**Class : 8**

Mathematics

01 Select the rational number lies between $\frac{1}{4}$ and $\frac{1}{3}$?

(A) $\frac{7}{24}$ (B) $\frac{7}{15}$ (C) $\frac{13}{48}$ (D) Both (A) & (C)

02 Choose the value of $(2^{30} + 2^{30} + 2^{30} + 2^{30})$.

(A) 8^{120} (B) 8^{30}

(C) 2^{32} (D) 2^{26}

03 Two cylinders of equal volume have their heights in the ratio 2 : 1. What is the ratio of their radii ?

(A) $2 : 1$ (B) $1 : 2$

(C) $\sqrt{2} : 1$ (D) $1 : \sqrt{2}$

04 If x and y are positive integers with $x > y$ and $x + xy = 391$, what is the value of $x + y$?

(A) 392   (B) 39

(C) 31   (D) 40

05 If 'a', 'b', 'c' and 'd' are consecutive natural numbers and $d^3 = a^3 + b^3 + c^3$, what is the least value of 'd' ?

(A) 6   (B) 9

(C) 3   (D) 12

===== Space for rough work =====

06 What is the percentage change in the area of rectangle obtained by decreasing the length by 5% and increasing its breadth by 5% ?

(A) 2.5% increases   (B) 0.25% increases

(C) 0.25% decreases   (D) 2.5% decreases

07 If $l \parallel m$, find the value of x.
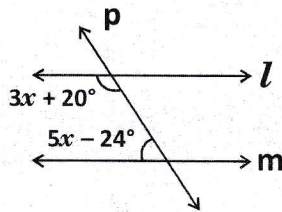
(A) 22°   (B) 23°

(C) 21°   (D) 48°

08 A sum of money on compound interest amounts to ₹ 10,648 in 3 years and ₹ 9680 in 2 years. Choose the rate of interest per annum.

(A) 5%   (B) 20%

(C) 15%   (D) 10%

Space for rough work

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09 By what least number must 25920 be divided to make it a perfect cube ?

(A) 15   (B) 5   (C) 3   (D) 90

10 A trader sells two cycles at ₹ 1188 each and gains 30% on the first and loses 30% on the second. What is the profit percentage or loss percentage on the whole transaction ?

(A) 1% loss   (B) no profit, no loss

(C) 1% gain   (D) 9% loss

11 The number 'x' was multiplied by 0.5 and the product divided by 3. The result was squared and 1 added to it. The final result was 26. What was the value of number 'x' ?

(A) 42   (B) 30   (C) 24   (D) 18

12 What is the sum of $x^2 + 4$ and the reciprocal of $x^2 - 4$?

(A) $\dfrac{4x^2}{x^2-4}$ (B) $\dfrac{x^4+4}{x^2-4}$ (C) $\dfrac{x^4-15}{x^2-4}$ (D) $\dfrac{x^4}{x^2-4}$

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13 Select the measure of 'x' of the given figure.
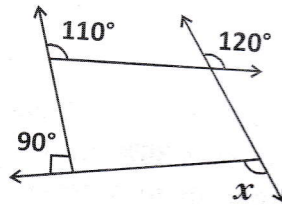
(A) 80°

(B) 40°

(C) 100°

(D) 134°

14 Select a factor of $(3^{25} + 3^{26} + 3^{27} + 3^{28})$.

(A) 11

(B) 16

(C) 25

(D) 30

15 A certain sum of money amounts to ₹ 1125 in 5 years and to ₹ 1200 in 8 years. Find the sum.

(A) ₹ 900

(B) ₹ 500

(C) ₹ 1000

(D) ₹ 800

16 A certain number of men can finish a piece of work in 100 days. If, there were 10 men less, it would take 10 days more for the work to be finished. How many men were there originally ?

(A) 75

(B) 82

(C) 100

(D) 110

17 The value of a car depreciates every year by 5%. If the present value of car is ₹ 270000. What will be its value after two years ?

(A) ₹ 210500

(B) ₹ 243675

(C) ₹ 256500

(D) ₹ 240000

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18 If a perfect square number has 'n' digits, then how many digits its square root has ?

(A) $\dfrac{n+1}{2}$

(B) $\dfrac{n}{2}$

(C) (A) or (B)

(D) $\dfrac{n-1}{2}$

19 Evaluate : $\dfrac{(-1)^{13}}{2^3} + \dfrac{2^3 - 1^{10} + 3^2}{3^2 - 2^2} + \left(\dfrac{7}{11}\right)^3 \div \dfrac{98}{121}$.

(A) $3\dfrac{173}{440}$　(B) $3\dfrac{17}{44}$　(C) $3\dfrac{137}{440}$　(D) $3\dfrac{21}{440}$

20 If ₹ 207 divided among three friends A, B and C in the ratio $\dfrac{1}{6} : \dfrac{1}{4} : \dfrac{1}{3}$, then what is the share of B ?

(A) ₹ 46

(B) ₹ 92

(C) ₹ 138

(D) ₹ 69

21 Select option correctly showing the factorisation of (1 + a + b + c + ab + bc + ca + abc).

(A) (1 + a) (1 + b) (1 + c)

(B) (1 − a) (1 − b) (1 + c)

(C) (1 + a) (1 − b) (1 − c)

(D) Cannot be factorised

Space for rough work

22 If $x - \dfrac{1}{x} = \sqrt{6}$, find the value of $x^2 + \dfrac{1}{x^2}$.

(A) 2

(B) 4

(C) 6

(D) 8

23 Select the simplest form for the given expression.

$$\left(\frac{9x}{7} - 7\right)\left(\frac{7x}{9} + 3\right) - \left(\frac{3x}{5} - 8\right)\left(\frac{5x}{3} + 7\right)$$

(A) $\left(\dfrac{2377x}{315} + 35\right)$

(B) $\left(\dfrac{2377x}{315} - 35\right)$

(C) $\left(\dfrac{x}{5} + 35\right)$

(D) None

24 Find the value of $\sqrt{\dfrac{0.16}{0.4}}$.

(A) 0.2

(B) 0.02

(C) 0.63

(D) $\dfrac{2\sqrt{5}}{5}$

25 Choose the result of $\sqrt{2x^2 - 2\sqrt{6}xy + 3y^2}$.

(A) $(2x - 3y)$

(B) $(3x - 2y)$

(C) $\left(\sqrt{2}x - \sqrt{3}y\right)$

(D) $\left(\sqrt{2}x + \sqrt{3}y\right)$

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26 Which set of information about sound waves is correct ?

	Nature of sound wave	Speed of sound in glass in m/s
(A)	Longitudinal	4540
(B)	Longitudinal	3619
(C)	Transverse	5000
(D)	Transverse	2500

27 A boy placed a magnet at the top of the ramp and the paper clip moved up the ramp and got attracted to the magnet.

(P) Frictional   (Q) Magnetic

(R) Elastic Potential   (S) Gravitational

Which of the given forces acted on the paper clip as it moved up the ramp ?

(A) P and Q only   (B) Q and R only

(C) P, Q and S only   (D) All of the above

[Space for rough work]

28 Four processes are used to charge an isolated metal sphere.

> P. The sphere is earthed by touching it.
> Q. The earth connection is removed from the sphere.
> R. A charged rod is brought close to the sphere.
> S. The charged rod is removed.

In which order should these processes be carried out to charge the isolated metal sphere ?

	First	→		Last
(A)	P	Q	R	S
(B)	P	R	S	Q
(C)	R	P	Q	S
(D)	R	S	P	Q

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29 A block of wood is at rest on a sloping ramp. The forces acting on the block are the weight W of the block, the frictional force F between the block and the ramp and the normal force N exerted by the ramp. Which diagram is correct ?

(A)

(B)

(C)

(D)
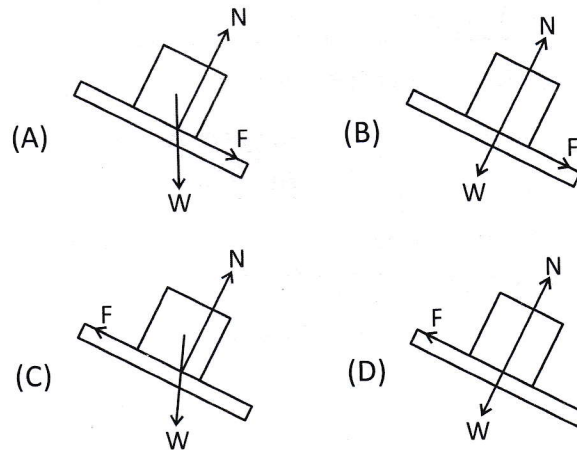
30 Observe the figure given below.
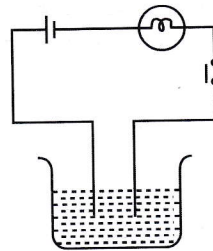
Which one of the following solutions will not enable the bulb to glow ?

(A) Sodium chloride

(B) Copper sulphate

(C) Silver nitrate

(D) Sugar solution in diluted water

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31 The characteristics of human eye disease/defect are given below.

> (i) Eye sight becomes foggy
> (ii) Eye lens becomes cloudy
> (iii) There is a loss of vision

Identify the disease/eye defect.

(A) Myopia

(B) Presbyopia

(C) Hypermetropia

(D) Cataract

32 Which of the following does not affect the pressure beneath the surface of a liquid ?

(A) Area of the liquid surface

(B) Density of the liquid

(C) Depth of the liquid

(D) Strength of the gravity

33 A businessman has set up an electroplating factory near his village. He should dispose off the waste of the factory

(A) in the nearby river.

(B) in the nearby pond.

(C) in the nearby corn field.

(D) according to the disposal guidelines of the local authority.

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34 A student pushed a heavy box over four different surfaces: polished marble, wood, carpet and cement. The graph given below shows the amount of force that he applied to push the box over the various surfaces.
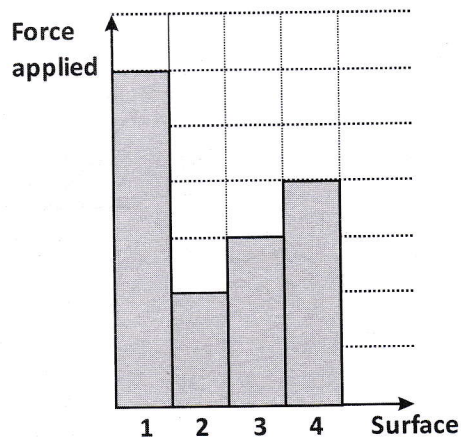

Which of the following best represents the polished marble and carpet surfaces ?

	Polished marble	Carpet
(A)	1	4
(B)	2	1
(C)	3	2
(D)	4	3

Space for rough work

35 A tiny mirror M is fixed on a piece of cardboard placed on a table. The cardboard is illuminated by light from a bulb. The position of eye with respect to position of bulb is shown below. In which position, mirror will be visible ?

(A)

Bulb   Eye

M

(B)

Bulb   Eye

M

(C)

Bulb   Eye

M

(D)

Bulb   Eye

M

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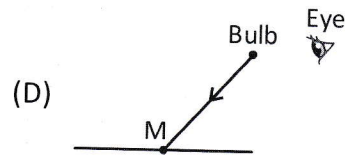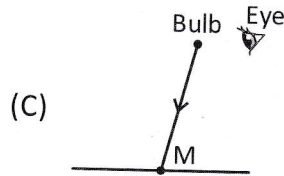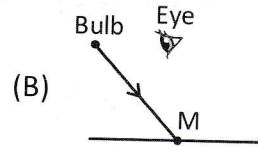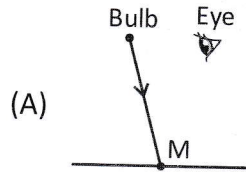
36 Coal tar is a mixture of about 200 substances. The products obtained from it is used as a starting material for manufacturing

(A) drugs.

(B) photographic materials.

(C) explosives.

(D) all the three

37 A copper article when exposed to moist air forms a green coating made up of X and Y. Identify X and Y.

	X	Y
(A)	Copper hydroxide	Copper oxide
(B)	Copper hydroxide	Copper carbonate
(C)	Copper oxide	Copper sulphide
(D)	Copper sulphate	Copper oxide

38 Carbon monoxide is produced when fuel is burnt with insufficient amount of oxygen. In excessive amount, why could this become harmful to humans ?

(A) It blocks the transmission of signals in the nervous system.

(B) It causes irritation in the respiratory system.

(C) It damages the kidney and prevents secretion of waste from the body.

(D) It binds with haemoglobin and disturbs the circulation of oxygen in the body.

39 Identify the correct definition of a polymer molecule.

(A) A macromolecule bound together by hydrogen bonds.

(B) A large molecule made up of one type of atoms joined together.

(C) A macromolecule with more repeating units.

(D) A cluster of small molecules.

40 The table given below shows the reactivity of metals P,Q and R with water and dilute hydrochloric acid respectively.

Metal	Reaction with	
	Water	dilute hydrochloric acid
P	✓	✓
Q	✗	✓
R	✗	✗
✓ : Reaction takes place ✗ : No reaction		

Which of the following shows their reactivity in a decreasing order ?

(A) P, Q, R   (B) P, R, Q

(C) R, Q, P   (D) Q, R, P

41 Match the entries in Column-I with those in Column-II correctly.

	Column-I			Column-II
a.	Dark inner zone		1.	Hottest part (No carbon)
b.	Blue zone		2.	Partial combustion
c.	Luminous zone		3.	Unburnt vapours of wax
d.	Non-luminous zone		4.	Complete combustion

(A) a-1, b-2, c-3, d-4   (B) a-2, b-3, c-4, d-1

(C) a-3, b-4, c-2, d-1   (D) a-4, b-1, c-2, d-3

42 Four materials, P, Q, R and S, are soaked in a pail of water. The mass of the materials before and after soaking are measured and recorded in the table given below. Which material is the best for making a swim suit ?

	Material	Mass of material before soaking in water (g)	Mass of material after soaking water (g)
(A)	P	20	40
(B)	Q	50	55
(C)	R	60	90
(D)	S	100	200

======= Space for rough work =======

43 Aluminium is used to make cooking utensil even though it is very high in the reactivity series. Which of the following statements justifies its use ?

(A) It has a much lower density compared to iron.

(B) It has a relatively high melting point compared to other metals.

(C) It can react readily with oxygen in the air to form aluminium oxide.

(D) Both (A) and (B)

44 Global warming leads to a rise in the sea level causing floods. One of the main reason is combustion of fuels that release

(A) sulphur dioxide which increases the temperature.

(B) carbon monoxide which decreases the temperature.

(C) unburnt carbon particles which decreases the temperature.

(D) carbon dioxide which increases the atmospheric temperature.

Space for rough work

45 Read the information given below about three substances.

> X : Tough porous and black substance
> Y : Black liquid with unpleasant smell
> Z : Obtained during processing of coal to get coke.

X, Y and Z could be respectively

(A) Coal, coke and coal tar

(B) Coke, coal tar and coal gas

(C) Petrol, crude oil and coal tar

(D) All of the above

Space for rough work

46 **Study the given table below:**

	Method of preparation	Functions	Tools used
(i)	Ploughing	To loosen soil for root penetration & to plant seeds	Plough and tractor
(ii)	Manuring	To prevent soil erosion	Manures and Fertilizers
(iii)	Levelling	To increase soil fertility	Leveller

Which of the following given in the given table are wrongly described ?

(A) (i) and (ii) only   (B) (ii) and (iii) only

(C) (iii) and (i) only   (D) (i), (ii) and (iii)

47 **Identify the basic necessity for the conservation of biodiversity.**

(i) **Biodiversity maintains balance in the ecosystem.**

(ii) **Wild animals and plants provide a variety of commodities.**

(iii) **Wildlife is needed for breeding programmes.**

(A) (i) and (ii) only   (B) (ii) and (iii) only

(C) (i) and (iii) only   (D) (i), (ii), and (iii)

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48 The chart given below shows the characteristic features of bacteria.
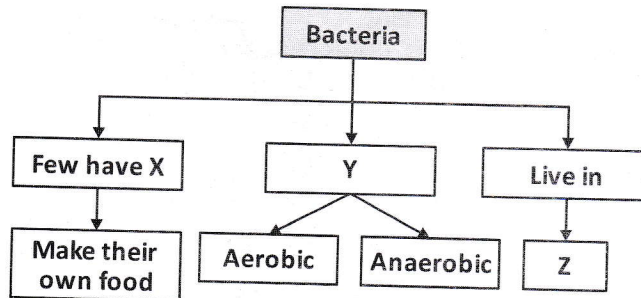
Identify X, Y and Z in the given chart.

	X	Y	Z
(A)	Chlorophyll	Nutrition	Dry places
(B)	Nucleus	Respiration	Moist places
(C)	Chloroplast	Reproduction	Humid places
(D)	Chlorophyll	Respiration	Damp places

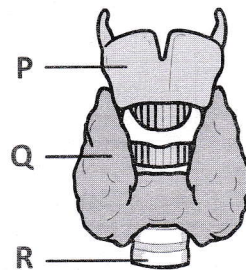**49** Study the given Venn diagram and identify X and Y.
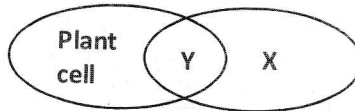
	X	Y
(A)	Cell membrane	Plant cells
(B)	Animal cell	Vacuole
(C)	Cell wall	Cell membrane
(D)	Bacteria cell	Cell wall

50 In the given female reproductive system, identify the labelled part(s) where the fertilisation takes place.
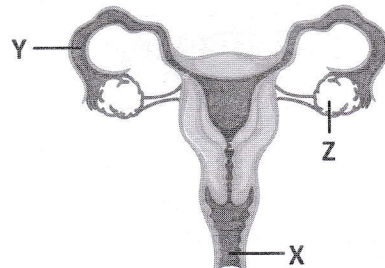
(A) X

(B) X and Z

(C) Z

(D) Y

51 The given diagram shows a gland located in the neck.

Identify the parts P, Q and R.

	P	Q	R
(A)	Pituitary	Thyroid	Voice box
(B)	Larynx	Thyroid	Trachea
(C)	Thyroid	Larynx	Windpipe
(D)	Parathyroid glands	Larynx	Thyroid

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52 Select the correct statements about asexual reproduction.

(i) This process is relatively slower than sexual reproduction.

(ii) It produces progeny that are genetically identical with the parent.

(iii) It involves a single parent.

(iv) The progeny of asexual reproduction can be termed as clones.

(A) (i), (ii) and (iii) only   (B) (ii), (iii) and (iv) only

(C) (iii) and (iv) only   (D) (i), (iii) and (iv) only

53 Identify the given cell and select the correct option.
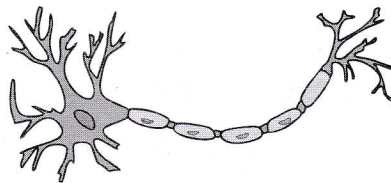
(A) It receives and transfers messages from various body parts to brain and brain to various parts of the body.

(B) It is the longest cell.

(C) It helps to control and coordinate the working of different parts of the body.

(D) All of the above.

─────(**Space for rough work**)─────

54 Study the given diagram of nitrogen cycle.
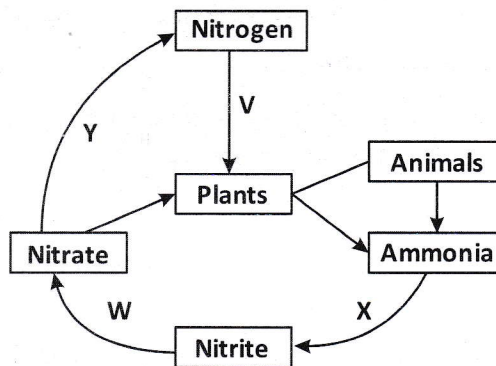
Which option is correct for Nitrosomonas ?
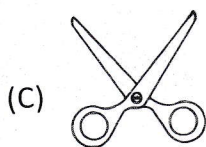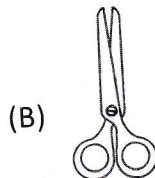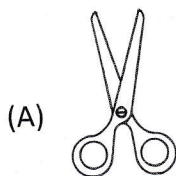
(A) V (B) W

(C) X (D) Y

55 Even though the method of broadcasting is cost effective, it is not advisable because:

> (i) The seed distribution is uneven.
> (ii) The density and depth of seeds are uneven.
> (iii) The germination of seed is not uniform.

(A) (i) and (ii) only (B) (ii) and (iii) only

(C) (iii) and (i) only (D) (i), (ii) and (iii)

───────(Space for rough work)───────

56 Which pair of scissors will cut through cardboard easier ?

(A)

(B)

(C)

(D) All the above

57 Ravi has less money than Rahul. Ravi and Rahul together have as much money as Rakesh and Ramesh together. Rakesh and Rahul together have less money than Ramesh and Ravi together. What is the correct richest-poorest pairing ?
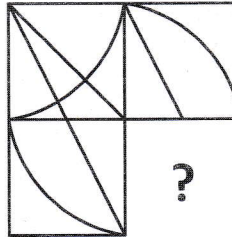
(A) Ramesh-Ravi

(B) Ramesh-Rakesh

(C) Rahul-Ravi

(D) Ravi-Rakesh

58 Which number will need maximim number of blocks to glow ?
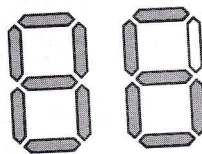
(A) 09

(B) 10

(C) 11

(D) 12

59 Which option will complete the pattern in the given question figure ?

(A)   (B)

(C)   (D)

60 Which of the following assumptions is made regarding competitors' products based on the statement ?

Statement : "Buy pure butter of company A."

(A) Competitors do not advertise in magazines.

(B) Competitors' butter is not as pure as Company A's.

(C) Company A has the largest market share.

(D) Competitors don't sell butter.

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