



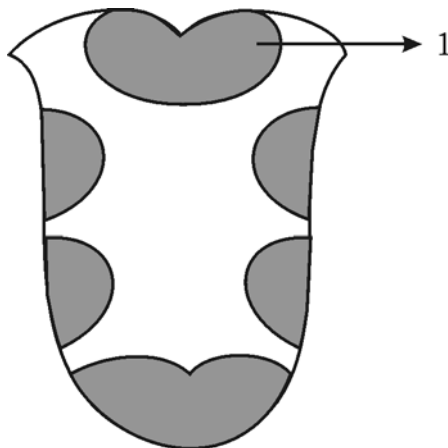
Four alternatives are given for each of the following questions / incomplete statements. Only one of them is correct or most appropriate. Choose the correct alternative and write the complete answer along with its letter.

$$10 \times 1 = 10$$

1. According to Graham's law of diffusion, at the given temperature and pressure the rate of diffusion of a gas is
 - (A) directly proportional to the square root of its density.
 - (B) directly proportional to its mass.
 - (C) inversely proportional to the square root of its density.
 - (D) inversely proportional to the square of its mass.

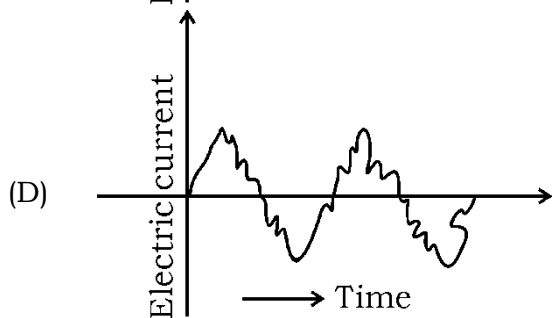
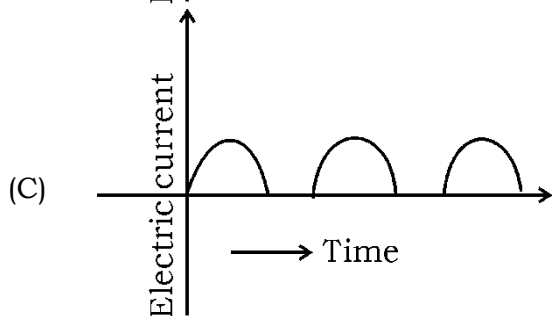
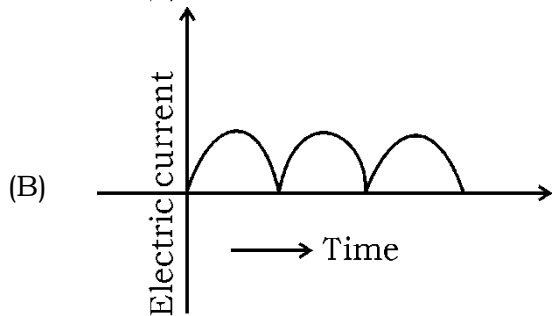
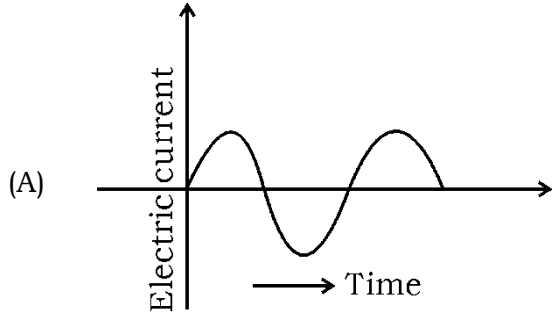
2. When the source of the sound is moving away from the observer, the observer feels the sound to be of lower frequency because,
 - (A) the waves behind the source of sound are compressed.
 - (B) the wavelength of the source of sound decreases.
 - (C) the waves behind the source of sound are farther apart.
 - (D) the observer receives more number of waves.

3. The distribution of taste buds in the human tongue is shown in this figure. The part labelled as '1', senses this taste.



- (A) Sweet (B) Bitter
(C) Salt (D) Sour.
4. 'Norit' is used in the manufacture of sugar because
- (A) the impurities in the sugarcane juice get precipitated
(B) the crystallisation of sugar becomes fast
(C) sugar gets decolourised
(D) the protein matter of sugarcane juice is coagulated.
5. When Mendel crossed pure varieties of a tall plant with red flowers and a dwarf plant with white flowers, the number of dwarf plants with white flowers obtained in F_1 generation is
- (A) 0 (B) 9
(C) 3 (D) 1.

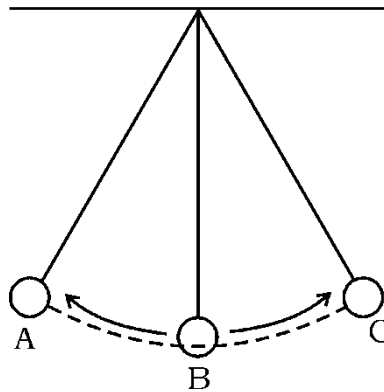
6. Identify the graph of alternating current in the following :



7. If the number of blood cells present in 1 mm^3 blood of a healthy person is written in the increasing order, then the correct order obtained is

- (A) platelets, red blood cells, white blood cells
- (B) white blood cells, red blood cells, platelets
- (C) red blood cells, platelets, white blood cells
- (D) white blood cells, platelets, red blood cells.

8. The main feature of the red giant stage of a star is
- (A) the star has hydrogen core
 - (B) the radiation pressure acting outwards is equal to the inward gravitational pull of the star
 - (C) the temperature of the star increases and emits radiation of high frequency
 - (D) the star swells, loss of radiation takes place, the temperature decreases.
9. The disease Syphilis is caused by the bacterium
- (A) *Neisseria gonorrhoeae*
 - (B) *Vibrio cholerae*
 - (C) *Treponema pallidum*
 - (D) *Salmonella typhae*.
10. The motion of a simple pendulum is shown in the figure. Identify the correct statement related to this figure.



- (A) The pendulum has maximum potential energy at the point B.
- (B) The pendulum has maximum kinetic energy at the point A.
- (C) The pendulum has maximum potential energy at the points A and C.
- (D) The pendulum has maximum kinetic energy at the points A and C.

11. **A few terms used in metallurgy are given in Column-A and their meanings are given in Column-B. Match them and write the answers along with its letter :** $4 \times 1 = 4$

Column - A

- (A) Concentration of the ore
(B) Calcination
(C) Flux
(D) Roasting

Column - B

- (i) The substance added to the ore before heating
(ii) Heating the ore just below its melting point in the presence of air
(iii) Impurities present in the ore
(iv) Subjecting the ore to the method of electrolysis
(v) Increasing the percentage of desired component of the ore
(vi) Heating the ore just below its melting point in the absence of air
(vii) Crystallising the ore.

Answer the following questions : $7 \times 1 = 7$

12. Effluents coming from furnaces of the industries must be cooled to atmospheric temperature before releasing into water bodies. Why ?
13. What are mechanical waves ?
14. Define Charles law.
15. Moss plants do not grow to greater heights. Why ?
16. Draw the circuit symbol of *p-n-p* transistor.
17. If an A.C. source of 220 volts has to be stepped down to 10 volts, then calculate the turns ratio of the primary coil and secondary coil.