

**Class: 10**  
**Subject: Science**  
**Topic: ASK1510UT04**  
**No. of Questions: 20**

### Physics

- Q1. When a plane mirror is rotated by an angle Q. What will the rotation of the reflected ray?
- (a) 3 Q
  - (b) 2 Q
  - (c) Q
  - (d) Q/2

Sol. (b)

- Q2. What type of mirrors are generally used to demonstrate reflection of light in laboratories?
- (a) None of these
  - (b) Concave mirror
  - (c) Plane mirror
  - (d) Convex mirror

Sol. (c)

- Q3. Irrespective of your distance from a mirror, your image appears erect. The mirror is likely to be
- (a) Plane only
  - (b) Concave only
  - (c) Convex only
  - (d) Either plane or convex

Sol. (d)

- Q4. Mirror formula is given by:

- (a)  $\frac{1}{f} = -\frac{1}{u} + \frac{1}{v}$
- (b)  $-\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$
- (c)  $\frac{1}{f} = \frac{1}{u} - \frac{1}{v}$
- (d)  $\frac{1}{f} = \frac{1}{u} - \frac{1}{u}$

Sol. (c)

- Q5. Your school lab has one large window. To find the focal length of a concave using one of the walls as the screen, the experiment may be performed.
- (a) On the wall advancement to the window
  - (b) On the same wall as the window
  - (c) Near the wall opposite to the window
  - (d) Only on the table as per the lab arrangement

Sol. (b)

- Q6. The S.I. unit of linear magnification is
- (a)  $m^2$
  - (b) m
  - (c) no unit
  - (d)  $m^{-1}$

Sol. (c)

- Q7. Find the incorrect statement
- (a) Concave mirrors are used for shaving purpose
  - (b) Concave mirrors are used by doctors to focus light inside the ear or inside the mouth for medical examination
  - (c) Concave mirrors are used as rear view mirrors in cars, motorcycles, scooters etc.
  - (d) Convex mirrors are used by dentist to see the large images of teeth of patients

Sol. (d)

- Q8. When a lemon kept in water in a bowl viewed from side, it appears \_\_\_\_\_ than its actual size
- (a) Large
  - (b) Same
  - (c) Smaller
  - (d) None of these

Sol. (a)

- Q9. Which of the following materials cannot be used to make a lens?
- (a) Plastic
  - (b) Clay
  - (c) Water
  - (d) Glass

Sol. (b)

Q10. If two lenses of power  $P_1$  and  $P_2$  are put in contact. What will be the net power?

- (a)  $P_1 + P_2$
- (b)  $P_1 \times P_2$
- (c)  $P_1/P_2$
- (d)  $P_1 - P_2$

Sol. (a)

Q11. The light travel fastest in

- (a) Water
- (b) Diamond
- (c) Kerosene
- (d) Turpentine

Sol. (a)

Q12. Where an object should be placed in front of convex lens to get a real image of the size of the object?

- (a) At principal focus
- (b) At infinity
- (c) Between focus and optical centre
- (d) At twice the focal length

Sol. (d)

Q13. Angle of incidence = Angle of reflection, it is true for –

- (a) Only plane mirror
- (b) Mirrors as well as lens.
- (c) Only for lens
- (d) Both plane mirror and spherical mirror

Sol. (d)

Q14. The focal length of plane mirror is

- (a) 10 cm
- (b) Infinity
- (c) 0.0
- (d) 20 cm

Sol. (b)

Q15. An object is kept at the centre of curvature of a concave mirror, the distance between the pole of the mirror and the image is

- (a) Greater than  $2f$
- (b) Equal to  $2f$
- (c) Equal to  $f$
- (d) Between  $f$  and  $2f$

Sol. (b)

Q16. The image of a bright object is brought on a screen with the help of a concave mirror. If the upper half of the concave mirror is covered, the effect on the image will be

- (a) Its size becomes half
- (b) Brightness reduced
- (c) Image changes position
- (d) The image disappears

Sol. (b)

Q17. For experimentation, the principal axis of the lens should be

- (a) Parallel to the length of the optical bench
- (b) Anywhere, it hardly matters.
- (c) Normal to the length of the optical bench
- (d) Inclined at angle of  $45^\circ$  to the length of optical bench

Sol. (d)

Q18. Magnification for a plane mirror is  $m = +1$  what does this signify for  $m = 1$

- (a)  $M = 1$ , signifies that the image is of the same size as the object
- (b)  $M = 1$ , signifies that the image is of the smaller size as the object
- (c)  $M = 1$ , signifies that the image is of diminished size.
- (d)  $M = 1$ , signifies that the image is of the bigger size as the object

Sol. (a)

Q19. A spherical mirror and thin spherical lens have each a focal length – 15 cm.

- (a) The mirror is convex, but the lens is concave.
- (b) The mirror is concave, but the lens is convex.
- (c) Both are concave
- (d) Both are convex

Sol. (c)

Q20. A sharp image of a distant object is obtained on a screen by using a convex lens in order to determine the focal length of the lens, you need to measure the distance between the

- (a) Lens and the screen
- (b) Object and the screen
- (c) Lens and object
- (d) Lens and the screen and also object and the screen

Sol. (a)

## Biology

Q1. The F<sub>2</sub> phenotype ratio of a monohybrid cross studied by Mendel is

- (a) 1 : 1
- (b) 2 : 1
- (c) 3 : 1
- (d) 4 : 1

Sol. (c)

Q2. If T is for tallness and t for dwarfness, what shall be the genotype of a tall pea plant according to Modalism?

- (a) TT
- (b) Tt
- (c) Either TT or Tt
- (d) tt

Sol. (c)

Q3. A random change in the frequency of alleles in any population over several generation due to errors in the gametes is called

- (a) Gene flow
- (b) Genetic Drift
- (c) Genetic error

(d) Genetic crash

Sol. (b)

Q4. Wings of an insect & a bird are example of

- (a) Analogous organs
- (b) Vestigial organs
- (c) Homologous organs
- (d) Analytic organs

Sol. (a)

Q5. Vermiform appendix is an example of

- (a) Analogous organ
- (b) Vestigial organ
- (c) Homologous organ
- (d) Analytic organ

Sol. (b)

Q6. A trait in an offspring is influenced by

- (a) DNA of mother gamete
- (b) DNA of father gamete
- (c) Both DNAs of father and mother gamete
- (d) Neither of mother or father gamete DNA

Sol. (c)

Q7. The theory of Natural selection was proposed by

- (a) Lamarck
- (b) Darwin
- (c) Mendel
- (d) Haldane

Sol. (b)

Q8. How life might have originated on earth was experimentally shown by

- (a) Urey and Miller
- (b) Oparin and Haldane
- (c) Watson and Crick
- (d) None of the above

Sol. (a)

Q9. Surgically removing tails of mice over several generations' do not yield mice without tails. This prove that

- (a) Cutting tails does not cause genetic change. So it not inherited.
- (b) Acquired characters during one's own life are not inherited.
- (c) Neither a nor b is correct
- (d) Both a and b are correct

Sol. (d)

Q10. Who proposed the hypothesis that life must have developed from the simple inorganic molecules which were present on earth soon after it was formed?

- (a) Miller
- (b) Urey
- (c) Darwin
- (d) Haldane

Sol. (d)

Q11. Mendel observed 7 pairs of contrasting characters in *Pisum sativum*. One of the following is not a part of that. Find out.

- (a) Tall and dwarf,
- (b) Yellow and green seed colour,
- (c) Terminal and axial flower,
- (d) Smooth and rough stem

Sol. (d)

Q12. A male child will be born if

- (a) Father is healthy
- (b) Mother is will fed during pregnancy
- (c) Genetic composition of child has XY set of chromosomes
- (d) Genetic composition of child has XX set of chromosomes

Sol. (c)

Q13. A pair of contrasting characters is called

- (a) Phenotype

- (b) Genotype
- (c) Allele
- (d) Gene

Sol. (c)

- Q14. Which of the example of homologous organs
- (a) Forelimbs of man and wings of bird
  - (b) Wings of birds and wings of insects
  - (c) Vermiform appendix and nictitating membrane
  - (d) Archaeopteryx and Balano glossus

Sol. (a)

- Q15. A mendelian experiment considered of breeding tall pea plants bearing violet flowers with short pea plants bearing white flowers. The progeny all bore violet flowers, but almost half of them were short. This suggests that the genetic make up of the tall parent can be depicted as
- (a) TTWW
  - (b) TTww
  - (c) TtWW
  - (d) TtWw

Sol. (c)

- Q16. Your arms homologous with
- (a) A seal flipper
  - (b) An octopus tentacle
  - (c) A bird wing
  - (d) Both (a) and (c)

Sol. (d)

- Q17. Which of the following are fossils?
- (a) Pollen grains buried in the bottom of a peat bog
  - (b) The petrified cast of a clam's burrow
  - (c) The impression a clam shell made in mud, preserved in mudstone
  - (d) All of the above

Sol. (d)



- Q18. Which of the following would stop evolution by natural selection from occurring?
- (a) If humans became extinct because of a disease epidemic
  - (b) If a thermonuclear war killed most living organisms and changed the environment drastically
  - (c) If ozone depletion led to increased ultraviolet radiation, which caused many new mutations
  - (d) If all individuals in a population were genetically identical, and there was no genetic recombination, sexual reproduction, or mutation

Sol. (d)

- Q19. Match **column – I** with **column – II** and select the correct answer using the codes give below the columns.

<b>Column – I</b>		<b>Column – II</b>	
(i)	Planaria	(p)	Molecular Biology
(ii)	DNA	(q)	1953
(iii)	Miller and Urey	(r)	Natural selection
(iv)	Darwin	(s)	Rudimentary eyes

- (a) (i) → (p); (ii) → (s); (iii) → (r); (iv) → (q)
- (b) (i) → (s); (ii) → (p); (iii) → (p); (iv) → (q)
- (c) (i) → (s); (ii) → (p); (iii) → (q); (iv) → (r)
- (d) (i) → (s); (ii) → (q); (iii) → (p); (iv) → (r)

Sol. (c)

- Q20. New species may be formed if
- (i) DNA undergoes significant changes in germ cells
  - (ii) Chromosome number changes in the gamete
  - (iii) There is no change in the genetic material
  - (iv) Mating does not take place

- (a) (i) and (ii)
- (b) (i) and (iii)
- (c) (ii), (iii) and (iv)
- (d) (i), (ii) and (iii)

Sol. (a)