

FIITJEE INTERNAL TEST

Batch: NWCMLG223A1

PHASE TEST – II

QP CODE:

Time : 1:30 Hrs.

Maximum Marks : 90

Scholastic Aptitude Test

Instructions

- The question paper consists of **90** multiple choice questions divided into four sections.
Section – I contains **45** questions of **Mathematics**.
Section – II contains **15** questions of **Physics**.
Section – III contains **15** questions of **Chemistry**.
Section – IV contains **15** questions of **Biology**.
- Each question carries **+1** marks.
- There is **No negative** marking.
- Attempt **All** questions.
- Use of Calculator is **NOT PERMITTED**.
- All symbols have their usual meanings, if not mentioned in the question.
- The Question Paper contains blank spaces for your rough work.
No additional sheets will be provided for rough work.
- This booklet also contains **OMR** answer sheet.

Name of the Candidate :

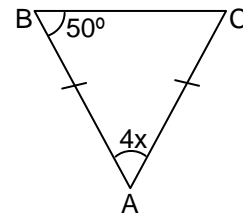
Enrollment Number :

SECTION – I MATHEMATICS

1. Which of the following has two end points?
 (A) a ray (B) a line segment
 (C) a line (D) none of these

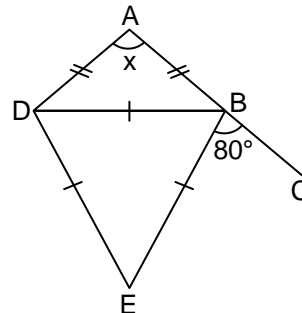
1. B
 Sol. A line segment has 2 end points

2. The diagram shows an isosceles triangle ABC, such that AB = AC. The value of x is _____
 (A) 100° (B) 80°
 (C) 50° (D) 20°



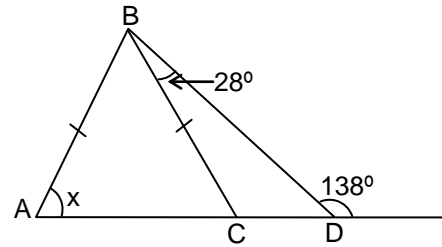
2. D
 Sol. In isosceles $\triangle ABC$, $AB = AC$
 $\therefore \angle ABC = \angle ACB = 50^\circ$
 $\therefore \angle A + \angle B + \angle C = 180^\circ$ (Angle sum property of \triangle)
 $\therefore 4x = 180^\circ - 50^\circ - 50^\circ$
 $\Rightarrow x = \frac{80}{4} = 20^\circ$

3. In the diagram, ABC is a straight line. $AD = AB$ and DBE is an equilateral triangle. If $\angle EBC = 80^\circ$, then x is _____
 (A) 80° (B) 100°
 (C) 120° (D) 140°



3. B
 Sol. Since $\triangle DBE$ is equilateral \triangle
 $\therefore \angle DBE = 60^\circ$
 Now since ABC is straight line
 $\therefore \angle ABD + \angle DBE + \angle EBC = 180^\circ$
 i.e. $\angle ABD + 60^\circ + 80^\circ = 180^\circ$
 $\therefore \angle ABD = 40^\circ$
 Now, $AD = AB$
 $\therefore \angle ADB = \angle ABD = 40^\circ$
 $\therefore x = 180^\circ - 40^\circ - 40^\circ$ (by angle sum property of \triangle)

4. In the given figure, ACD is a straight line. ABC is an isosceles triangle. The value of x is _____
 (A) 65° (B) 70°
 (C) 72° (D) 83°



4. **B**
 Sol. $\angle BDC = 180^\circ - 138^\circ$ (Linear pair)

$$\therefore \angle BDC = 42^\circ$$

Since $\triangle ABC$ is isosceles \triangle

$$\therefore \angle BAC = \angle BCA = x$$

$$\therefore \angle BCA = x = 28^\circ + 42^\circ \text{ (exterior angle property of } \triangle)$$

$$\Rightarrow x = 70^\circ$$

5. If ratio of angles of a triangle are 2 : 3 : 4, then value of angles are
 (A) $20^\circ, 40^\circ$ and 200° (B) $60^\circ, 20^\circ$ and 80°
 (C) $40^\circ, 60^\circ$ and 80° (D) $60^\circ, 70^\circ$ and 50°

5. **C**
 Sol. Let angles be $2x, 3x$ and $4x$

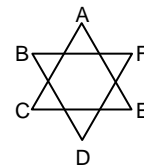
$$\therefore 2x + 3x + 4x = 180^\circ$$

$$\Rightarrow 9x = 180^\circ$$

$$\Rightarrow x = 20^\circ$$

$$\therefore \text{Angles are } 40^\circ, 60^\circ, 80^\circ$$

6. In the adjoining figure, $\angle A + \angle B + \angle C + \angle D + \angle E + \angle F$ is
 (A) 180° (B) 360°
 (C) 270° (D) none of these



6. **B**
 Sol. $\angle A + \angle C + \angle E = 180^\circ$ (angle sum property of \triangle)

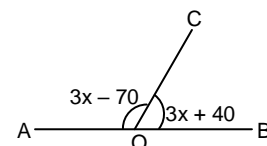
$$\text{Similarly } \angle B + \angle D + \angle F = 180^\circ$$

$$\Rightarrow \angle A + \angle B + \angle C + \angle D + \angle E + \angle F = 360^\circ$$

7. If two angles of a triangle are complementary, then third angle is
 (A) 60° (B) 80°
 (C) 76° (D) 90°

7. **D**
 Sol. 3^{rd} angle = $180^\circ - 90^\circ = 90^\circ$

8. If $\angle AOC = 3x - 70$ and $\angle COB = 3x + 40$, then the value of x is
 (A) 70° (B) 35°
 (C) 65° (D) none of these

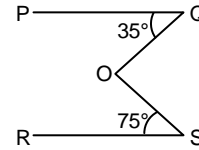


8. **B**

Sol. $\angle AOC + \angle BOC = 180^\circ$ (Linear pair)
 $\Rightarrow 3x - 70^\circ + 3x + 40^\circ = 180^\circ$
 $\Rightarrow 6x - 30^\circ = 180^\circ$
 $\Rightarrow 6x = 210^\circ$
 $\Rightarrow x = 35^\circ$

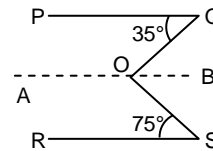
9. If $PQ \parallel RS$, then $\angle QOS$ is
 (A) 75°
 (C) 110°

(B) 108°
 (D) none of these



9. **C**
 Sol. Construct $AB \parallel PQ \parallel RS$

$\angle QOB = \angle PQO = 35^\circ$ (alt. int. is)
 Similarly, $\angle RSO = \angle SOB = 75^\circ$ (alt. int. is)
 $\therefore \angle QOS = \angle QOB + \angle SOB$
 $= 35^\circ + 75^\circ$
 $= 110^\circ$



10. The measure of each interior angle of regular hexagon is
 (A) 100°
 (C) 45°

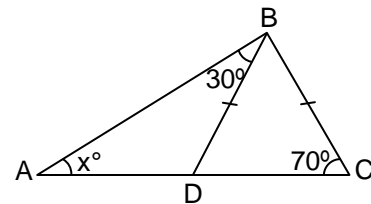
(B) 120°
 (D) 150°

10. B

Sol. Each interior angle $= \frac{(n-2) \times 180}{n}$
 \therefore Each angle $= \frac{(6-2) \times 180}{6}$
 $= 4 \times 30^\circ = 120^\circ$

11. In the given diagram, ADC is a straight line and BCD is an isosceles triangle. The value of x is
 (A) 20°
 (C) 40°

(B) 30°
 (D) 50°



11. **C**
 Sol. Since $\triangle BDC$ is isosceles \triangle
 $\therefore BD = BC$

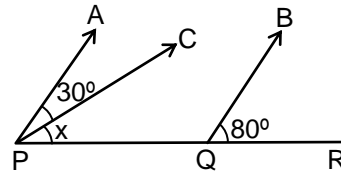
$\Rightarrow \angle BDC = \angle BCD = 70^\circ$
 Now, $\angle BDC = x + 30^\circ$ (exterior \angle Property)
 $\therefore x = 70^\circ - 30^\circ$
 $= 40^\circ$

12. The number of edges of a triangular pyramid is
 (A) 3
 (C) 6

(B) 4
 (D) 8

12. C
Sol. The number of edges of a triangular pyramid is 6.

13. In the given figure PQR is a straight line and $AP \parallel BQ$. The value of x is
(A) 70° (B) 80°
(C) 100° (D) 50°



13. D
Sol. Since $AP \parallel BQ$
 $\therefore \angle APQ = \angle BQR$

$$\text{i.e. } 30 + x = 80^\circ$$

$$\Rightarrow x = 50^\circ$$

14. Three cubes each of side 5 cm are joined end to end. Find the surface area of the resulting cuboid.
(A) 340 cm^2 (B) 350 cm^2
(C) 330 cm^2 (D) 320 cm^2

14. B
Sol. $l = 5 \text{ cm} + 5 \text{ cm} + 5 \text{ cm} = 15 \text{ cm}$
 $b = 5 \text{ cm}$
 $h = 5 \text{ cm}$
 \therefore Surface area of cuboid
 $= 2(lb + bh + lh)$
 $= 2(75 + 25 + 75) = 2 \times 175 = 350 \text{ cm}^2$

15. An angle is 45° less than two times of its supplement. Then the greater angle is
(A) 75° (B) 100°
(C) 120° (D) 105°

15. D
Sol. Let 1st angle = x
 \therefore 2nd angle = $180^\circ - x$
 $\therefore 180 - x = 2x - 45$
 $\Rightarrow 3x = 225^\circ$
 $\Rightarrow x = 75^\circ$
 \therefore greater $\angle = 105^\circ$

16. The curved surface area of a right circular cylinder of height 14 cm is 88 cm^2 . Find the diameter of the base of the cylinder.
(A) 4 cm (B) 5 cm
(C) 2 cm (D) 8 cm

16. C
Sol. $2\pi rh = 88 \Rightarrow 2\pi \times r \times 14 = 88$
 $r = \frac{88}{2\pi \times 14} = \frac{88}{2 \times \frac{22}{7} \times 14} = 1 \text{ cm}$
 $\therefore d = 2r = 2 \times 1 = 2 \text{ cm}$

17. Thrice of a number when increased by 6 gives 24, then the number is
 (A) 6 (B) 7
 (C) 8 (D) 11

17. A
 Sol. Let number = x
 $\therefore 3x + 6 = 24$
 $\Rightarrow 3x = 18$
 $\Rightarrow x = 6$

18. If $\frac{4}{5}$ of a number exceeds its $\frac{2}{3}$ by 8, the number is
 (A) 30 (B) 45
 (C) 90 (D) 60

18. D
 Sol. Let number = x
 $\therefore \frac{4}{5}x - \frac{2}{3}x = 8$
 $\Rightarrow \frac{12x - 10x}{15} = 8$
 $\Rightarrow x = \frac{8 \times 15}{2} = 60$

19. $8 - [28 \div \{34 - (36 - 18 \div 9 \times 8)\}] = ?$
 (A) 6 (B) $6\frac{4}{9}$
 (C) 25 (D) None of these

19. A
 Sol. $8 - [28 \div \{34 - (36 - 18 \div 9 \times 8)\}]$
 $= 8 - [28 \div \{34 - (36 - 2 \times 8)\}]$
 $= 8 - [28 \div \{34 - 20\}]$
 $= 8 - 2$
 $= 6$

20. Additive identity of a number is
 (A) 0 (B) 1
 (C) -1 (D) None of these

20. A
 Sol. Additive identity is 0.

21. Add $5m - 7n$, $3n - 4m + 2$, $2m - 3mn - 5$
 (A) $5m - 2n - 3mn + 5$ (B) $7m + 2n - 3mn + 3$
 (C) $3m - 4n - 3mn - 3$ (D) $3m + 5n + 5mn - 7$

21. C

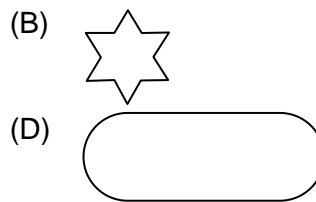
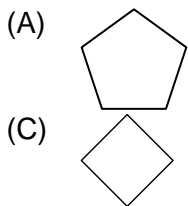
Sol. $5m - 7n$
 $-4m + 3n + 2$
 $2m \quad -5 - 3mn$

$3m - 4n - 3 - 3mn$
 or $3m - 4n - 3mn - 3$

22. At 3 O'clock, the angle formed between the hands of a clock is
 (A) Obtuse angle (B) Right angle
 (C) Straight angle (D) Acute angle

22. **B**
 Sol. At 3 O'clock, the angle formed between the hands of a clock is right angle

23. Which of the following figure is not a polygon?



23. **D**
 Sol. Polygon is formed with the help of line segments

24. An angle is equal to five times its complementary then the measure of the angle is
 (A) 75° (B) 45°
 (C) 60° (D) 90°

24. **A**
 Sol. Let angle be x
 \therefore Complement angle be $90 - x$
 $\therefore x = 5(90 - x)$
 $\Rightarrow x = 450 - 5x$
 $\Rightarrow 6x = 450$
 $\Rightarrow x = \frac{450}{6} = 75^\circ$

25. If perimeter of an equilateral triangle is 21 cm, then length of its side is
 (A) 6 cm (B) 7 cm
 (C) 3 cm (D) 12 cm

25. **B**
 Sol. Perimeter of equilateral triangle = $3 \times \text{side}$
 $\therefore 3 \times \text{side} = 21$
 $\Rightarrow \text{Side} = 7 \text{ cm}$

26. If $x = 2$, $y = 3$ and $z = -1$ find the value of $x^2 + yz + x^2yz + y^2z$
 (A) 20 (B) -20
 (C) 18 (D) -18

26. **B**

Sol. $x^2 + yz + x^2yz + y^2z$
 $= (2)^2 + 3 \times (-1) + 2^2 \times 3 \times (-1) + 3^2 \times (-1)$
 $= 4 + (-3) + 4 \times (-3) + 9 \times (-1)$
 $= 4 - 3 - 12 - 9$
 $= -20$

27. The expression $3xy - y^2 + 3y^2z + 79z$ is a
 (A) monomial (B) binomial
 (C) trinomial (D) polynomial

27. D

Sol. The expression $3xy - y^2 + 3y^2z + 79z$ is a polynomial

28. Coefficient of yz in $-12xyz^2$ is equal to
 (A) $-12x$ (B) $-12x^2$
 (C) $-12xz$ (D) $-12xz^2$

28. C

Sol. Coefficient of yz in $-12xyz^2$ is equal to $-12xz$

29. Write an expression using the terms $7x, -2x^2, -5x^3 - 3$
 (A) $7x + 2x^2 - 5x^3 - 3$ (B) $7x - 2x^2 + 5x^3 - 3$
 (C) $7x - 2x^2 - 5x^3 - 3$ (D) $7x - 2x^2 - 5x^3 + 3$

29. C

Sol. $7x - 2x^2 - 5x^3 - 3$

30. If cost of 1 pen is 44 units and cost of 1 pencil is $\frac{7}{11}$ of cost of 1 pen, then find the total cost of 6 pens and 5 pencils.
 (A) 404 units (B) 410 units
 (C) 408 units (D) 400 units

30. A

Sol. Cost of 1 pen = 44 units
 Cost of 1 pencil = $\frac{7}{11} \times 44 = 28$ units
 \therefore Cost of 6 pens and 5 pencil = $6 \times 44 + 5 \times 28$
 $= 264 + 140$
 $= 404$ units

31. If $(2n + 5) = 3(3n - 10)$, then the value of n is equal to:
 (A) 5 (B) 3
 (C) $\frac{2}{5}$ (D) $\frac{2}{3}$

31. A

Sol. $2n + 5 = 3(3n - 10)$

$$\begin{aligned} \Rightarrow 2n + 5 &= 9n - 30 \\ \Rightarrow 9n - 2n &= 5 + 30 \\ \Rightarrow n &= \frac{35}{7} = 5 \end{aligned}$$

32. If $x = -2$ and $x^2 + 3xy = -5$, then find y

- (A) $\frac{3}{2}$ (B) $\frac{2}{3}$
 (C) $-\frac{3}{2}$ (D) -2

32. A

Sol. $x^2 + 3xy = -5$

$$\begin{aligned} \Rightarrow (-2)^2 + 3 \times (-2) \times y &= -5 \\ \Rightarrow 4 - 6y &= -5 \\ \Rightarrow 6y &= 4 + 5 = 9 \\ \Rightarrow y &= \frac{9}{6} = \frac{3}{2} \end{aligned}$$

33. Coefficient of x in $-9xy^2z$ is

- (A) $9yz$ (B) $-9yz$
 (C) $9y^2z$ (D) $-9y^2z$

33. D

Sol. Coefficient of x in $-9xy^2z$ is $-9y^2z$

34. In $\triangle ABC$, $\angle A - \angle B = 20^\circ$, $\angle A - \angle C = 70^\circ$, then find all angles respectively.

- (A) $\angle A = 70^\circ$, $\angle B = 90^\circ$, $\angle C = 20^\circ$ (B) $\angle A = 20^\circ$, $\angle B = 90^\circ$, $\angle C = 70^\circ$
 (C) $\angle A = 90^\circ$, $\angle B = 70^\circ$, $\angle C = 20^\circ$ (D) $\angle A = 90^\circ$, $\angle B = 20^\circ$, $\angle C = 70^\circ$

34. C

Sol.

$$\angle A - \angle B = 20^\circ$$

$$\angle A - \angle C = 70^\circ$$

$$\& \angle A - \angle A = 0^\circ$$

$$3\angle A - (\angle A + \angle B + \angle C) = 90^\circ$$

$$\Rightarrow 3\angle A = 90^\circ + 180^\circ \quad (\because \angle A + \angle B + \angle C = 180^\circ)$$

$$\Rightarrow \angle A = \frac{270}{3} = 90^\circ$$

$$\therefore \angle B = 70^\circ \text{ and } \angle C = 20^\circ$$

35. Two angles are called adjacent if they have

- (A) same vertex
 (B) common arm
 (C) uncommon arm are on either side of common arm
 (D) All of these

35. D
Sol. All of these

36. An angle is equal to one-third of its supplement. Find its measure.
(A) 30° (B) 60°
(C) 50° (D) 45°

36. D
Sol. Let angle = x
 \therefore Supplementary angles = $180 - x$
 $\therefore x = \frac{1}{3}(180 - x)$
 $\Rightarrow 3x + x = 180^\circ$
 $\therefore x = 45^\circ$

37. Which of the following measures (in cm) form triangle?
(A) 6, 9, 15 (B) 6, 4, 2
(C) 9, 12, 15 (D) 1, 2, 3

37. C
Sol. $6 + 9 = 15$
 $4 + 2 = 6$
 $1 + 2 = 3$
Only option C satisfies

38. Find the unit digit in the product $4139 \times 4139 \times 4139 \times 4139 \times \dots$ (25 times)
(A) 1 (B) 3
(C) 7 (D) 9

38. D
Sol. We consider unit digit in the product of unit digits of the given numbers
 \therefore unit given in $4139 \times 4139 \times 4139 \times \dots$ (25 times)
= unit digit of $(9 \times 9 \times 9 \times 9 \times \dots 25 \text{ times})$
We observe
 $9 \times 9 = 81$ (one is the unit digit)
 $9 \times 9 \times 9 = 81 \times 9 = 9$ is the unit digit
 $9 \times 9 \times 9 \times 9 = 1$ is the unit digit
 $9 \times 9 \times 9 \times 9 \times 9 = 9$ is the unit digit
So, we conclude when 9 is multiplied even number of times unit digit is 1. When 9 is multiplied odd number of times unit digit is 9.
By multiplying 9 for 25 times (odd number of times) we get unit digit as 9.

39. Roman numeral for 769 is
(A) DCCXLIX (B) DXCVI
(C) DCCLXIX (D) DCCCL

39. C
Sol. $769 = 500 + 100 + 100 + 50 + 10 + (10 - 1)$
= DCCLXIX

40. Which of the following numbers is divisible by 11?
(A) 235698 (B) 5697451
(C) 4263556 (D) 13231

40. C

Sol. Sum of even place digits = $5 + 3 + 2 = 10$
 Sum of odd place digits = $6 + 5 + 6 + 4 = 21$
 Difference = $21 - 10 = 11$
 which is divisible by 11.

41. The LCM of two numbers is 112 and their HCF is 2. If one of the numbers is 14, then find the other number

- (A) 18 (B) 14
 (C) 16 (D) none of these

41. C

Sol. Product of 2 numbers = HCF \times LCM

$$\therefore \text{other number} = \frac{2 \times 112}{14}$$

$$= 16$$

42. The sum of present ages of 5 brothers is 120 years. How many years ago the sum was 80 years.

- (A) 6 years (B) 7 years
 (C) 8 years (D) 9 years

42. C

Sol. Number of years = $\frac{120 - 80}{5} = \frac{40}{5} = 8$

43. Find the HCF of first 100 natural numbers.

- (A) 2 (B) 100
 (C) 1 (D) none of these

43. C

Sol. HCF of first 100 natural number is 1.

44. What should be the smallest number added to 45 so that the result becomes a three digit number?

- (A) 45 (B) 55
 (C) 65 (D) 75

44. B

Sol. Smallest three digit number = 100

$$100 - 45 = 55$$

\therefore 55 is the smallest number that must be added to 45 to make the result a three digit number.

45. If n is natural number, then $n(n+1)$ is always divisible by

- (A) 1 (B) 3
 (C) 2 (D) 4

45. C

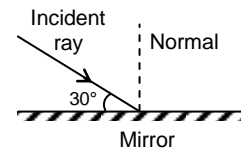
Sol. For any n , $n(n+1)$ is always a even number.

So, always divisible by 2.

SECTION – II PHYSICS

1. A ray of light falls on a mirror at 30° with the mirror surface. What is the angle of incidence
 (A) 30° (B) 60°
 (C) 15° (D) 150°

1. B
 Angle of incidence is angle between incident ray and normal = $90^\circ - 30^\circ = 60^\circ$.



2. The object which does not allow light to pass through it is called
 (A) transparent (B) opaque
 (C) translucent (D) none of these

2. B
 Sol. Opaque object does not allow light to pass through it.

3. Which of the following letters will be seen without any change in a plane mirror?
 (A) S (B) T
 (C) L (D) P

3. B
 Sol. T, because of symmetry.

4. Light shows
 (A) Curvilinear propagation (B) Rectilinear propagation
 (C) Random propagation (D) None of these

4. B
 Sol. Light travels in straight line.

5. The partially lit portion of the shadow on the periphery of the totally dark portion is called:
 (A) Umbra (B) Penumbra
 (C) Lighter region (D) None of these

5. B
 Sol. Partially lit portion of the shadow on the periphery of umbra is called Penumbra.

6. Which of the following are natural sources of light?
 (A) Sun (B) Stars
 (C) Fire flies (D) All of these

6. D
 Sol. Sun, stars and fire flies are the natural source of light.

7. Identify the opaque object from the following
 (A) Glass (B) air
 (C) Iron (D) water

7. C
 Sol. Iron is an opaque object.

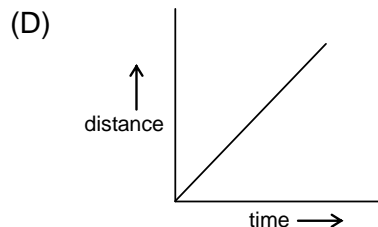
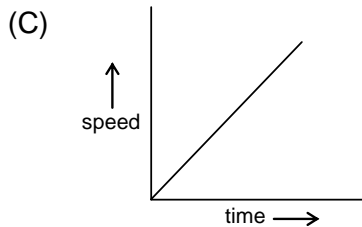
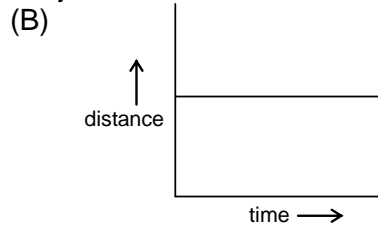
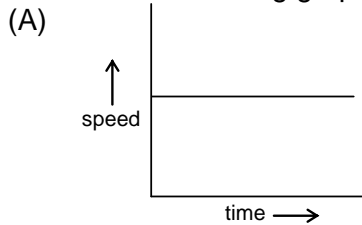
8. Image which can be obtained on screen is called :
 (A) Real image (B) Virtual image
 (C) Erect image (D) All of these

8. A
 Sol. Image which can be taken on the screen is real image.

9. The image formed by the pinhole camera is:
 (A) virtual and erect (B) real and inverted
 (C) virtual and inverted (D) real and erect

9. B
 Sol. The image formed by a pinhole camera is real and inverted.

10. Which of the following graph shows that object is at rest?

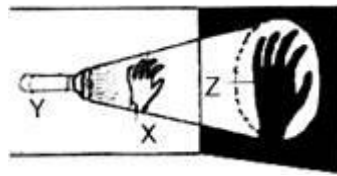


10. B
 Sol. The slope of distance-time graph gives speed of the body.

11. Which of the following statements about shadows is not correct?
 (A) The shadow of an opaque object is formed on the screen if object comes in path of the light.
 (B) The position of the shadow changes with the position of the light source.
 (C) The colour of shadow of an object is always black.
 (D) A transparent body produces a sharp shadow.

11. D
 Sol. A transparent body does not produce a sharp shadow. Sharp shadows are formed by opaque bodies.

12. Observe the figure given below and identify X, Y and Z.



(A)

X	Y	Z
Opaque body	Light source	Shadow

(B)

X	Y	Z
Light source	Opaque body	Light source

(C)

X	Y	Z
Light source	Opaque body	Shadow

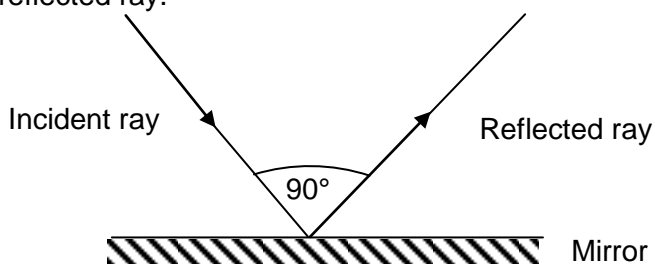
(D)

X	Y	Z
Opaque body	Shadow	Light source

12. A

Sol. X is an opaque body. Y (the torch) is a light source. Z is the shadow.

13. From the given ray diagram find angle of reflection if incident ray is perpendicular to the reflected ray.



- (A) 90°
- (C) 30°

- (B) 45°
- (D) 40°

13. B

Sol. As, angle of incidence = angle of reflection. So,

$$\angle i = \angle r = \frac{90^\circ}{2} = 45^\circ$$

14. Light travels with highest speed in

- (A) Plastics
- (B) Water
- (C) Vacuum
- (D) Glass

14. C

Sol. Speed of light is maximum in vacuum, and its approximate value is 3×10^8 m/s.

15. Which of the following shows periodic motion?
(A) motion of hands of clock (B) rotation of the earth
(C) revolution of the earth (D) all of these

15. D

Sol. The motion, which repeats after a fixed time interval is called periodic motion.

**SECTION – III
CHEMISTRY**

1. Which of the following statements is not correct?
(A) Separation of a mixture is carried out to separate two useful substances.
(B) Separation of a mixture is carried out to separate harmful substances from useful one.
(C) Separation of a mixture is carried out to purify a substance.
(D) Separation of a mixture is carried out to separate two non-useful substances.
1. D
Sol. Separation of a mixture is carried out to separate two useful components from a mixture or to purify a substance or to separate a useful substance from non-useful impurities.
2. The process of separating the insoluble and suspended solid particles of different sizes from a liquid with the help of a porous separator is known as
(A) filtration (B) decantation
(C) evaporation (D) sedimentation
2. A
Sol. During the process of filtration insoluble particles are left on the filter paper as residue and the filtrate comes down from filter paper in the form of solution.
3. The process of settling down of solid particles in a liquid is
(A) decantation (B) sublimation
(C) sedimentation (D) filtration
3. C
Sol. Sedimentation is the process of settling down the solid particles in a liquid.
4. Which of the following is the property due to which two components of a mixture can be separated by distillation?
(A) Difference in densities (B) Difference in boiling points
(C) Difference in colour (D) Difference in solubilities
4. B
Sol. There should be a difference of at least 20–25°C in their boiling points.
5. Which of the following is not correctly matches?
(A) Mixture obtained by dissolving a solute in a solvent – Solution
(B) A substance having same composition throughout – Homogeneous
(C) Solid particles having fixed geometry and shape – Soluble solids
(D) A solution which cannot dissolve any more solute – Saturated
5. C
Sol. Solid particles having fixed geometry and shape are called crystals.
6. It is difficult to dissolve sugar in ice cold water because
(A) sugar is insoluble in ice
(B) solubility of solids decreases with decrease in temperature
(C) ice floats on water and sugar settles down
(D) sugar is heavier than cold water hence, remains insoluble
6. B
Sol. Solubility of solids decreases with decrease in temperature, hence, it is difficult to dissolve sugar in cold water.

7. Sedimentation, decantation, loading and filtration are the process which can be used to separate a mixture of
(A) two solids of different sizes
(B) two liquids which are miscible
(C) solid and liquid in which solid is insoluble in liquid
(D) solid and liquid in which solid is soluble in liquid
7. C
Sol. A mixture with an insoluble solid in a liquid can be separated by sedimentation, decantation, loading and filtration.
8. Photosynthesis by green plants is a
(A) physical change (B) chemical change
(C) reversible change (D) undesirable change
8. B
Sol. During photosynthesis carbon dioxide and water are converted into food.
9. Formation of steam from water on boiling is
(A) reversible change (B) irreversible change
(C) chemical change (D) undesirable change
9. A
Sol. Formation of steam from boiling of water is a physical change since steam can be condensed back to give water.
10. When nitrogen reacts with hydrogen under high pressure and temperature, it forms ammonia which is also a gas. This is an example of
(A) chemical change (B) physical change
(C) slow change (D) temperature change
10. A
Sol. Nitrogen reacts with hydrogen to give a new product ammonia.
11. Making of ornaments from gold is a physical, reversible process because
(A) only the shape of the gold changes
(B) gold can be obtained again by melting the ornament
(C) only the appearance of the gold changes
(D) all of these.
11. D
Sol. Gold can be moulded into any shape and it can be obtained back on melting.
12. Burning of petrol is an example of
(A) physical endothermic reaction (B) physical exothermic reaction
(C) chemical exothermic reaction (D) chemical endothermic reaction
12. C
Sol. Burning of petrol is a chemical reaction accompanied by release of energy.
13. Two changes are stated below:
(i) a piece of iron becomes red when heated strongly.
(ii) a piece of paper gives bright yellow flame when heated strongly.
Which of the above changes is a physical change?
(A) (i) only (B) (ii) only
(C) Both (i) and (ii) (D) Neither (i) nor (ii)

13. A
Sol. When a piece of paper is heated it burns to give yellow flame which is a chemical change. Iron becomes red hot on heating which is a physical change only.
14. Which of the following statements is true?
(i) Rusting of iron is a physical change.
(ii) Evaporation of petrol is a physical change
(iii) Bending of a wire is only a change in its shape
- (A) (i) and (ii) (B) (ii) and (iii)
(C) (i) and (iii) (D) (i), (ii) and (iii)
14. B
Sol. Rusting of iron is a chemical change.
15. Glowing of an electric bulb involves
(A) change of colour (B) change in temperature
(C) physical and reversible change (D) all of these
15. D
Sol. When the bulb glows, there is a change in colour, it gets heated up and can be switched off.

SECTION – IV BIOLOGY

1. Which pair of animals form a pair of omnivores?
 (A) Cockroach and human beings (B) Cockroach and goat
 (C) Eagle and goat (D) Goat and human beings

1. **A**
 Sol. **Cockroach and human beings** form a pair of omnivores.

2. Reproductive part of plant:–
 (A) Stem (B) Plumule
 (C) Root (D) Flower

2. **D**
 Sol. **Flower** is the Reproductive part of a plant.

3. Ginger is underground stem. It is distinguished from roots because:
 (A) it lacks chlorophyll (B) has xylem
 (C) stores food (D) has nodes

3. **D**
 Sol. Ginger is underground stem. It is distinguished from roots because **has nodes**.

4. Water comes out from leaf in form of water vapours by process called _____.
 (A) Photosynthesis (B) Respiration
 (C) Transpiration (D) None

4. **C**
 Sol. Water comes out from leaf in form of water vapours by process called **transpiration**.

5. Phyllotaxy is:
 (A) Arrangement of leaves on stems (B) Patterns of veins on leaf lamina
 (C) Arrangement of petals around flower (D) shape of leaf

5. **A**
 Sol. Phyllotaxy is **arrangement of leaves on stems**.

6. Calyx is related to:–
 (A) Pollen grains (B) Petals
 (C) Petals and Sepals (D) Sepals

6. **D**
 Sol. Calyx is related to **sepals**.

7. Egg, meat, and paneer are
 (A) Plant product (B) animal products
 (C) Bacteria product (D) Both plant and animal product

7. **B**
 Sol. Egg, meat, and paneer are **animal product**.

8. What are the parameters on which Herbs can be differentiated with shrubs?
 (A) Height (B) Woody structures
 (C) both (A) & (B) (D) Life span and nutrition

8. **C**
Sol. **Height & woody structures** can be the parameters on which Herbs can be differentiated with shrubs.
9. Select the odd set:
(A) Plant, Vegetable, Butter milk (B) Cow, Milk, Butter
(C) Hen, Meat, Egg (D) Goat, Milk, Meat
9. **A**
Sol. Plant and vegetables is plant product whereas Butter milk is animal product.
10. Which of the following is not a part of female part of plant?
(A) Stigma (B) Anther
(C) Style (D) Ovum
10. **B**
Sol. **The anther** is the male reproductive organ in seed plants. Its main function is **to produce and disperse pollen**.
11. Which of the following is correct characteristics of Xerophytes (Dry/Desert):–
(1) Long penetrative roots (2) Succulent leaves
(3) Red colour leaves (4) Stomata exposed
(A) All (B) 1, 2 & 3
(C) 1 & 2 (D) 3 & 4
(E) only 1
11. **C**
Sol. Long penetrative roots and Succulent leaves are characteristics of Xerophytes.
12. Find the odd out from the following:–
Cuscuta, Croton plant, Banyan tree, Rose
(A) Cuscuta (B) Banyan
(C) Croton (D) Rose
12. **A**
Sol. Cuscuta commonly known as dodder or amarbel, is **a genus of over 201 species of yellow, orange, or red (rarely green) parasitic plants**.
13. Root of mangroves is known as:–
(A) Fibrous (B) Floating
(C) Tuberos (D) Respiratory
13. **D**
Sol. Mangrove species have specialized above ground roots called **breathing roots or pneumatophores**.
14. What about perennials are correct?
(1) Life cycle of more than 2 seasons
(2) Die after bearing fruits once
(3) Mango and coconut are perennials
(A) 1, 2 & 3 (B) 1, 2
(C) 2 only (D) 1, 3

14. **D**

Sol. Perennials are plants that survive for a more than two years. **Examples of perennials are mango, coconut, apple and bougainvillea.** It is interesting to see that during specific seasons perennials produce flowers and fruits.

15. Match the following:

Clolumn - I		Clolumn - II	
(a)	<i>Cuscuta</i>	(i)	Holozoic nutrition
(b)	Fungus	(ii)	Parasitic nutrition
(c)	Human	(iii)	Autotrophic nutrition
(d)	Green Plants	(iv)	Saprophytic nutrition

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

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

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

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

15. **A**

Sol. *Cuscuta* is parasite. Fungus feeds on dead decaying organism follows the saprophytic mode of nutrition. Green plants make their own food so they are autotrophic in nature and human depend on other organism for their food and are holozoic in nature.