

SECTION A

GENERAL SCIENCE (Question No 1 to 25)

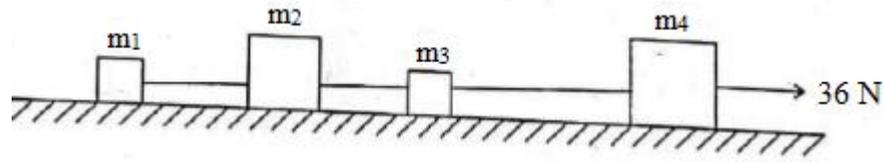
- 1 Which type of tissue support, defend and stores food in the body
- [A] Muscle tissue [B] Nervous tissue
[C] Epithelial tissue [D] Connective tissue
-
- 2 Plasmolysis takes place when a plant cell is placed in a
- [A] Hypotonic solution [B] Isotonic solution
[C] Hypertonic solution [D] Dilute solution
-
- 3 Body cells of fruit flies contain only 8 chromosomes, compared to human cells that contain 46. Scientists used studies of fruit flies to discover how egg and sperm cells (gametes) are formed. What did they observe?
- [A] Body cells of the offspring flies had 16 chromosomes.
[B] Sperm cells from the male had 8 chromosomes.
[C] Egg cells from the female had 4 chromosomes.
[D] Body cells of the offspring flies had 4 chromosomes.
-
- 4 Sometimes, lysosomes digest the cell organelles of the same cell. This process is called
- [A] Autophagy [B] Heterophagy
[C] Exocytosis [D] Endocytosis
-
- 5 The interval between infection and appearance of a disease is known as
- [A] Penetration [B] Infection period
[C] Inoculation [D] Incubation period
-
- 6 Study the features given below
The plant body is not differentiated into root, stem, and leaves. The sex organs are unicellular
Into which of the following groups would you place the plant with above features?
- [A] Thallophyta [B] Bryophyta
[C] Pteridophyta [D] Phanerogams
-
- 7 Which one of the following is modification of parenchyma?
- [A] Fibres found in phloem [B] Tracheid
[C] vessel [D] Chlorenchyma
-
- 8 All of the following are steps of photosynthesis EXCEPT
- [A] Chlorophyll is absorbed through plant roots.
[B] During photolysis a photon of light is absorbed by the chlorophyll pigment, which then is in an excited (higher energy) state.
[C] Water is separated into hydrogen and oxygen atoms.
[D] An ADP molecule is phosphorylated to ATP

-
- 9 Which of the following contains maximum number of molecules?
- [A] 1g CO₂ [B] 1g N₂
[C] 1g H₂ [D] 1g CH₄
-
- 10 Which of the following statements does not go well with the liquid state?
- [A] Particles are loosely packed in the liquid state
[B] Fluidity is maximum in the liquid state
[C] Liquids cannot be compressed
[D] Liquids take up the shape of any container in which they are placed
-
- 11 If formula of chromic acid is H₂CrO₄, then what is the formula of divalent metal chromate?
- [A] MCrO₄ [B] M₂CrO₄
[C] M₂(CrO₄)₃ [D] M₃CrO₄
-
- 12 The chemical equations are balanced to satisfy
- [A] Law of conservation of mass [B] Law of definite proportions
[C] Boyle's law [D] Dalton's law
-
- 13 The solubility of a substance **P** in water is 28.6% (mass by volume) at 50°C. When 50ml of saturated solution at 50°C is cooled to 40°C, 2.4g of solid **P** separates out. The solubility of **P** in water at 40°C (mass by volume) is
- [A] 2.4% [B] 11.9%
[C] 26.2% [D] 23.8%
-
- 14 A mixture of non-reacting gasses contains hydrogen and oxygen gases in the mass ratio of 1 : 4 respectively. What will be the molar ratio of the above two gases in the mixture?
- [A] 4 : 1 [B] 1 : 4
[C] 16 : 1 [D] 1 : 6
-
- 15 The number of atoms in 8g oxygen molecules are
- [A] 6.022 X 10²³ [B] 3.011 X 10²³
[C] 1.51 X 10²³ [D] 12.044 X 10²³
-
- 16 A spring balance is graduated on sea level. A body of mass 1kg is weighed at consecutively increasing heights from the earth's surface, then what would be the weight indicated by the balance?
- [A] Weight will remain same
[B] Weight will first increases and then decreases
[C] Weight will go on decreasing continuously
[D] Weight will go on increasing continuously
-
- 17 A force of 10N is applied on an object of mass 1kg for 2 seconds, which is initially at rest. What is the work done on the object by the force?
- [A] 200J [B] 180J
[C] 20J [D] 18J
-

18 A vehicle will accelerate as long as

- [A] Air resistance is greater than the thrust
- [B] Air resistance is greater than the inertia
- [C] Thrust is greater than the sum of air resistance and friction
- [D] Friction is greater than the thrust

19 Four blocks of different masses ($m_1 = 1\text{Kg}$, $m_2 = 2\text{kg}$, $m_3 = 1\text{ kg}$ and $m_4 = 5\text{kg}$) are connected with light, inextensible strings as shown in figure. This system is pulled along a frictionless surface by a horizontal force of 36N . The force pulling the block of mass m_1 will be

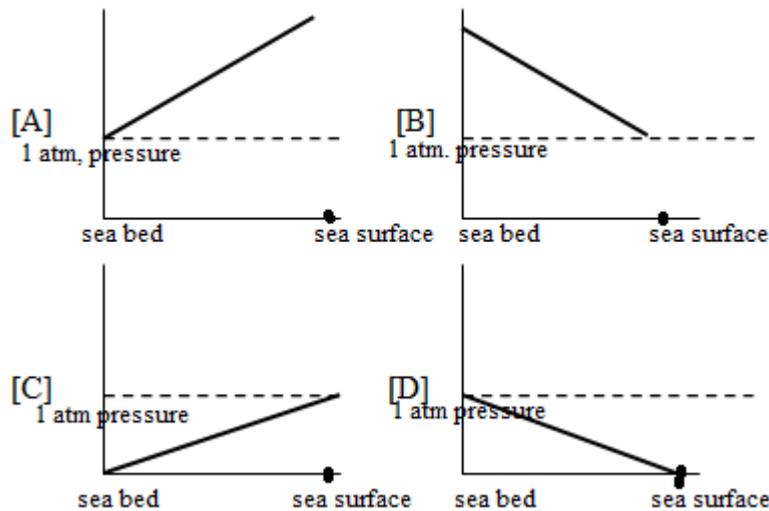


- [A] 2N
- [B] 4N
- [C] 12N
- [D] 36N

20 A particle is acted upon by a constant force, the magnitude of which is always perpendicular to the velocity of the particle. The motion of the particle takes place in a plane. It follows that

- [A] Its velocity is constant
- [B] Its magnitude of acceleration is constant
- [C] Its K E is constant and it is in circular motion
- [D] Both (B) & (C)

21 A body submerged in the sea is brought up to its surface. Which of the following graphs represents correctly the variation of pressure on the body with decrease in depth?



22 At what height will a man's weight be half his weight on the surface of earth? [R is the radius of earth]

[A] 0.236R

[B] 0.414R

[C] 0.732R

[D] 0.645R

23 The heart of a man pumps 4 litres of blood per minute at a pressure of 130mm of mercury. If the density of mercury is 13.6gcm^{-3} , then calculate the power of heart. [$g = 10\text{ms}^{-2}$]

[A] 0.02W

[B] 0.2W

[C] 1.2W

[D] 3.2W

24 The acceleration of a particle **X** remains constant in magnitude but not in direction. Which of the following path does particle **X** can have?

[A] Straight line

[B] Circular path

[C] Elliptical path

[D] Parabolic path

25 A source of sound is placed at one end of an iron bar two kilometers long and two sounds are heard at the other end at an interval of 5.6 seconds. If the velocity of sound in air is 330ms^{-1} , the time taken by sound to travel 2 km in iron is

[A] 0.46s

[B] 0.16s

[C] 2.26s

[D] 3.36s

MATHEMATICS (Question No 26 to 40)

26 The value of $0.142857142857 \dots$ is

[A] $\frac{1}{7}$

[B] $\frac{9}{70}$

[C] $\frac{142857}{100000000}$

[D] $\frac{2}{7}$

27 The expression $2x^3 + ax^2 + bx - 2$ leaves remainders 7 and 0 when divided by $2x - 3$ and $x + 2$ respectively. The value of a and b are

[A] $a = 3, b = 0$

[B] $a = 3, b = -3$

[C] $a = -3, b = 1$

[D] $a = 2, b = 1$

28 The graph of the equation $y = x^2$ is

[A] x axis

[B] y axis

[C] Straight line

[D] Parabola

29 Sameer is of the same age as Joy. Akhil is also of the same age as Joy. State the Euclid's axiom that illustrates the relative ages of Sameer and Akhil

[A] First Axiom

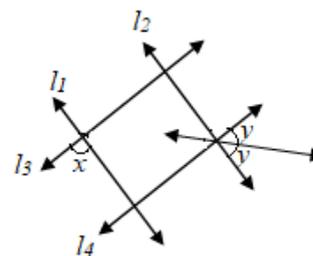
[B] Second Axiom

[C] Third Axiom

[D] Fourth Axiom

30 In the following fig, $l_1 \parallel l_2$ and $l_3 \parallel l_4$. What is y in terms of x ?

- [A] $90 + x$
 [B] $90 + 2x$
 [C] $90 - \frac{x}{2}$
 [D] $90 - x$



31 The mean of 10 numbers is 7 and the mean of 15 other numbers is 12. Then the mean of 25 numbers taken together is

- [A] 10 [B] 9
 [C] 8 [D] 11

32 The 100^{th} root of $10^{(10^{10})}$ is

- [A] $10^{8^{10}}$ [B] 10^{10^8}
 [C] $(\sqrt{10})^{(\sqrt{10})^{10}}$ [D] $10(\sqrt{10})^{\sqrt{10}}$

33 $0.12\bar{3}$ can be expressed in rational form as

- [A] $\frac{900}{111}$ [B] $\frac{111}{900}$
 [C] $\frac{123}{10}$ [D] $\frac{121}{900}$

34 A and B are friends. A is older to B by 5 years, C is half the age of B while A's father D is 8 years older than twice the age of B. If the present age of D is 48 years, the present age of A is

- [A] 28 years [B] 26 years
 [C] 24 years [D] 25 years

35 ABCD is a parallelogram. Any line through A cuts DC at a point P and BC produced at Q, Then

- [A] Area (ΔBPC) = Area (ΔDPQ) [B] Area (ΔBPC) = $\frac{1}{4}$ Area (ΔACB)
 [C] Area (ΔDPQ) = $\frac{1}{4}$ Area (ΔADP) [D] None of these

36 The expression $2x^2 + 3px^2 - 4x + p$ has remainder when divided by $(x + 2)$, then the value of p is

- [A] 0 [B] 2
 [C] 1 [D] -1

37 If radius of a circle is a rational number, then its area is given by a number which is

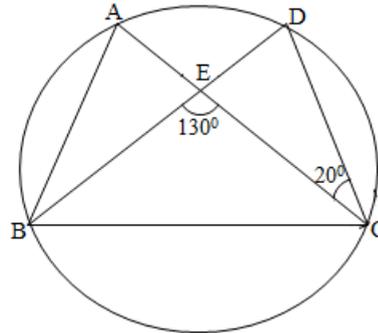
- [A] Rational [B] Irrational
 [C] Integral [D] A perfect square

38 In a survey of 364 children aged 19-36 months, it was found that 91 liked potato chips. If a child is selected at random, the probability that he/she does not like potato chips is

- [A] 0.8 [B] 0.75
[C] 0.65 [D] 0.5
-

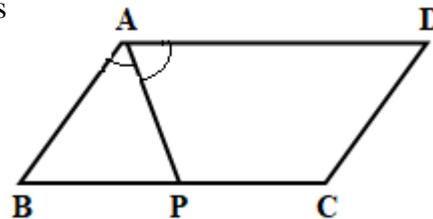
39 A, B, C and D are four points on a circle. AC and BD intersect at a point E such that $\angle BEC = 130^\circ$ and $\angle ECD = 20^\circ$ then $\angle BAC$ is

- [A] 110°
[B] 100°
[C] 90°
[D] 120°



40 In the figure given below, P is the mid-point of side BC of a parallelogram ABCD such that $\angle BAP = \angle DAP$, then which of the following is

- [A] $AD = \frac{1}{2} CD$
[B] $AD = CD$
[C] $AD = 2CD$
[D] $AD < DC$



SECTION B

41 FORTRAN is a programming language. What does FORTRAN stand for?

- [A] File Translation [B] Format Translation
[C] Formula Translation [D] Floppy Translation
-

42 Files with VXD extension represent

- [A] Normal text files [B] Application programmes
[C] Device drivers [D] Executable files
-

43 Excel uses another name for database. It is called as

- [A] Listing [B] Organizer
[C] Sequencer [D] List
-

44 Where does a computer add and compare data?

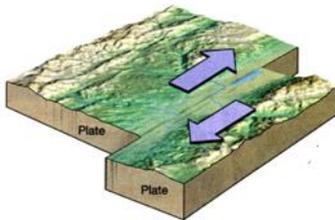
- [A] Floppy Disk [B] CPU Chip
[C] Memory Chip [D] Hard Disk
-

45 The Nobel Peace Prize 2018 was awarded jointly to these two great personalities "for their efforts to end the use of sexual violence as a weapon of war and armed conflict.". Identify these two great personalities who received Nobel Prize for Peace in 2018

- [A] Denis Mukwege and Nadia Murad
- [B] Francis H Arnold and George P Smith
- [C] William D Hordhaus and Paul M Romer
- [D] Sveriges and Riksbank Prize



46 The following diagram is best to explain?



- [A] Convergent boundary
- [B] Divergent boundary
- [C] Transform boundary
- [D] Subsiding boundary

47 Tropic of cancer is located at:

- [A] $23^{\circ} 27'$ N of the equator
- [B] $66^{\circ} 30'$ N of the equator
- [C] $23^{\circ} 27'$ S of the equator
- [D] $66^{\circ} 30'$ S of the equator

48 The 'Kharif' season begins;

- [A] With onset of monsoon.
- [B] At the end of southwest monsoon
- [C] In December
- [D] In March

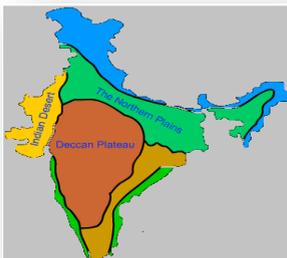
49 If it is 12.00 noon at Greenwich, calculate the local time of a place situated 900E.

- [A] 6.00am
- [B] 6.00pm
- [C] 2.00am
- [D] 2.00pm

50 Which one of the following is not an incident related to the French Revolution

- [A] Fall of the Bastille
- [B] Tennis Court Pledge
- [C] March on Versailles
- [D] October Revolution

51 The following maps are suitable to explain



- [A] Physical features of India
- [B] Soils distribution in India
- [C] Monsoon map of India
- [D] Grain cultivation

52 It is a system implemented by the British in India, in this system natural trees were cut and single species of trees planned in a row?

[A] 'Afforestation'

[B] 'Scientific forestry'

[C] 'Tree Plantation'

[D] 'Deforestation'

53 Which one of the following country is not included in Axis power?

[A] Italy

[B] Germany

[C] Japan

[D] Russia

54 In the following question, select the odd letter group from the given alternatives.

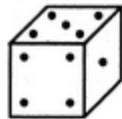
[A] CPBO

[B] BODQ

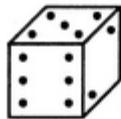
[C] ANHU

[D] ESGT

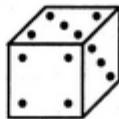
55 Amongst the following figures, find the correct one, if it is known that the total number of dots on opposite faces of the cube shown is always 7.



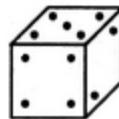
[A]



[B]

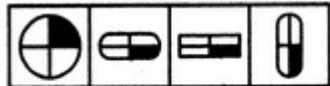


[C]



[D]

56 Choose the figure which is different from the rest.



[A]

[B]

[C]

[D]

57 Village Chimur is 20 km to the North of village Rewa. Village Rahate is 18 km to the East of village Rewa. Village Angne is 12 km to the West of Chimur. If Sanjay starts from village Rahate and goes to village Angne, in which direction is he from his starting point?

[A] North

[B] North-West

[C] South

[D] South-East

58 Answer the following question based on this data

A + B means A is brother of B

A - B means A is father of B

A * B means A is uncle of B

A / B means A is sister of B

From the given expression A / B - C + D which of the following is true?

[A] A is the aunt of D

[B] A is the sister of D

[C] A is the maternal uncle of D

[D] A is the sister in law of D

59 Which one of the following cities will never get the vertical rays of the sun?

- [A] Thiruvananthapuram [B] Mumbai
[C] Srinagar [D] Kolkata

60 Q, R, S and T are sitting in a line facing west. P and Q sit at adjacent places. R is sitting at south end and S is sitting at north end. T is neighbor of Q and R. Who is neighbour of P?

- [A] S [B] T
[C] Q [D] Both (A) and (C)

61 Consider following three digit numbers:

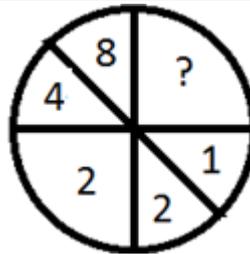
519 328 746 495 837

If half of the second highest number is subtracted from the third highest number, what will be the value?

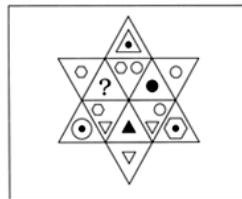
- [A] 156 [B] 146
[C] 166 [D] 126

62 Select the missing number.

- [A] 32
[B] 8
[C] 16
[D] 4

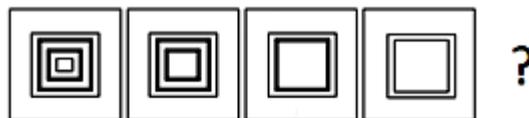


63 Replace the question mark:



- [A] [B] [C] [D]

64 Replace question mark:



- [A] [B] [C] [D]

65 An 'atom' is related to 'molecule' in the same way 'cell' is related

[A] Nucleus

[B] Organism

[C] Life

[D] Death

66 In the following question, select the odd word pair from the given alternatives.

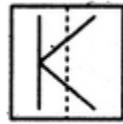
[A] Debit-Credit

[B] Profit-Gain

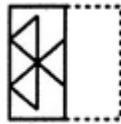
[C] Income-Expenditure

[D] Assets-Liabilities

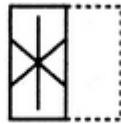
67 Find out from amongst the four alternatives as to how the pattern would appear when the transparent sheet is folded at the dotted line.



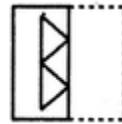
X



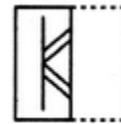
[A]



[B]



[C]



[D]

68 Replace the question mark

TTRIBUTION, TTRIBUTIO, RIBUTIO, IBUTI, ?

[A] IBU

[B] UT

[C] UTI

[D] BUT

69 If ENGLAND is written as 1234526 and FRANCE is written as 78529, how is GREECE coded?

[A] 381171

[B] 381191

[C] 832252

[D] 835545

70 Given are some words decoded from artificial language - chikerkurrip means birdhouse; phyckurrip means bluebird and phycbrell means bluebell. Select the code for 'houseguest' in this artificial language.

[A] bellchicker

[B] chikerrdrop

[C] chickerrphyc

[D] dropchiker
