VIBRATION ACADEMY

VIBRO'NET

SCHOLARSHIP TEST

9th TO 10th MOVING

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Ph.no. : 9377305511

Centre 1: Shilpi Complex, Zadeshwar Road, Bharuch

Centre 2: Silver Square Complex, Link Road, Bharuch

GENERAL INSTRUCTION IN EXAMINATION HALL

Time Allotted: 2 Hours **Maximum Marks: 300**

- Do not open this Test Booklet until you are asked to do so.
- Please read the instructions carefully. You are allotted 5 minutes specifically for this purpose.

Important Instructions:

1. Immediately fill in the particulars on this page of the Test Booklet with *Blue / Black Ball Point Pen. Use of pencil is strictly prohibited.*
2. The Answer Sheet is kept inside this Test Booklet. When you are directed to open the Test Booklet, take out the Answer Sheet and fill in the particulars carefully.
3. The test is of 2 **hours** duration.
4. The Test Booklet consists of 75 questions. The maximum marks are 300.
5. There are ***FIVE*** parts in the question paper consisting of **MENTAL ABILITY, PHYSICS, CHEMISTRY, BIOLOGY** and **MATHS** .
6. For each right answer you will be awarded **+ 4 marks** if you darken the bubble corresponding to the correct answer *and* **Zero marks** if no bubble is darkened or in case of bubbling of incorrect answer.
7. Use ***Blue / Black Ball Point Pen only*** for writing particulars / marking responses on the Answer Sheet. ***Use of pencil is strictly prohibited.***
8. No candidate is allowed to carry any textual material, printed or written, bits of papers, pager, mobile phone, any electronic device, etc. except the Admit Card inside the examination hall / room.
9. On completion of the test, the candidate must hand over the Answer Sheet to the Invigilator on duty in the Room / Hall.
10. **Do not fold or make any stray marks on the Answer Sheet.**

Name of the Candidate (in Capital Letters) :_____

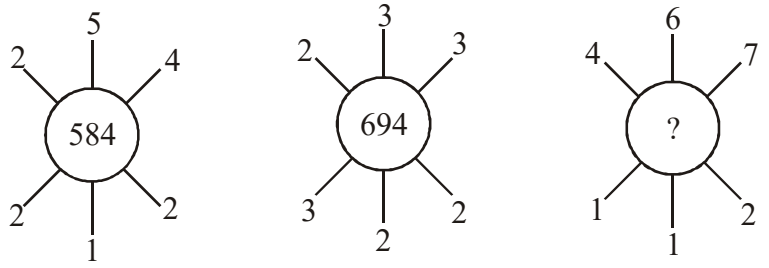
Branch :_____

Batch :_____ **Date of Examination :** _____

SECTION : A (MENTAL ABILITY)

1. 8, 9, 8, 7, 10, 9, 6, 11, 10, ?, 12
(A) 5 (B) 7 (C) 8 (D) 11

2. BYCXA, EVFUD, HSIRG, KPLOJ, ?
(A) MNLOL (B) NMOLM (C) QJRIP (D) PKQJO

3. 

(A) 937 (B) 824 (C) 769 (D) 678

4. If × means –, – means ×, + means ÷ and ÷ means +, then
24 × 5 – 2 ÷ 8 + 4 = ?
(A) 13 (B) 50 (C) 8 (D) 16

5. If Letters of alphabets are written in reverse way then which letter will be seventh letter right to Q ?
(A) K (B) U (C) J (D) W

6. In a certain code **FORGET** is written as **DPPHCU**. In the same code **DOCTOR** will be written as
(A) EPDUPS (B) ROTCOD (C) BPAUMS (D) CPBUNS

7. Vinod travelled 6 km South from the starting point D, then turned right and moved 4 km and again turned right and travelled 6 km and turned left and travelled 8 km. Find out how many kilometer he has to cover to reach his starting point D.
(A) 10 km (B) 12 km (C) 14 km (D) 16 km

8. Six persons P, Q, R, S, T and U are sitting in two rows, three in each as per following information. T is not at the end of any row.
S is second of the left of U.
R the neighbour of T is sitting diagonally opposite to S.
Q is the neighbour of U
Which of the following are sitting diagonally opposite to each other.
(A) P and R (B) S and P (C) P and U (D) None of these

9. How many times '+' comes before '÷' and after '×' ?
+ ÷ – × ∩ U × – ÷ + + × + ÷ – + ÷ ∩ U ÷ × + ÷ ∩ U + × ÷ – U × + ÷ ÷ × U ÷ × – ÷ U × + ÷ ∩ – + × ÷ × + ÷ ∩ × + ÷
(A) 6 (B) 5 (C) 4 (D) 7

10. A is uncle of B, B is daughter of C, C is the wife of D's son. Then how is A related to D?
(A) Son (B) Brother (C) Father (D) Maternal uncle.

SECTION : B (PHYSICS)

11. If the speed of car is increased to two times the breaking force to stop the car over the same distance will be :
(A) one fourth (B) half (C) twice (D) four times

12. A motor car covers 1/3 part of total distance with v_1 = 10 km/hr, second 1/3 part with v_2 = 20 km/hr and rest 1/3 part with v_3 = 60 km/hr. What is the average speed the car-
(A) 18 km/hr (B) 45 km/hr (C) 6 km/hr (D) 22.5 km/hr

13. A cyclist moving on a circular track of radius 40 m completes half a revolution in 40 sec. Its average velocity is-
(A) Zero (B) 5 m/sec. (C) 2 m/sec. (D) 3.5 m/sec.

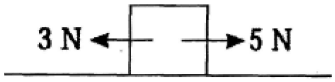
14. A force of 100 N acts on 50 kg for 2 seconds. The same force acts on 25 kgs for 2 seconds. The ratio of the momenta produced and the accelerations caused in two bodies respectively are –
(A) 1 : 1, 2 : 1 (B) 1 : 1, 1 : 2 (C) 1 : 2, 1 : 1 (D) none of these

15. If a body experiences a net zero balanced force, then body :
(A) Can be accelerated (B) Moves with constant velocity
(C) Cannot remain at rest (D) None of these

16. A car and a motor cycle are moving with the same momentum. When equal retarding forces are applied, the car comes to halt in t_1 seconds and the motor cycle in t_2 seconds. If the mass of the car is five times more than the mass of the motor cycle, then _____.

(A) $t_1 = t_2$ (B) $t_1 = 5t_2$ (C) $t_1 = \frac{1}{5}t_2$ (D) $t_1 = 25t_2$

17. The figure shows two horizontal forces acting on a block on a frictionless floor. If a third horizontal force $\vec{F}_3$ also acts on the block, what are the magnitude and direction of $\vec{F}_3$ when the block is moving to the left with a constant speed of 5 m/ s ?



(A) 2 N leftward (B) 2 N rightward (C) 8 N leftward (D) 8 N rightward

18. If the distance between the earth and the moon becomes just half the present value, then the gravitational force become:

(A) 4 times (B) 2 times (C) $\frac{1}{2}$ times (D) $\frac{1}{4}$ times

19. If earth stops rotating , the value of g at the equator
(A) will increase (B) will decrease
(C) will remains constant (D) none of these

20. In vacuum all freely falling objects
(A) have the same speed (B) have the same velocity
(C) have the same acceleration (D) none of these

21. A stone dropped from the roof of a building takes 4 s to reach the ground. The height of the building is (acceleration due to gravity is 9.8m/s2)
(A) 19.6 m (B) 938 m (C) 136 m (D) 78.4 m

22. Two bodies with momentum in the ratio 4 : 1 are moving with equal linear velocity. The ratio of their masses is

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

23. A mass m falls freely from rest. The linear momentum after it has fallen through a height h is (g = acceleration due to gravity)

(A) $\sqrt{mgh}$ (B) m $\sqrt{2gh}$ (C) m$\sqrt{gh}$ (D) zero

24. A mass of 20 kg moving with a speed of 10 m/s collides with another stationary mass of 5 kg. As a result of the collision, the two masses stick together. The momentum of the composite mass will be:

(A) 6 kgm/s (B) 8 kgm/s (C) 1kgm/s (D) 12 kgm/s

25. For a body falling freely under gravity, its momentum –

(A) remains constant (B) goes on increasing

(C) goes on decreasing (D) zero

SECTION : C (CHEMISTRY)

26. On arranging water, sugar and oxygen in increasing order of attraction between their particles. Which of the following will be the correct arrangement?

(A) Water, oxygen, sugar (B) Oxygen, sugar, water

(C) Sugar, oxygen, water (D) Oxygen, water, sugar

27. Priya and karthick wanted to study about diffusion among liquids. They took identical beakers and poured 100 mL of H_2O in both the beakers. Priya heated the water to 50° C but karthick maintained the water at room temperature. They both added 5 drops of ink into the beaker, what will they notice?

(A) Colour of ink spreads faster in Priya's beaker.

(B) Colour of ink spreads faster in Karthick's beaker.

(C) Colour of ink spreads at the same rate in both beakers.

(D) In both the beakers, ink drops settle down at the bottom without spreading.

28. What will be the mass by mass percentage of a solution containing 30 g of common salt in 220 g of water?

(A) 3% (B) 1.2% (C) 12% (D) 22%

29. Which of the following shows the Tyndall effect?

(A) Solution of common salt (B) Milk

(C) Lemon juice (D) Solution of copper sulphate

30. The properties of which of the following are different from those of the constituents?

(A) Mixture (B) Element (C) Compound (D) Any of these

31. Which of the following statements are correct about properties of colloids?

I. A colloid is a homogeneous mixture.

II. The size of particle of a colloid is too small to be individually seen by naked eye.

III. Colloids are big enough to scatter a beam of light passing through it and make its path visible.

(A) I, II and II (B) II and III (C) I and II (D) I and III

32. The dyes of an ink can be separated by

(A) filtration (B) sublimation

(C) fractional distillation (D) chromatography

33. The path of light gets illuminated when passed through the

(A) blood solution$_{(aq)}$ (B) brine solution$_{(aq)}$

(C) copper sulphate solution$_{(aq)}$ (D) acetic acid solution$_{(aq)}$

34. Entire positive charge in an atom is concentrated in a small area at its centre called nucleus. This was suggested by -

(A) Thomson (B) Rutherford (C) Bohr (D) Dalton

35. Elements belonging to different groups of the periodic table are given below. If the element X forms a chloride whose formula is 'XCl_2' then element 'X' belongs to the group whose representative element is

(A) Al (B) Na (C) Mg (D) Si

36. Which of the following pairs provides an example of isobar

(A) ${}^{12}_{6}C$ and ${}^{14}_{6}C$ (B) ${}^{11}_{6}B$ and ${}^{11}_{5}B$ (C) ${}^{2}_{1}H$ and ${}^{3}_{1}H$ (D) ${}^{16}_{8}O$ and ${}^{18}_{8}O$

37. The approximate radii of atoms lie in the range of -

(A) $10^{-6}m - 10^{-5}m$ (B) $10^{-7}m - 10^{-6}m$

(C) $10^{-18}m - 10^{-17}m$ (D) $10^{-10}m - 10^{-9}m$

38. Which of the following has more electrons than neutrons -

(A) Na^{+} (B) Mg^{2+} (C) F^{-} (D) O^{2-}

39. How many electrons are there in chloride ion?

(A) 17 (B) 18 (C) 16 (D) 8

40. The number of neutrons in an atom of ${}^{23}_{11}X$ is

(A) 23 (B) 11 (C) 34 (D) 12

SECTION : D (BIOLOGY)

41. Nucleus was discovered by :
(A) Robert Brown (B) Robert Hooke (C) Leeuwenhoek (D) Virchow

42. Who said that Protoplasm is the physical basis of life :
(A) Huxley (B) Robert Brown (C) Virchow (D) Robert Hooke

43. Bacteria do not possess
(A) DNA (B) RNA (C) Nucleus (D) Lipids

44. Identify the phenomena by which protoplast of a cell shrinks from the cell wall :
(A) Plasmolysis (B) Deplasmolysis (C) Osmosis (D) Diffusion

45. Middle lamella is :
(A) outer wall layer (B) Inner wall layer
(C) Middle wall layer (D) Cementing wall layer

46. Girth of stem increases due to
(A) apical meristem (B) lateral meristem
(C) intercalary meristem (D) vertical meristem

47. Protein present in muscle fibre are :
(A) Actin (B) Myosin (C) Chondrin (D) Both (A)&(B)

48. In sclerenchyma cell wall contains
(A) cellulose (B) cellulose + lignin (C) silica (D) cellulose + silica

49. In sugarcane, length of internodes is variable to
(A) Size of lamina of lower node (B) Intercalary meristem
(C) Shoot apical meristem (D) Position of axillary buds

50. Nissl's granules are found in
(A) Neurons (B) Osteoblasts (C) Chondroblasts (D) Mast cells

51. Which one is an acute disease
(A) Tuberculosis (B) Hypertension (C) Typhoid (D) Diabetes

52. Non-communicable disease is the one which is
(A) Non-infectious (B) Remains restricted to affected person
(C) Both (A) and (B) (D) Caused by a pathogen

53. Which of the following is most infectious?
(A) Common cold (B) HIV (C) Hepatitis (D) Syphilis

54. An antibody is
(A) molecule that specifically inactivates an antigen
(B) WBC which invades bacteria
(C) secretion of mammalian RBC
(D) component of blood

55. Vectors can be defined as
(A) organisms which carry the infectious agents from sick person to another healthy person
(B) microorganisms which cause many diseases
(C) infected person
(D) diseased plants

SECTION : E (MATHEMATICS)

56. If $x = 7 + 4\sqrt{3}$ and xy = 1, then $\frac{1}{x^2} + \frac{1}{y^2} =$
(A) 64 (B) 134 (C) 194 (D) 1/49

57. If p and q are rational numbers and $\frac{5+\sqrt{11}}{3-2\sqrt{11}} = p + q\sqrt{11}$, then find the values of p and q respectively.
(A) $\frac{37}{35}, \frac{-13}{35}$ (B) $\frac{37}{35}, \frac{13}{35}$ (C) $\frac{-37}{35}, \frac{-13}{35}$ (D) $\frac{-37}{35}, \frac{13}{35}$

58. Find the value of $\dfrac{9^{3/2}-3\times5^{0}-\left[\frac{1}{81}\right]^{-1/2}}{\left(\frac{64}{125}\right)^{-2/3}+\frac{1}{\left(\frac{256}{625}\right)^{1/4}}+\left(\frac{\sqrt{25}}{\sqrt[3]{64}}\right)}$

(A) $\frac{15}{13}$ (B) 0 (C) $\frac{16}{5}$ (D) $\frac{48}{13}$

59. If $x = 3-\sqrt{5}$, then $\frac{\sqrt{x}}{\sqrt{2}+\sqrt{3x-2}} =$ _____

(A) $\frac{1}{\sqrt{5}}$ (B) $\sqrt{5}$ (C) $\sqrt{3}$ (D) $\frac{1}{\sqrt{3}}$

60. If $4^x - 4^{x-1} = 24$, then $(2x)^x$ equals

(A) $5\sqrt{5}$ (B) $\sqrt{5}$ (C) $25\sqrt{5}$ (D) 125

61. If $\sqrt[x]{75} = \sqrt[y]{45} = \sqrt[z]{15} = a$, then which of the statement is true

(A) x + y = 2z (B) x + y = 3z
(C) x – y = 2z (D) x – y = 3Z

62. What must be added to $x^4 + 2x^3 - 2x^2 + x - 1$ so that the result is exactly divisible by $x^2 + 2x - 3$?

(A) –x + 2 (B) 3 (C) x –2 (D) 4x – 3

63. Which among the options is one of the factors of $x^2 + \frac{x}{6} - \frac{1}{6}$?

(A) 3x + 1 (B) 2x + 1 (C) $x - \frac{1}{5}$ (D) $x - \frac{1}{2}$

64. If $x^2 + 2x = 45$, what is the value of $x^4 + 4x^3 + 4x^2 - 13$?

(A) 2013 (B) 1986 (C) 2012 (D) 32

65. Find the remainder when $2x^3 - 9x^2 + x + 12$ is divided by 2 + 3x.

(A) 0 (B) $\frac{116}{9}$ (C) –2 (D) $\frac{182}{27}$

66. If $x = 2\sqrt{2} + \sqrt{7}$, identify the value of $\frac{1}{2}\left(x + \frac{1}{x}\right)$

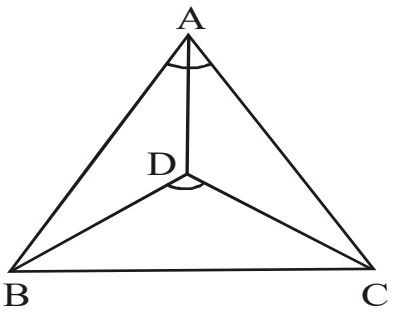
(A) $2\sqrt{2} - \sqrt{7}$ (B) $\sqrt{7}$ (C) $2\sqrt{2}$ (D) $\sqrt{2} + \sqrt{7}$

67. All the three sides of a Δ ABC have lengths in integral units, with AB = 2001 unitsand BC = 1002 units. The possible number of triangles with this condition is :(A) 2001 (B) 2002 (C) 2003 (D) 2004

68. In the given figure, ΔABD and ΔACD are congruent triangles. BAC = 60° and BDC = 110°, then ABD is :

(A) 15° (B) 22°

(C) 35° (D) 25°



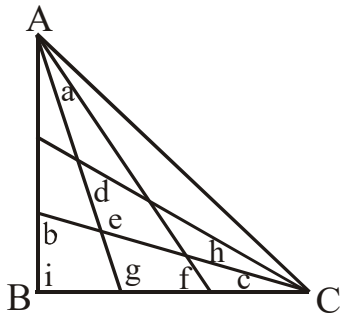
69. In ΔABC, what is sum of the angles a + b + c + d + e + f + g + h + i ?

(A) 360º

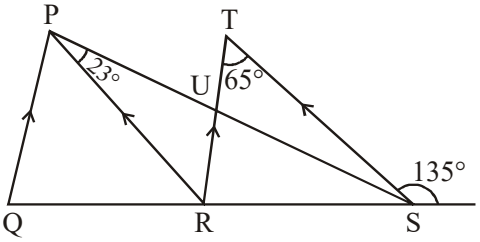
(B) 540º

(C) 600º

(D) Cannot be determined



70. The given figure is not drawn to scale. Find the values of QPS and TRQ respectively



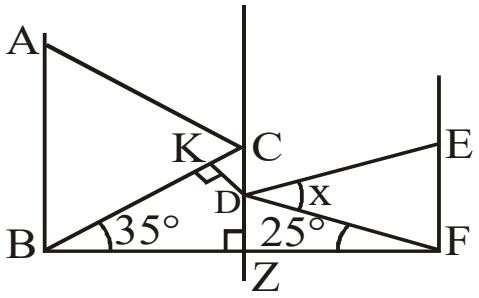
(A) 78°, 140° (B) 88°, 110° (C) 62°, 150° (D) 82°, 110°

71. In the figure, it is given that

(i) AB BF and EF BF

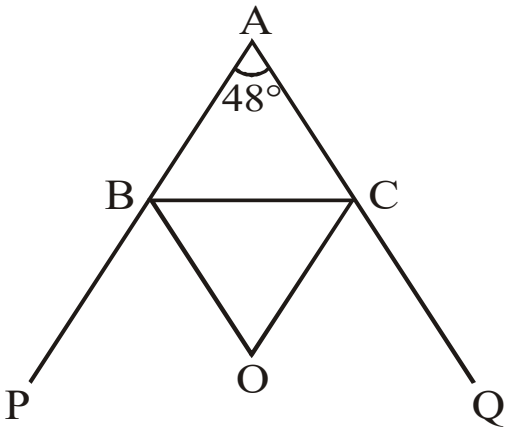
(ii) AC = BC

(iii) KD is perpendicular to BC and DE, Find the measure of x



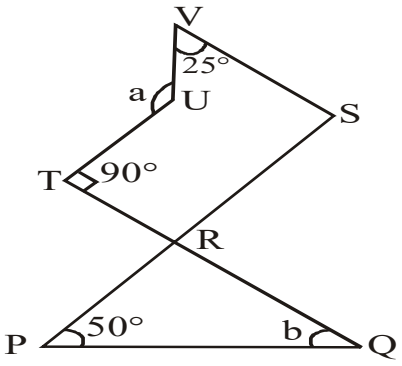
(A) 75° (B) 30° (C) 60° (D) 45°

72. In the given figure BO and CO are the bisectors of the exterior angles of B and C. Then BOC is



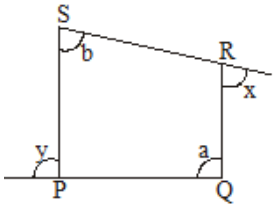
(A) 46° (B) 56° (C) 66° (D) 60°

73. In the given figure (not drawn to scales), TU || SR and TR || SV, then find a and b



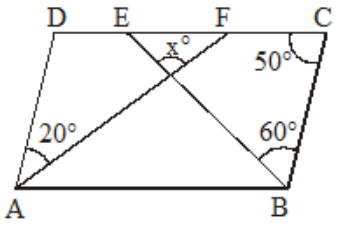
(A) a = 115°, b = 40° (B) a = 120°, b = 65°
(C) a = 145°, b = 55° (D) a = 105°, b = 35°

74. Sides QP and SR of a quadrilateral PQRS are produced as shown in figure, then x + y is equal to



(A) a – b (B) a + b (C) a + 2b (D) None of these

75. In the given figure ABCD is a parallelogram, then the measure of x is :



(A) 50° (B) 60° (C) 70° (D) 80°

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IIIT Allahabad

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GOVT. MEDICAL COLLEGE SURAT

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VIBRATION ACADEMY

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All India Rank **494**

- All india Rank 1 in Physics.

DIST. TOPPER

NEET SCORE 2022

Shachi Thakkar

Total **630** out of 720

Physics - 98.35pr
Chemistry - 99.75pr
Biology - 98.85pr
Total - 99.45pr

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