

IIT / NEET FOUNDATION TEST - 1

Class: Class 8

Duration: 90 Min

Date: 05-07-2025

MATHS: Number System | PHYSICS: Trigonometry | CHEMISTRY: Valency| BIOLOGY: What is Science, Cell - The Fundamental Unit Of Life Till Cell Shape, Cell Size, Plasma Membrane

Maths

- 1) Numbers that have only two factors and are different from each other are called

A) odd numbers	B) prime numbers	C) composite numbers	D) even numbers
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- 2) Considering prime factorization, prime factors of 450 are

A) $2 \times 3 \times 3 \times 5 \times 5$	B) $2 \times 5 \times 7$	C) $2 \times 3 \times 5 \times 5$	D) $2 \times 2 \times 5$
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- 3) Out of 52, 62, 70, 82, 78, 66, numbers that have 13 as factors are

A) 52, 78	B) 66, 78	C) 70, 78	D) 62, 82
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- 4) Which of the following are co-primes?

A) 5,6	B) 2,4	C) 3,6	D) 4,10
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- 5) Numbers that have factors other than 1 are called as :

A) prime numbers	B) composite numbers	C) prime numbers	D) even numbers
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- 6) State giving reasons, whether each one of number is rational or irrational $(\sqrt{7} - 2)$

A) rational	B) ratio	C) irrational	D) none of these
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- 7) What type of decimal expansion does a rational number has?

A) terminating repeating	B) terminating	C) repeating.	D) All of these
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- 8) Which of the following numbers is its own reciprocal

A) 10	B) 0	C) 1/5	D) 1
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- 9) Which of the following numbers has no multiplicative inverse

A) 0	B) 1	C) -1	D) none of these
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- 10) Which of the following numbers is the additive inverse of 7/29.

A) 29/7	B) -29/7	C) -7/29	D) 7/29
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- 11) Write the following number in standard form: 0.0000529×10^4

A) 5.29×10^{-1}	B) 5.29×10^{-2}	C) 5.29×10^3	D) 5.29×10^2
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- 12) Write the rational number $\frac{-36}{-216}$ in standard form

A) $\frac{2}{12}$	B) $\frac{1}{6}$	C) $\frac{2}{6}$	D) $\frac{3}{12}$
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- 13) Which of the following number is a perfect square?

A) 136	B) 121	C) 234	D) 240
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- 14) the factors of $4y^2 - 12y + 9$ is:

A) $(2y+3)^2$	B) $(2y-3)^2$	C) $(2y-3)(2y+3)$	D) none of these
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- 15) Add $\frac{5}{12}$ and $\frac{3}{8}$

A) $\frac{17}{24}$	B) $\frac{19}{2}$	C) $\frac{1}{24}$	D) $\frac{19}{24}$
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Physics

16) The value of

$$\cos 0^\circ \times \cos 1^\circ \times \cos 2^\circ \times \cos 3^\circ \times \cos 4^\circ \dots \times \cos 100^\circ$$

- A) 0 B) 1 C) 2 D) 3

17) The ratio of $\tan 60^\circ$ and $\cot 60^\circ$ is

- A) 1/2 B) 2 C) 3 D) 1

18) The product of $\sin 30^\circ$ and $\cos 60^\circ$ is

- A) 1/2 B) 1/4 C) 1 D) 3

19) The value of $2\sin^2 30^\circ - 3\cos^2 45^\circ + \tan^2 60^\circ$ is _____.

- A) 2 B) 3 C) 5 D) 6

20) The value of $\cos \theta \times \sec \theta$ is equal to _____.

- A) 2 B) 4 C) 1 D) 7

21) If $\sec \theta = \frac{2}{\sqrt{3}}$, then which of the following is correct.

A) $\sin \theta = \frac{1}{2}$ B) $\tan \theta = \frac{1}{\sqrt{3}}$ C) $\cos \theta = \frac{\sqrt{3}}{2}$ D) $\cot \theta = \frac{2}{\sqrt{3}}$

- A) ABC B) BCD C) CDA D) ABCD

22) If $\cos \theta = \frac{\sqrt{3}}{2}$ and ' θ ' is acute, then $\sin^2 \theta + \tan^2 \theta =$

- A) $\frac{7}{12}$ B) 1 C) 2 D) -2

23) $\tan 60^\circ - \cot 60^\circ =$ _____

- A) $\frac{2}{\sqrt{3}}$ B) $\frac{1}{5\sqrt{3}}$ C) $\frac{1}{\sqrt{3}}$ D) $2\sqrt{3}$

24) The value of $2\sin^2 30^\circ - 3\cos^2 45^\circ + \tan^2 60^\circ$

- A) -1 B) 3 C) 1 D) 4

25) In a right angled triangle ABC, right angled at B, Given $15\cos A - 8\sin A = 0$,

$$\frac{\sec A - \cos cA}{\cos cA + \sec A}$$

- A) $\frac{17}{120}$ B) $\frac{120}{17}$ C) $\frac{7}{23}$ D) $\frac{23}{7}$

26) Statement I : $\tan \theta \times \cot \theta = 1$

Statement II : $\cot \theta = \frac{\sin \theta}{\cos \theta}$

- A) Both Statements are true, Statement II is the correct explanation of Statement I.
 B) Both Statements are true, Statement II is not correct explanation of Statement I.
 C) Statement I is true, Statement II is false.
 D) Statement I is false, Statement II is true.

27) The value of $2(\sin 45^\circ \times \cos 45^\circ) =$ _____

- A) 1 B) 5 C) 6 D) 8

28) $\cos^2 75^\circ + \sin^2 75^\circ + \operatorname{Cosec}^2 80^\circ - \cot^2 80^\circ$

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

29) The value of $\left(\frac{\sin 45^\circ \times \cos 45^\circ + \tan 30^\circ \times \sec 30^\circ}{\sin 60^\circ - \cos 60^\circ} \right)$ is

- A) $\frac{7}{3(\sqrt{3}-1)}$ B) $\frac{5}{3(\sqrt{3}-1)}$ C) $\frac{3}{5(\sqrt{3}-1)}$ D) $\frac{3(\sqrt{3}-1)}{5}$

30) The value of $\cos 0^\circ + \sin 90^\circ + \sqrt{2} \sin 45^\circ$ is _____.

- A) 0 B) 1 C) 2 D) 3

IIT Foundation Chemistry

31) Fe^{3+} will be pronounced as

- A) Ferrous B) Irum C) Ferric D) Ironic

32) Reason for variable valency

A) Outer orbit contains different electrons in different conditions

B) Along with valence electrons, inner electrons also participate under such conditions

C) Nuclear charge changes, so attraction decreases in certain conditions

D) All the above

33) Valence electrons and valency respectively in calcium

A) 2, 1

B) 2, 2

C) 8, 2

D) 2, 8

34) Number of electrons present in ammonium ion are

A) 9

B) 10

C) 11

D) 12

35) The anion is usually

A) larger in size than consecutive atom

B) smaller in size than consecutive atom

C) same in size than consecutive atom

D) None of the above

36) Valency of Iron in $FeCl_2$ and $FeCl_3$ is

A) 3, 2

B) 2, 3

C) 3, 4

D) 2, 4

37) Valency of carbon in CH_4 , C_2H_6 , C_2H_4 , C_2H_2 is

A) 1, 2, 3, 4

B) 4, 3, 4, 2

C) 4, 6, 4, 2

D) 4, 3, 2, 1

38) Which of the following is a Divalent Radical

A) Phosphonium

B) Stannous

C) Aurous

D) Arsenous

39) Name and atomic number of an element whose atom has the electronic configuration 2, 8, 4.

A) Aluminium - 13

B) Sulphur - 14

C) Silicon - 14

D) Phosphorus - 15

40) Which of the following statements are wrong ?

a) An atom is electrically neutral

b) An atom & its ion have an unequal number of protons

c) The size of a cation is smaller than that of corresponding atom

d) An atom & its corresponding anion have equal number of electrons

A) cb

B) da

C) bd

D) ba

41) valency is a

a) Number of electrons gained

b) Number of electrons lost

c) Number of electrons shared

d) Valency electrons

A) ac

B) ad

C) ab

D) cd

42) Which of the following statements are correct.

a) Atom can be converted into anion by gaining electrons.

b) Valency and valency shell electrons gives the same meaning.

c) Noble gases are stable regarding chemical reactions.

d) None of the these

A) bd

B) ab

C) ad

D) ac

43) Statement-I : Halogens have 7 Valence electrons

Statement-II : Halogens shows valency 7

A) Both statement I and II are correct and statement II is correct explanation of statement I

B) Both statement I and II are correct and statement II is not correct explanation of statement I

C) Statement I is correct and statement II is incorrect

D) Statement I is incorrect and statement II is correct

44) A neutral atom of an element has a nucleus with nuclear charge 11 times and mass 23 times that of hydrogen.

The element can form a stable charged ion by

A) losing 1 electron

B) losing 2 electrons

C) gaining 1 electron

D) gaining 2 electrons

45) Match the following.

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Element	Valence electrons	
a) Sodium	p)	7
b) Carbon	q)	2
c) Magnesium	r)	1
d) Fluorine	s)	4

- A) A-r, B-s, C-q, D-p B) A-q, B-s, C-p, D-r
C) A-r, B-q, C-s, D-p D) A-r, B-p, C-s, D-q

TSINTEGRATEDBIOLOGY

46) Which scientist proposed the theory of gravity?

- A) Isaac Newton B) Albert Einstein C) Galileo Galilei D) Nicolaus Copernicus

47) Which scientist famously formulated the heliocentric theory?

- A) Isaac Newton B) Galileo Galilei C) Johannes Kepler D) Nicolaus Copernicus

48) What is the ultimate goal of the scientific method?

- A) To prove preconceived notions
B) To refine understanding through evidence
C) To suppress new ideas
D) To maintain ignorance

49) The study related to the structure and functioning of cells is known as

- A) Palynology B) Karyology C) Cytology D) Embryology

50) Animal cell is limited by–

- A) Plasma membrane B) Shell membrane C) Cell wall D) Basement membrane

51) The extra protection in a plant cell which is made up of cellulose is

- A) Cell Membrane B) Plasma membrane C) Cell wall D) All of these

52) An animal cell differs from a plant cell in respect of

- A) ER B) Cell wall C) Ribosomes D) Cell membrane

53) Cell is best defined as

- A) The smallest part of a living being
B) The part that can be seen only under microscope
C) The starting point in the life of all organisms
D) The structural and functional unit of life

54) Example of prokaryotes

- A) plants B) animals C) bacteria and cyanobacteria D) fungi

55) What is the main distinctive feature of prokaryotic and eukaryotic cell

- A) Nucleus B) Cell Organells
C) Both A & B D) none

56) Which of the following instruments can be used to observe cells?

- A) Barometer B) Microscope C) Periscope D) Telescope

57) Who discovered the cell in 1665?

- A) Robert hook B) Robert crook C) David Thomson D) Marie Francois

58) Electron microscope has an magnification about

- A) 1 lakh to 2 lakh B) 1 lakh to 5 lakh
C) 1 lakh to 7 lakh D) 1 lakh to 3 lakh

59) Who is so called Father of Microscopy

- A) Robert Hooke B) Robert Brown C) Leeuwen Hoek D) Janseen

60) Who presented the idea that all cells arise from pre-existing cells?

- A) Haeckel B) Virchow C) Purkinje D) Hooke