SCIENCE

1. A man puts his hand in water at 30°C for a while. He will feel colder if he puts the same hand in another vessel containing water at

(1) 20°C

(2) 30°C

(3) 35°C

(4) 40°C

2. Which of the following conditions are essential for rusting?

(i) Presence of air (ii) Presence of moisture

(iii) Presence of sunlight

Mark the correct option

(1) (i) & (ii) (2) (ii) & (iii)

(3) (i), (ii) & (iii) (4) (i) & (iii)

3. Match the following and choose an appropriate option.

	Column – I		**Column – II**
(a)	*Cuscuta*	(i)	Insectivorous plant
(b)	Pitcher plant	(ii)	Symbiotic relationship
(c)	Mushroom	(iii)	Parasitic plant
(d)	Lichen	(iv)	Saprotrophic

(1) a(i), b(ii), c(iii), d(iv)

(2) a(i), b(iii), c(iv), d(ii)

(3) a(iii), b(ii), c(i), d(iv)

(4) a(iii), b(i), c(iv), d(ii)

4. In cockroaches, exchange of gases occurs through

(1) Gills (2) Tracheae

(3) Spiracles (4) Skin

5. A ball is thrown up with a certain velocity. It attains maximum height of 40 m and comes back to the thrower, then the

(1) total distance travelled by the body is 40 m

(2) total displacement of the body is 80 m

(3) total displacement is zero

(4) total distance travelled by the body is zero.

6. Match the column I with column II:

	Column – I		**Column – II**
(a)	Shearing	(p)	Cleaning sheared skin
(b)	Burrs	(q)	Morus alba
(c)	Mulberry	(r)	Small fluffy fibre
(d)	Scouring	(s)	Removal of fleece from the body

(1) a → q, b → p, c → r, d → s

(2) a → s, b → r, c → q, d → p

(3) a → p, b → r, c → s, d → q

(4) a → r, b → q, c → p, d → s

7. Vegetable fibres are made up of

(1) cellulose

(2) protein

(3) nylon

(4) rayon

8. The rate of photosynthesis in green light is

(1) very high

(2) very less

(3) zero

(4) light has no role to play

9. Constipation is a problem of difficulty in egestion of undigested and unabsorbed food materials. What nutrients are mostly deficient according to you?

(1) Carbohydrates

(2) Proteins

(3) Fats

(4) Fibres

10. The organ known as Graveyards of RBC

(1) lymph nodes

(2) thymus gland

(3) spleen

(4) liver

11. Dionaea is an insectivorous plant commonly known as

(1) sundew

(2) bladder wart

(3) pitcher plant

(4) venus fly trap

12. The second most widely used fibre after cotton is

(1) jute

(2) hemp

(3) coir

(4) silk cotton

13. Among the following, the smallest temperature is

(1) 1K

(2) 1°C

(3) 1°F

(4) All are equal

14. SI unit of luminous intensity is

(1) Mole

(2) Candela

(3) Ampere

(4) Kelvin

15. The pictures show a lightbulb connected to a battery. Which bulb will light?

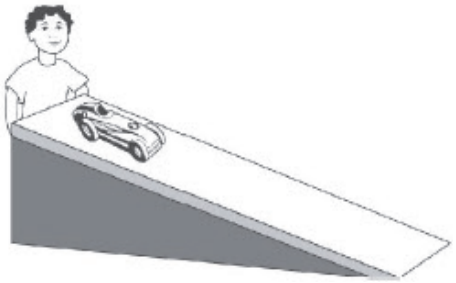
(1) 

(2) 

(3) 

(4) 

16. Which motion is exhibited by the wheels of car as it comes down the ramp?



(1) Rotational only

(2) Translational only

(3) Curvilinear only

(4) Rotational and translational

17. Which of the following species found in the aqueous solution of weak acid?

(1) Only molecules

(2) Mostly ions

(3) Both molecules and ions

(4) Mostly electrons

18. Which gas is primarily responsible for Green House Effect, i.e. global warming?

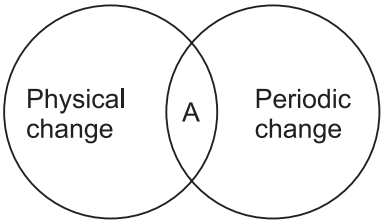
(1) Nitrogen dioxide

(2) Carbon dioxide

(3) CFC (Chloro Fluoro Carbon)

(4) Sulphur dioxide

19. Study the venn diagram and identify 'A'.



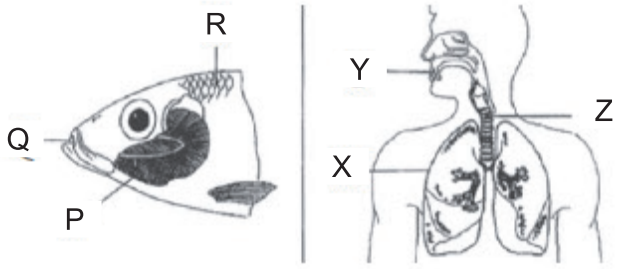
(1) Occurrence of seasons

(2) Dissolving sugar in water

(3) Solar eclipse

(4) Stretching of spring

20. Name the breathing organs marked in given figures.



(1) P-Lungs; X-Gills

(2) R- Lungs; Z-Stomata

(3) P-Gills; X-Lungs

(4) P-Stomata; X-Gills

21. Four students studied reactions of zinc and sodium carbonate with dilute hydrochloric acid and dilute sodium hydroxide solutions and presented their results as follows. The (✓) represents a gas and (×) represents absence of any reaction.

The right set of observations is that of student

(1)

	Zn	Na_2CO_3
HCl	✓	✓
NaOH	×	✓

(2)

	Zn	Na_2CO_3
HCl	✓	×
NaOH	✓	✓

(3)

	Zn	Na_2CO_3
HCl	×	×
NaOH	✓	✓

(4)

	Zn	Na_2CO_3
HCl	✓	✓
NaOH	✓	×

22. Which is not correctly matched?

(1) Bile ; emulsifier

(2) Lacteal ; absorption of fatty acid and glycerol

(3) Ptyalin ; digestion of starch

(4) Duodenum ; water absorption

23. One plant is grown in a greenhouse and the other is grown under a forest canopy. (i.e. under the shade of trees). What would be the effect on the rate of photosynthesis in both the conditions?

(1) The rate of photosynthesis would be equally low in both the conditions.

(2) The rate of photosynthesis would be greater under the forest canopy.

(3) The rate of photosynthesis would be greater in the greenhouse.

(4) The greenhouse or shade of forest canopy would not influence the rate of photosynthesis because only 1% of sunlight is used in photosynthesis.

24. Wind develops as a result of differences in

(1) air temperature and humidity

(2) relative humidity

(3) condensation and evaporation rates

(4) atmospheric pressure and temperature

25. Silk fibre is made up of

(1) Carbohydrates (2) Lipids

(3) Proteins (4) Fats

26. A muscular organ which walls secretes gastric juice is

(1) stomach (2) esophagus

(3) rectum (4) all of these

27. A given white crystalline salt was tested as follows:

(a) It dissolve in water and resulting solution of the salt turned blue litmus red.

(b) Addition of barium chloride solution into this solution gives a white precipitate.

(c) A flame test on the salt gave a persistent golden-yellow colourisation.

Identify the salt.

(1) Potassium sulphate

(2) Ammonium sulphate

(3) Sodium sulphate

(4) Sodium chloride

28. Pollen grains of wind pollinated flowers are

(1) sticky and lightweight

(2) lightweight and in a huge quantity

(3) lightweight and huge

(4) sticky and huge

29. Which of the following relations is incorrect?

(1) Speed = Distance × Time

(2) Speed = Distance ÷ Time

(3) Time = Distance ÷ Speed

(4) Distance = Speed × Time

30. An ammeter should be connected to measure current flow in

(1) series circuit (2) parallel circuit

(3) open circuit (4) close circuit

MATHEMATICS

31. Side of an equilateral triangle is 2.5 m, then its perimeter is

(1) 5 m (2) 10 m

(3) 15 m (4) 7.5 m

32. What should be added to $\left(\frac{1}{2}+\frac{1}{3}+\frac{1}{5}\right)$ to get 3?

(1) $\frac{58}{30}$ (2) $\frac{59}{32}$

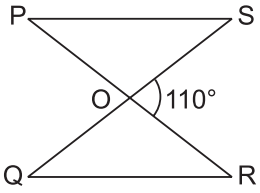
(3) $\frac{59}{30}$ (4) $\frac{59}{95}$

33. The value of $a^2 - b^2$, if $a = 1$, $b = 2$ is

(1) 1 (2) –3

(3) 3 (4) 0

34. Number of interior angles formed in the triangles are



(1) 2 (2) 3

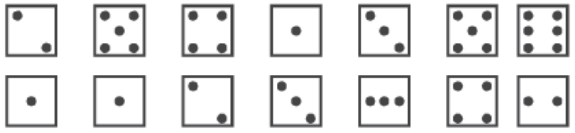
(3) 4 (4) 6

35. If $\frac{2^{m+n}}{2^{n-m}} = 16$ and $a = 2^{1/10}$ then $\frac{(a^{2m-n+p})^2}{(a^{m-2n+2p})} =$

(1) $2^{3/5}$ (2) $\sqrt[5]{8}$

(3) Both (1) & (2) (4) 1

36. A dice was thrown 14 times as follows:



The mean score was

(1) 2.5 (2) 2

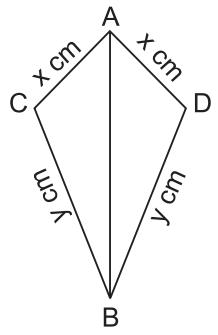
(3) 4 (4) 3

37. If the cost of an article is directly proportional to the square of number of articles sold. If cost of 20 articles is ₹ 2000, then find the cost of 45 articles.

(1) ₹ 2025 (2) ₹ 10125

(3) ₹ 3025 (4) ₹ 10500

38. By which congruency property, the two triangles connected by following figure are congruent?



(1) SAS property

(2) SSS property

(3) RHS property

(4) ASA property

39. The median and mode of a frequency distribution are 26 and 29 respectively. Then, the mean is

(1) 27.5 (2) 24.5

(3) 28.4 (4) 25.8

40. $\left[4-\left\{4-\left(4-\overline{4-5}\right)\right\}\right] =$

(1) 9 (2) 13

(3) 5 (4) 3

41. What is the median of the following data: 37, 31, 42, 43, 46, 25, 39, 45, 32

(1) 35 (2) 39

(3) 5 (4) 8

42. The area of a square and a parallelogram are 441 sq. cm each. If the base of the parallelogram is twice the side of the square, find the height of the parallelogram.

(1) 10.5 cm

(2) 21 cm

(3) 42 cm

(4) insufficient data

43. A student is ranked 10th from the top and 40th from the bottom in a class. Then the number of students in the class is

(1) 46 (2) 49

(3) 48 (4) 45

44. The radius of a circular park is 112 m, then the area of the park is

(1) 39444 (2) 32944

(3) 39424 (4) 39244

45. Area of a trapezium is A cm. Parallel sides are 5 cm, 8 cm then the distance between the parallel sides is

(1) $\frac{2A}{13}$ (2) $\frac{A}{13}$

(3) $\frac{13}{2A}$ (4) $\frac{13}{A}$

46. Which of the following statements is correct?

(1) $(-1)^n = -1$, if n is an odd integer

(2) For any natural number a, $a^0 = 1$

(3) If $4 \times 8^m = 2^5$, then $m = 1$

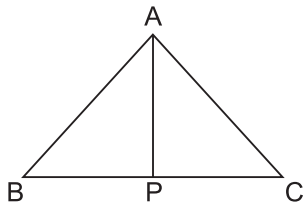
(4) All of these

47. $0 \times 1 + 1 \times 10 + 0 \times 0 + 1 =$

(1) 0 (2) 1

(3) 3 (4) 11

48. In the given figure, P is a point on the side BC of ΔABC. Which of the following inequality is true?



(1) AB + BC + AC > AP

(2) AB + BC + AC < AP

(3) AB + BC + AC > 2AP

(4) AB + BC + AC < 2AP

49. Subtract $\frac{-10}{11}$ from the sum of $\frac{1}{2}$ and $\frac{1}{11}$.

(1) $\frac{2}{3}$ (2) $\frac{4}{3}$

(3) $\frac{3}{4}$ (4) $\frac{3}{2}$

50. A trapezium with parallel sides of length 5 cm and 7 cm has area 96 sq. cm. Its height is then

(1) 16 cm (2) 8 cm

(3) 6 cm (4) 9 cm

51. Two angles of a triangle are 50° and 60°. Then the third angle is

(1) 70° (2) 80°

(3) 60° (4) 90°

52. Supplement of a right angle is a

(1) right angle (2) acute angle

(3) obtuse angle (4) straight angle

53. Find the rate at Simple Interest, at which a sum becomes four times of itself in 15 years.

(1) 10% (2) 20%

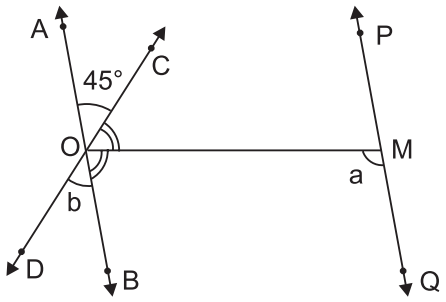
(3) 30% (4) 40%

54. The average of four consecutive odd numbers is 24. Find the largest number.

(1) 25 (2) 27

(3) 29 (4) 31

55. In the given figure, if COD is a straight line, OM is the bisector of ∠COB and AB || PQ, then a – b is equal to



(1) 22.5° (2) 45°

(3) 135° (4) 67.5°

56. The area of a rectangle is 24 cm^2. How many different possibilities are there of side lengths (whole numbers only)?

(1) 1 (2) 2

(3) 3 (4) 4

57. In Δ PQR, PS is the bisector of ∠P and PT ⊥ OR, then ∠ TPS is equal to:

(1) ∠Q + ∠R

(2) 90° + 1/2 ∠Q

(3) 90° – 1/2 ∠R

(4) 1/2(∠Q – ∠R)

58. ₹ 800 becomes ₹ 956 in 3 years at a certain rate of simple interest. If the rate of interest is increased by 4% what amount will ₹ 800 become in 3 years.

(1) ₹1052

(2) ₹1152

(3) ₹1252

(4) ₹1352

59. If the cost price is 25% of selling price, then what is the profit percent?

(1) 150%

(2) 200%

(3) 300%

(4) 350%

60. Find the average of all numbers between 6 and 34 which are divisible by 5.

(1) 15

(2) 20

(3) 25

(4) 30

END OF THE EXAM