

SECTION – I

Physics

1. The physical property that allows lakes to freeze from the top down involves
 - (A) the quantity of salt in water.
 - (B) the anomalous behavior of the expansion of water between 0 °C and 4 °C.
 - (C) the confinement properties of the boundaries of the lake.
 - (D) the high specific heat of water.

1. B
2. Absolute zero is a temperature on the Kelvin scale. It is _____
 - (A) – 137.15 °C
 - (B) – 237.15 K
 - (C) – 173.15 K
 - (D) – 273.15 °C

2. D
3. Suppose the volume of gasoline in your gas tank expands with warming temperatures. Do you now have more gasoline?
 - (A) No, you still have the same mass of gasoline.
 - (B) Yes, the volume increased and so has the mass.
 - (C) No, the mass decreased as the volume increased to maintain the density.
 - (D) Yes, the density and the volume increased.

3. A
4. When you heat water from 2 °C. to 7 °C., its density
 - (A) first increases, then decreases.
 - (B) first decreases, then increases.
 - (C) always remains the same.
 - (D) always decreases.

4. A
5. Land breeze blows during
 - (A) winter
 - (B) day
 - (C) night
 - (D) summer

5. C
6. A thermometer is used to measure
 - (A) heat
 - (B) thermal capacity
 - (C) water equivalent
 - (D) temperature

6. D
7. Absolute zero temperature corresponds to
 - (A) –273 K
 - (B) 273 K
 - (C) 0 K
 - (D) –100°C

7. C
8. Steam at 100°C causes more severe burns than water at the same temperature because
 - (A) Steam is a gas
 - (B) Steam cannot do work
 - (C) Steam can provide more heat
 - (D) steam is highly combustible

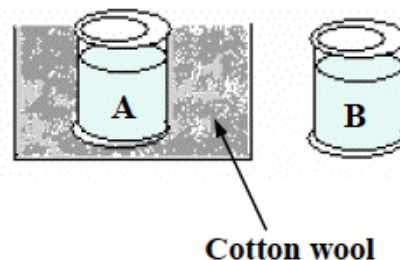
8. C
9. – 40°F on absolute scale is equal to
 - (A) 0 K
 - (B) 233 K
 - (C) 273 K
 - (D) 313 K

9. B

- 10 Which of the following process of heat transfer does not require medium?
 (A) Conduction (B) Convection (C) Radiation (D) Both (B) and (C)
 10 C
11. Air is cooled from room temperature (25°C) to 100 K. What is the temperature difference in K?
 (A) 298 K (B) 198 K
 (C) 75 K (D) 125 K
 11. B
12. How much energy is needed to heat 1 kg of sand, which has a specific heat of $664 \text{ J}/(\text{kg K})$ from 30°C to 50°C ?
 (A) 19,920 J (B) 33.2 J
 (C) 33,200 J (D) 13,280 J
 12. D
13. When a metal spoon with a temperature of 20°C is placed into a cup of water with a temperature of 90°C the spoon will heat up. This is an example of:
 (A) convection
 (B) radiation
 (C) conduction
 (D) insulation



13. C
14. The diagram shows two metal cans equal in size and filled with the same amount of water at 100°C . Can A is wrapped in cotton wool and can B has no wrapping. After 15 minutes, which can, A or B, would you expect to have the higher temperature, and why?
 (A) B, because the metal can is a good absorber of heat.
 (B) A, because cotton wool is a good insulator.
 (C) A, because cotton wool is a good reflector of heat.
 (D) B, because the metal can is a good conductor



14. B
15. What are the missing words from the following sentence? Heat is a form of _____ measured in _____
 (A) energy and joules (B) energy and degrees Celsius
 (C) power and joules (D) power and degrees Celsius
 15. A

SECTION – II
Chemistry

1. Wool fibre cannot be obtained from which of the following?
(A) goat (B) lyamna
(C) Alpaca (D) Moth
1. D,
2. Selective breeding is a process of
(A) selecting the off springs wit desired properties
(B) selecting the parents with desired properties
(C) selecting an area for breeding
(D) selecting fine hair for good quality wool.
2. B,
3. The process of twisting fibres to make yarn is called
(A) combing (B) ginning
(C) spinning (D) knotting
3. C,
4. Which fibre is obtained from flax seed?
(A) cotton (B) jute
(C) nylon (D) linen
4. D,
5. The acid present in tea is
(A) tannic (B) lactic
(C) tartaric (D) citric
5. A,
6. Acids turn blue litmus
(A) green (B) red
(C) yellow (D) orange
6. B,
7. Milk of magnesia is an
(A) acid (B) caustic soda
(C) alkali (D) rock salt
7. C,
8. Which of the following is not a property of acids?
(A) all acids have a sour taste (B) acids turn blue litmus red
(C) acids turn red litmus blue (D) all acids forms H^+ ions in water
8. C,
9. Which of the following is not an acidic salt?
(A) $CuSO_4$ (B) Na_2CO_3
(C) $ZnSO_4$ (D) NH_4NO_3
9. B,

10. Cocoons are prepared by silkworms at which of the following stage of its life cycle?
(A) Larva (B) Pupa
(C) Nymph (D) Adult
10. B,
11. Which of the following is present in silk fibre?
(A) Carbohydrate (B) Lipids
(C) Proteins (D) Fats
11. C,
12. Wool is obtained from
(A) Wool worms (B) carbon compounds
(C) Fleece of sheep (D) cotton plants
12. C,
13. The scientific name of silk moth is
(A) *Cajanas cajan* (B) *Bombyx mori*
(C) *Anthrex* (D) *Rozacynancis*
13. B,
14. Which of most exclusive silk of India?
(A) Mulberry (B) Erri
(C) Tassar (D) Muga
14. D,
15. Scouring of wool is done to remove
(A) Dirt (B) Dust
(C) Both A & B (D) None of these
15. C,

SECTION – III

Mathematics

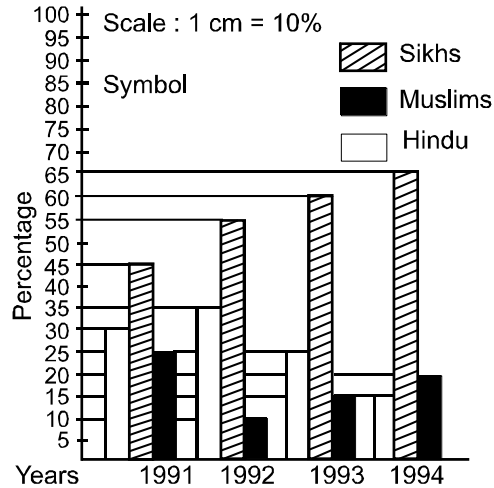
1. The difference between two numbers is 26. If one number is thrice the other then find the numbers.
 (A) 36,10 (B) 39,13
 (C) 42,16 (D) 45,19
1. B
2. If the mean of a, b, c, d, e is 15. What is the mean of a, b+c and d+e?
 (A) 15 (B) 25
 (C) 30 (D) 20
2. B
3. My age this year is a multiple of seven. Next year it will be a multiple of five. I am more than 20 years of age but less than 80 years of age. How old will I be 6 years from now?
 (A) 45 (B) 55
 (C) 40 (D) 50
3. B
4. Convert recurring decimals to fractions of $4.\overline{237}$.
 (A) $\frac{839}{198}$ (B) $\frac{4195}{990}$
 (C) $\frac{4233}{999}$ (D) $\frac{4233}{990}$
4. B
5. Solve: $x - \frac{2x+8}{3} = \frac{1}{4}\left(x - \frac{2-x}{6}\right) - 3$.
 (A) -1 (B) -5
 (C) -10 (D) -20
5. C
6. The angles of a triangle measured in degree are $3x$, $(5x-40)$, $(2x+20)$. Find x .
 (A) 30 (B) 12
 (C) 22 (D) 20
6. D
7. If $2x - (1-2x) = 5 - 3(1+x)$, then find x .
 (A) $\frac{4}{3}$ (B) $\frac{3}{5}$
 (C) $\frac{3}{7}$ (D) $\frac{5}{7}$
7. C

8. The sum of digits of a two digit number is 7. The number obtained by interchanging the digits exceeds the original number by 27. Find the number.
 (A) 16 (B) 34
 (C) 70 (D) 25

8. D

9.

Given below is a bar diagram showing the percentage of Hindus, Sikhs and Muslims in a state during the years from 1992 to 1994.



9. Study the following graph & answer the question
 What percentage was the increase in Sikh population from 1992 to 1994 ?

- (A) 10% (B) $18\frac{2}{11}\%$
 (C) $19\frac{1}{11}\%$ (D) 20%

9. A

10. The multiplicative inverse of $|(-2) + (-5) \times (-7)|$ is

- (A) $\frac{1}{33}$ (B) $-\frac{1}{33}$
 (C) 33 (D) -33

10. A

11. Travelling at three-fourth of the usual speed, a person is 10 minutes late. Find the usual time to cover the distance.

- (A) 20 (B) 25
 (C) 30 (D) 40

11. C

12. If 12, 15, 17, 18, $x + 2$, $x + 4$, 25, 30, 31, 32 are in ascending order and median of the observations is 22, then value of x is

- (A) 20 (B) 19
 (C) 22 (D) 23

12. B

13. The mean of 80 items was 42. Later on, it was discovered that the two items were misread as 87 and 6 instead of 187 and 66. Which of the following will be correct mean?
(A) 44.0 (B) 44.2
(C) 44.6 (D) none of these
13. A
14. One-third of Rahul's savings in National Savings Certificate is equal to one-half of his savings in Public Provident Fund. If he has Rs. 1,50,000 as total savings, how much has he saved in Public Provident Fund?
(A) Rs. 30,000 (B) Rs. 50,000
(C) Rs. 60,000 (D) Rs. 90,000
14. C
15. A student obtains 75%, 80% and 85% marks in three subjects. If the marks of any other subject are added, then their average cannot be less than
(A) 60% (B) 65%
(C) 70% (D) 80%
15. A

SECTION – IV

Biology

1. **Organisms which prepare food for themselves using simple naturally available raw materials** are referred to as
 (A) heterotrophs (B) autotrophs
 (C) parasites (D) saprophytes
1. B,
2. **The term that is used for the mode of nutrition in yeast, mushroom and bread-mould is**
 (A) autotrophic (B) insectivorous
 (C) saprophytic (D) parasitic
2. C,
3. **Which of the following statements is/are correct?**
 (i) All green plants can prepare their own food.
 (ii) Most animals are autotrophs.
 (iii) Carbon dioxide is not required for photosynthesis.
 (iv) Oxygen is liberated during photosynthesis.
 Choose the correct answer from the options below:
 (A) (i) and (iv) (B) (ii) only
 (C) (ii) and (iii) (D) (i) and (ii)
3. A,
4. **Choose the correct option from the following:**
Which part of plant gets carbon dioxide from the air for photosynthesis?
 (A) Root hair (B) Stomata
 (C) Leaf veins (D) Sepal
4. B,
5. If the cells of small intestine are coated with a layer of fat, then which amongst the following related pathway of digestive system would be most affected?
 (A) digestion (B) absorption
 (C) assimilation (D) egestion
5. B,
6. The rate of photosynthesis remains unaffected by the presence of
 (A) oxygen (B) carbon dioxide
 (C) water (D) chlorophyll
6. A,
7. **Statement-I:** Cells of large intestine are usually thin walled to increase the absorption of undigested sugars, fat and proteins
Statement-II: Large intestine is the main area for the digestion of all nutrients
- (A) both statements are true
 (B) only statement – I is true
 (C) statement – II is true & statement – I is false
 (D) both statements are false
7. D,

8. Emulsification of fats involves the conversion of complex fat sheet into tiny fat droplets. It is important in the fats metabolism because it
 (A) helps in fats assimilation
 (B) increase surface area for lipase to act
 (C) helps in removal of undigested matter
 (D) prevents the attack or growth of microbes
8. B,
- 9 Given below from (i) to (iv) are some food items.**
 (i) potato (ii) moong dal
 (iii) rajma (iv) Mustard oil
 Which of the above will give blue-black colour when tested with iodine?
 (A) (i) and (ii) (B) (i) and (iii)
 (C) (ii) and (iii) (D) only i
9. D,
- 10. Which of the following pair of teeth differ in structure but are similar in function?**
 (A) canines and incisors (B) molars and premolars
 (C) incisors and molars (D) premolars and canines
10. B,
- 11. Read carefully the terms given below. Which of the following set is the correct combination of organs that do not carry out any digestive functions?**
 (A) Oesophagus, Large Intestine, Rectum
 (B) Buccal cavity, Oesophagus, Rectum
 (C) Buccal cavity, Oesophagus, Large Intestine
 (D) Small Intestine, Large Intestine, Rectum
11. A,
12. Cuscuta is often seen to grown on potatoes for their nourishment. This is an example of
 (A) autotrophic nutrition (B) decomposition
 (C) parasitism (D) symbiosis
12. C,
- 13. The acid present in the stomach?**
 (A) kills the harmful bacteria that may enter along with the food.
 (B) protects the stomach lining from harmful substances.
 (C) digests starch into simpler sugars.
 (D) makes the medium alkaline.
13. A,
14. Consumption of sweet foods for the longer periods of time will destroy _____, the hardest part of the teeth and causes dental caries.
 (A) Enamel (B) Dentine
 (C) Pulp cavity (D) Bone
14. A,
15. Green plants fix atmospheric CO₂ through photosynthesis in the form of :
 (A) Ribulose biphosphate (B) mono sacchrides
 (C) lipase (D) poly peptides
15. B,

