*, *S* and *T* are given ranks based on an essay writing competition. Neither *S* nor *Q* got the best rank. *P* has exactly one person who got a better rank than him. *R* is two ranks better than *T*. Who got the third lowest rank ?

(**A**)   *R*   (**B**)   *S*   (**C**)   *Q*   (**D**)   *T*

4.

5	8	10
30	72	?

(**A**)   110   (**B**)   90   (**C**)   120   (**D**)   130

5. Samir walks 8 *km* towards North. Then he turns right and walks a further 8 *km*. How far and in what direction is he from the starting point ?

(**A**)   10 *km* approx, North   (**B**)   11 *km* approx, North-east

(**C**)   16 *km* approx, North-east   (**D**)   14 *km* approx, North-east

SECTION – II | MATHEMATICS

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

(**A**)   12   (**B**)   14   (**C**)   16   (**D**)   10

7. If $p(x) = x^4 - k^2 x^2 + 3x - k$, then the value of '*k*' for which $x + k$ is a factor of $p(x)$, is :

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

8. If $(2\alpha - 1, \alpha)$ is a solution of $9y = 10x - 12$, then 'α' is equal to :

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

9. The mean of 10 numbers is '20'. If 5 is subtracted from every number, then the new mean is equal to:

(**A**)   10   (**B**)   12   (**C**)   16   (**D**)   15

10. If each edge of a cuboid of surface area $54cm^2$ is doubled, then surface area of new cuboid is :

(**A**) $212cm^2$ (**B**) $216cm^2$ (**C**) $218cm^2$ (**D**) $222cm^2$

11. If $\sqrt{13 - a\sqrt{10}} = \sqrt{8} + \sqrt{5}$, then *a* is one of the zero of the polynomial :

(**A**) $x^2 - 3x + 2$ (**B**) $x^2 - 7x + 12$

(**C**) $x^2 + 7x + 12$ (**D**) $x^2 + 3x + 2$

12. If $x^2 + y^2 + z^2 = 20$ and $x + y + z = 0,$ then $xy + yz + zx$ is equal to :

(A) 10   (B) -10 (C) 8   (D) -8

13. The value of function $p(x) = 1 + x + x^2 + x^3 + \ldots + x^{101}$ at $x = -1,$ is equal to :

(A) -1 (B) 0   (C) 1   (D) 2

14. 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

15. In a triangle $\Delta PQR, PQ = PR$ and QR is produced to S such that $\angle PRS = 100°$ then $\angle P$ is :

(A) $20°$ (B) $40°$ (C) $60°$ (D) $80°$

16. Two cones have their volumes in the ratio of 2 : 1 and their heights in ratio 1 : 2, then the ratio of their radii is :

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

17. The value of $\alpha^3 + \beta^3 - 12\alpha\beta + 64$ is equal to zero if :

(A) $\alpha + \beta = 1$ (B) $\alpha - \beta = 1$ (C) $\alpha + \beta = 4$ (D) $\alpha + \beta + 4 = 0$

18. The expression which is not a factor of $x^6 - 7x^3 - 8,$ is :

(A) $x - 2$ (B) $x + 1$ (C) $x - 1$ (D) $x^2 - x + 1$

19. The area of three adjacent faces of a cuboid are 6 cm^2, 8 cm^2 and 12 cm^2 then volume of the cuboid is:

(A) $12cm^3$ (B) $32cm^3$ (C) $28cm^3$ (D) $24cm^3$

20. What is the missing number X in the series. 2, 3, 10, 15, X, 35 ?

(A) 20   (B) 25   (C) 26   (D) 28

21. The time at which hands (minute and hour hand) of clock are together between 3 and 4 pm is :

(A) 3/11 hour past 3   (B) 4/11 hour past 3

(C) 5/11 hour past 3   (D) 6/11 hour past 3

22. Prof. Rao walks to the market and comes back in an auto. It takes him 150 min. to make the round trip. If he takes an auto both ways it takes him 50 minutes. On Sunday, he decides to walk both ways. How long would it take him?

(A) 200 minutes   (B) 250 minutes   (C) 300 minutes   (D) 60 minutes

23. While travelling from A to B, wheels of a bus makes 1250 revolutions. Distance between A and B is 2.2 km. Find the radius of wheels.

(A) 30 cm (B) 32 cm (C) 28 cm (D) 26 cm

24. A shopkeeper inflates his price by 10% and uses weight which are 20% less than the actual weight. The total profit earned by him will be :

(A) 30%   (B) 88%   (C) 37.5%   (D) None of these

25. If 12 men or 8 women can do a piece of work in 52 days, then in how many days can 8 men and 12 women do the same piece of work ?

(A) 28 days   (B) 24 days   (C) 25 days   (D) 30 days

26. Sahu, Rahu and Umang can do a piece of work in 10, 15, 20 days respectively. If they all work together for 3 days, then fraction of the work that is left is :

(A) 1/20   (B) 1/15   (C) 7/20   (D) 1/4

27. If H is height, S is curved surface area and V is volume of a cone, then :

(A) $\pi VH^3 - SH^2 + V^2 = 0$ **(B)** $3\pi VH^3 + V^2 = S^2 H^2$

(C) $3\pi VH^3 + 9V^2 = S^2 H^2$ **(D)** $3\pi VH^3 - 9V^2 = S^2 H^2$

28. If $x = m^2$ and $y = m$ is a solution of the equation $x - 5y + 6 = 0,$ then the ratio of greatest value of *m* to least value *m* is :

   (A) $3 : 2$ **(B)** $4 : 3$ **(C)** $5 : 2$ **(D)** $2 : 1$

29. If $px^3 + qx^2 + x - 6$ is divisible by $'x + 2'$ and leaves remainder 4 when divided by $'x - 2;$ then :

   (A) $p^3 + q^3 = 18$ **(B)** $q^3 - p^2 = 6$ **(C)** $p + q = 3$ **(D)** $q^3 - p^3 = 8$

30. In triangle $\Delta LMN,$ $\angle M = 2\angle N.$ P is a point on MN such that LP bisects $\angle MLN$ and $MN = NL$, then :

   (A) $\angle MLN = 48°$ **(B)** $\angle MLN = 60°$

   (C) $\angle MLN = 72°$ **(D)** $\angle MLN = 36°$

SECTION – III | SCIENCE

31. The molecular weight divided by empirical weight is always a:

   (A) Positive non-zero whole number **(B)** Fraction

   (C) Unity **(D)** Integer

32. The percentage of an element M is 52 in its oxide of molecular formula M_2O_3 . Its atomic mass is about:

   (A) 45 **(B)** 9 **(C)** 18 **(D)** 26

33. The state of matter where matter is condensed is:

   (i) Solid state (ii) Liquid state (iii) Gaseous state

   (A) (i) and (iii) **(B)** (ii) and (iii) **(C)** (i) and (ii) **(D)** (i),(ii) and (iii)

34. The principle of crystallization is:

   (A) Liquids with lower boiling points boil off first

   (B) Salts with lower solubilities crystallize out from saturated solution when cooled

   (C) The rate of diffusion of liquids varies

   (D) All liquids are not miscible in water

35. Which of the following statements is not true about suspension?

   (A) The particles of suspension can be separated from solvent by the process of filtration.

   (B) When the suspension is kept undisturbed, the particles of suspension settle down.

   (C) A suspension is homogeneous in nature.

   (D) Scattering of light takes place in suspension.

36. Cell is a latin word for:

   (A) A little room **(B)** A little life **(C)** A little brick **(D)** None of these

37. Free living cells in pond with improved microscope was discovered by:

   (A) Robert Brown **(B)** Robert Hooke **(C)** Leeuwenhoek **(D)** George Palade

38. Simple permanent tissues are:

   (A) Parenchyma **(B)** Collenchyma **(C)** Sclerenchyma **(D)** All of these

39. Cardiac and skeletal muscles are respectively:

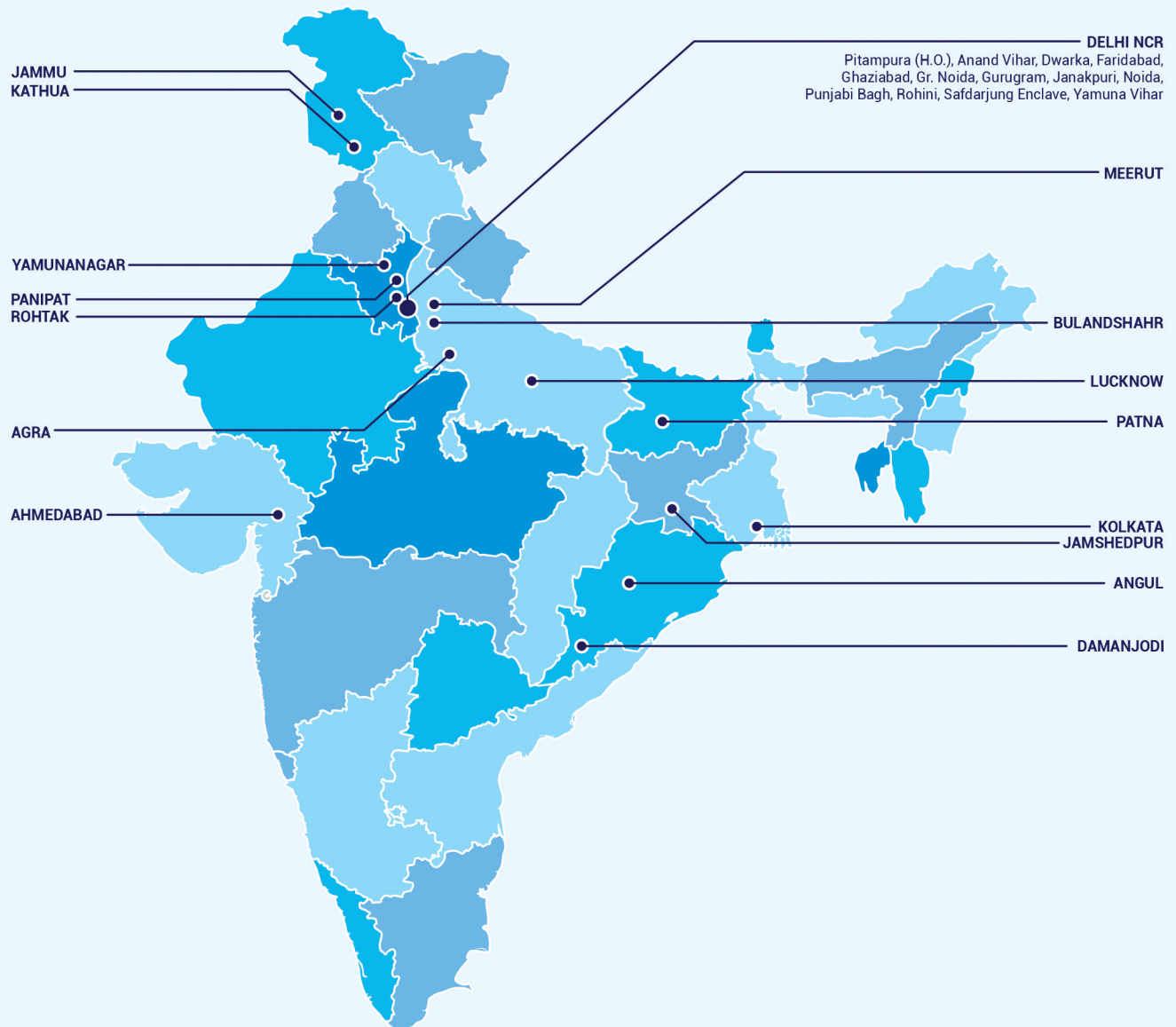   **(A)** Voluntary and involuntary muscles **(B)** Involuntary and voluntary muscles

    (C)   Voluntary and voluntary muscles   **(D)**   Involuntary and involuntary muscles

40. Proteins are synthesized by:
    (A) Ribosomes   **(B)** Plastids   **(C)** Mitochondria   **(D)** Nucleus

41. An aeroplane moves 400 m towards North, 300 m towards West and then 1200 m vertically upwards. Its displacement from the initial position is :
    (A) 1300 m   **(B)** 1400 m   **(C)** 1500 m   **(D)** 1600 m

42. A particle of mass 5 kg is moving with a constant velocity of 10 m/s along positive X-axis. The momentum of particle and the net external force acting upon the particle are respectively:
    (A) 49 Ns, 3 N   **(B)** 50 Ns, 0 N   **(C)** 59 Ns, 2 N   **(D)** 47 Ns, 1 N

43. A tunnel is dug along a diameter of the earth of mass M_e and radius R_e. The force on a particle of mass *m* placed in the tunnel at a distance *r* from the centre is :
    (A) $\dfrac{G\,M_e m}{R_e^3 r}$ **(B)** $\dfrac{G\,M_e m}{R_e^2\, r^2}$ **(C)** $\dfrac{G\,M_e\,m\,r}{R_e^3}$ **(D)** $\dfrac{G\,M_e m\,r}{R_e^2}$

44. The unit of relative density is:
    (A) $g\,cm^{-3}$ **(B)** $kg\,m^{-3}$ **(C)** $kgF\,m^{-3}$ **(D)** No unit

45. The rate of change of displacement is called:
    (A) Momentum   **(B)** Speed   **(C)** Velocity   **(D)** Acceleration

❧ ❧ ❧ **End of VIQ Sample Paper | 3 Year** ❧ ❧ ❧

3 Year 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	A	Easy	Mental Aptitude	Alphabet Test	Logical	5	1
2	B	Medium	Mental Aptitude	Coding	Logical	5	1
3	D	Difficult	Mental Aptitude	Analogy	Logical	5	1
4	A	Easy	Mental Aptitude	Figure Matrix	Logical	5	1
5	B	Medium	Mental Aptitude	Direction	Logical	5	1
6	B	Easy	Mathematics	Rational Numbers	Calculation	6	1
7	C	Easy	Mathematics	Polynomial	Conceptual	6	1
8	B	Easy	Mathematics	Linear Equation	Conceptual	6	1
9	D	Easy	Mathematics	Number System	Conceptual	6	1
10	B	Easy	Mathematics	Mensuration	Memory	6	1
11	C	Medium	Mathematics	Polynomial	Calculation	6	1
12	B	Easy	Mathematics	Polynomial	Memory	6	1
13	B	Easy	Mathematics	Polynomial	Conceptual	6	1
14	C	Medium	Mathematics	Profit and Loss	Calculation	6	1
15	A	Easy	Mathematics	Triangle	Memory	6	1
16	B	Easy	Mathematics	Mensuration	Memory	6	1
17	D	Easy	Mathematics	Polynomial	Memory	6	1
18	C	Easy	Mathematics	Polynomial	Conceptual	6	1
19	D	Easy	Mathematics	Mensuration	Memory	6	1
20	C	Easy	Mathematics	Number System	Conceptual	6	1
21	A	Medium	Mathematics	Lines and Angles	Conceptual	6	1
22	A	Medium	Mathematics	Linear Equation	Calculation	6	1
23	C	Medium	Mathematics	Linear Equation	Conceptual	6	1
24	C	Easy	Mathematics	Profit and Loss	Application	6	1
25	B	Medium	Mathematics	Comparing Quantities	Calculation	6	1
26	C	Medium	Mathematics	Direct and Inverse Proportion	Calculation	6	1
27	C	Medium	Mathematics	Mensuration	Calculation	6	1
28	A	Easy	Mathematics	Comparing Quantities	Calculation	6	1
29	D	Easy	Mathematics	Polynomial	Conceptual	6	1
30	C	Easy	Mathematics	Triangle	Calculation	6	1
31	A	Medium	Science	Atoms and Molecules	Conceptual	6	1
32	D	Medium	Science	Atoms and Molecules	Calculation	6	1
33	C	Easy	Science	Matter In Our Surroundings	Conceptual	6	1
34	B	Easy	Science	Is Matter Around us Pure	Conceptual	6	1
35	C	Easy	Science	Is Matter Around us Pure	Memory	6	1
36	A	Moderate	Science	Cell	Conceptual	6	1
37	C	Easy	Science	Cell	Memory	6	1
38	D	Easy	Science	Tissues	Application	6	1
39	B	Moderate	Science	Tissues	Conceptual	6	1
40	A	Moderate	Science	Cell	Application	6	1
41	A	Easy	Science	Motion	Calculation	6	1
42	B	Easy	Science	Force	Conceptual	6	1
43	C	Medium	Science	Gravitation	Memory	6	1
44	D	Easy	Science	Gravitation	Conceptual	6	1
45	C	Easy	Science	Motion	Conceptual	6	1

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