

# **FIITJEE INTERNAL TEST**

**Batch: NWCMLG425A1  
PHASE TEST – III  
QP CODE: 100865**

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.

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**Name of the Candidate** : .....

**Enrollment Number** : .....

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**SECTION – I  
MATHEMATICS**

1. What fraction of an hour is a second?  
(A)  $\frac{1}{60}$  (B)  $\frac{1}{36}$   
(C)  $\frac{1}{360}$  (D)  $\frac{1}{3600}$
2. 7.5 more than half of 75 is \_\_\_\_\_.  
(A) 37.5 (B) 45.5  
(C) 45 (D) 67.5
3. If  $A : B = 8 : 15$ ,  $B : C = 5 : 8$  and  $C : D = 4 : 5$ , then  $A : D$  is \_\_\_\_\_.  
(A) 2 : 7 (B) 4 : 15  
(C) 8 : 15 (D) 15 : 4
4. If  $\frac{5}{7}$  of  $\frac{4}{15}$  of a number is 8 more than  $\frac{2}{5}$  of  $\frac{4}{9}$  of the same number, then half of that number is \_\_\_\_\_.  
(A) 105 (B) 315  
(C) 210 (D) 630
5. The product of two decimals is 2864.25. If one of them is 6.7, then the other decimal is \_\_\_\_\_.  
(A) 427.5 (B) 327.5  
(C) 472.5 (D) 452.7
6. The ratio of 5.2 km to 1.3 kg is \_\_\_\_\_.  
(A) 4 : 1 (B) 1 : 4  
(C) 2 : 5 (D) ratio cannot be determined
7. Which of the following fraction is greatest?  
(A)  $\frac{3}{4}$  (B)  $\frac{4}{5}$   
(C)  $\frac{5}{6}$  (D)  $\frac{6}{7}$
8. If  $u = 3x^2 - 2xy + y^2$  and  $v = 2x^2 + 5xy - 7y^2$  then  $u - v = ?$   
(A)  $x^2 + 3xy - 6y^2$  (B)  $x^2 + 3xy + 8y^2$   
(C)  $x^2 - 3xy + 8y^2$  (D)  $x^2 - 7xy + 8y^2$

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*Space For Rough Work*

9. If 2,  $x + 3$ , 5 and  $x + 12$  are in proportion (in given order) then  $x =$  \_\_\_\_\_.  
(A) 5 (B) 4  
(C) 3 (D) 2
10. Which of the following has fractions in ascending order?  
(A)  $\frac{1}{3} < \frac{2}{5} < \frac{4}{7} < \frac{3}{5} < \frac{5}{6} < \frac{6}{7}$  (B)  $\frac{1}{3} < \frac{2}{5} < \frac{3}{5} < \frac{4}{7} < \frac{5}{6} < \frac{6}{7}$   
(C)  $\frac{1}{3} < \frac{2}{5} < \frac{3}{5} < \frac{5}{6} < \frac{4}{7} < \frac{6}{7}$  (D)  $\frac{2}{5} < \frac{3}{5} < \frac{1}{3} < \frac{4}{7} < \frac{5}{6} < \frac{6}{7}$
11. The unit digit in the product  $468 \times 507 \times 369 \times 981$  is \_\_\_\_\_.  
(A) 2 (B) 3  
(C) 4 (D) 8
12. If 64 is divided into three parts proportional to 2, 4 and 6, then smallest part is \_\_\_\_\_.  
(A)  $5\frac{1}{3}$  (B) 11  
(C)  $10\frac{2}{3}$  (D) 5
13. By how much  $\frac{-5}{12}$  is more than  $\frac{-3}{4}$ ?  
(A)  $\frac{1}{3}$  (B)  $\frac{2}{3}$   
(C) 1 (D)  $\frac{4}{3}$
14.  $1 \div \frac{5}{7}$  of  $6\frac{3}{10} - \frac{2}{9} =$  \_\_\_\_\_.  
(A) 0 (B) 1  
(C) 2 (D)  $\frac{1}{2}$
15. A machine prints 1500 news papers in 45 minutes. How many papers will be printed in 2 hours?  
(A) 3000 (B) 4000  
(C) 2000 (D) 1000

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16.  $\frac{3}{8}$  is what part of  $\frac{1}{12}$  ?
- (A)  $\frac{3}{7}$  (B)  $\frac{9}{2}$   
(C)  $\frac{1}{32}$  (D)  $\frac{4}{3}$
17. Coefficient of  $x^2y^2$  in  $-25x^2y^2z$  is \_\_\_\_\_.
- (A)  $-25z^2$  (B)  $-25z$   
(C)  $25xyz$  (D)  $-25$
18. What is the ratio of prime numbers and composite numbers in first ten counting numbers?
- (A) 2 : 5 (B) 4 : 5  
(C) 3 : 5 (D) 6 : 5
19. By what number should  $1\frac{1}{2}$  be divided to get  $\frac{2}{3}$  ?
- (A)  $2\frac{2}{3}$  (B)  $1\frac{2}{3}$   
(C)  $\frac{4}{9}$  (D)  $2\frac{1}{4}$
20. If  $\frac{0.0007}{x} = 0.01$ , then  $x = ?$
- (A) 0.7 (B) 0.07  
(C) 0.007 (D) 7
21. If  $x : y = 2 : 3$  and  $2 : x = 1 : 2$ , then  $y = ?$
- (A)  $\frac{1}{3}$  (B)  $\frac{3}{2}$   
(C) 6 (D)  $\frac{1}{2}$
22. Simplify:  $\frac{1}{3 - \frac{1}{2 - \frac{1}{5/7}}}$ .
- (A)  $\frac{2}{3}$  (B)  $\frac{3}{5}$   
(C)  $\frac{3}{4}$  (D)  $\frac{2}{5}$

Space For Rough Work

23. Which statement is false?  
(A)  $4.69 > 4.6$  (B)  $1061 > 10.601$   
(C)  $1.09 < 1.089$  (D)  $921.6 > 92.1601$
24. If  $15 : 35 :: 234 : x$ , then  $x$  is \_\_\_\_\_.  
(A) 346 (B) 546  
(C) 746 (D) 946
25. If fractions  $\frac{5}{8}, \frac{2}{3}, \frac{7}{11}$  and  $\frac{1}{2}$  are represented on number line then which fraction will be in rightmost position?  
(A)  $\frac{5}{8}$  (B)  $\frac{2}{3}$   
(C)  $\frac{7}{11}$  (D)  $\frac{1}{2}$
26. The value of  $(2 + 0.2 + 0.02 + 0.002 + 0.0002)$  is \_\_\_\_\_.  
(A) 2.0022 (B) 2.0002  
(C) 2.2222 (D) 2.0222
27. If 18,  $x$  and 8 are in continued proportion then  $x =$  \_\_\_\_\_.  
(A) 8 (B) 10  
(C) 12 (D) 14
28. The simplest form of  $\frac{720}{864}$  is \_\_\_\_\_.  
(A)  $\frac{3}{5}$  (B)  $\frac{5}{6}$   
(C)  $\frac{5}{7}$  (D)  $\frac{2}{5}$
29. The sum of place values of two 5's in the number 1050.051 is \_\_\_\_\_.  
(A) 55 (B) 10  
(C)  $50\frac{1}{2}$  (D)  $50\frac{1}{20}$
30. If  $3A = 4B = 5C$ , then  $A : B : C$  is \_\_\_\_\_.  
(A) 20:10:17 (B) 20:15:14  
(C) 20:15:12 (D) 20:15:16

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Space For Rough Work

31. Which improper fraction is not equivalent to  $3\frac{1}{2}$  ?  
 (A)  $\frac{7}{2}$  (B)  $\frac{21}{6}$   
 (C)  $\frac{18}{4}$  (D)  $\frac{35}{10}$
32. Simplify:  $\frac{1}{4} + \left[ \frac{1}{4} - \left\{ \frac{1}{4} + \left( \frac{1}{4} - \frac{1}{4} - \frac{1}{4} \right) \right\} \right]$   
 (A)  $\frac{1}{2}$  (B)  $\frac{1}{4}$   
 (C) 1 (D) 0
33. A man purchased 125 mangoes for ₹165. The cost of one mango is \_\_\_\_\_.  
 (A) ₹1.32 (B) ₹1.22  
 (C) ₹1.122 (D) ₹1.02
34. In a fraction, twice the numerator is 2 more than the denominator. If 3 is added to the numerator and to the denominator, the new fraction is  $\frac{2}{3}$ . The numerator of original fraction?  
 (A) 5 (B) 7  
 (C) 9 (D) 12
35. If  $219 \times 17 = 3723$  then  $1.7 \times 21.9 = ?$   
 (A) 0.3723 (B) 3.723  
 (C) 37.23 (D) 372.3
36. If  $(a+b):(b+c):(c+a) = 6:7:8$  and  $(a+b+c) = 14$ , then the value of c is \_\_\_\_\_.  
 (A) 6 (B) 7  
 (C) 8 (D) 14
37. Simplify:  $1 + 1 \div \left\{ 1 + 1 \div \left( 1 + \frac{1}{3} \right) \right\}$   
 (A)  $\frac{10}{7}$  (B)  $\frac{11}{7}$   
 (C)  $\frac{12}{7}$  (D)  $\frac{13}{7}$

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38. The number 42 in Roman numeral can be written as \_\_\_\_\_.  
(A) LXI (B) XLII  
(C) XXXXII (D) XL
39. The ratio between each exterior and corresponding interior angle of a regular octagon is \_\_\_\_.  
(A) 3 : 1 (B) 1 : 3  
(C) 2 : 1 (D) 1 : 2
40. If  $x = (-23) + 22 + (-23) + 22 + \dots$  up to 40 terms and  $y = 11 + (-10) + 11 + (-10) \dots$  up to 20 terms then  $y - x$  is \_\_\_\_\_.  
(A) 10 (B) 30  
(C) 20 (D) 40
41. If the sum of all interior angles of a regular polygon is  $1260^\circ$ , then the measure of each exterior angle is \_\_\_\_\_.  
(A)  $20^\circ$  (B)  $30^\circ$   
(C)  $40^\circ$  (D)  $50^\circ$
42. Find the number which when added to the terms of the ratio 11 : 23 makes it equal to the ratio 4 : 7.  
(A) 3 (B) 5  
(C) 4 (D) 6
43. Simplify  $7\frac{1}{3} \times 5\frac{1}{4} - 8\frac{1}{7} \times 2\frac{4}{19} =$  \_\_\_\_\_.  
(A)  $20\frac{1}{5}$  (B)  $20\frac{1}{3}$   
(C)  $20\frac{1}{4}$  (D)  $20\frac{1}{2}$
44. Find the value of x in the following expression  $0.3x + 0.4 = 0.28x + 1.16$   
(A) 28 (B) 42  
(C) 76 (D) 38
45. The mean proportional between 3 and 75 is \_\_\_\_\_.  
(A) 5 (B) 15  
(C) 25 (D) 45

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**SECTION – II  
PHYSICS**

1. Ramu is seeing his image in a plane mirror. Initially the distance between the mirror and his image is 5 m. If he moves 2 m towards the mirror then the distance between Ramu and his image will be  
(A) 3 m (B) 6 m  
(C) 7 m (D) 10 m
2. An instrument used to measure electric current is known as  
(A) Voltmeter (B) Ammeter  
(C) Potentiometer (D) None of these
3. Two objects having similar nature of charge  
(A) attract each other (B) repel each other  
(C) neither attract nor repel (D) none of these
4. Which of the following is used as an electrolyte in a dry cell?  
(A) Manganese dioxide (B) Ammonium chloride paste  
(C) Dilute sulphuric acid (D) None of these
5. A dry cell has  
(A) a carbon rod and a zinc rod (B) a zinc container and a carbon rod  
(C) a zinc container and an iron rod (D) an iron container and a zinc rod
6. Which of the following is not a vector quantity?  
(A) Time (B) Displacement  
(C) Velocity (D) Acceleration
7. A wire has resistance  $R$ . It is broken into two equal parts and these two parts are joined in parallel. The effective resistance is \_\_\_\_\_.  
(A)  $R/2$  (B)  $R/4$   
(C)  $2R$  (D)  $4R$
8. A car travels first half distance at a uniform speed of 40 km/h and next half distance at a uniform speed of 60 km/h. Its average speed for whole journey is:  
(A) 48 km/h (B) 55 km/h  
(C) 30 km/h (D) none of these

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*Space For Rough Work*



9. A current of 4.8 A is flowing in a conductor. The number of electrons moving through any cross section normal to direction of flow in one second is:  
(A)  $10^{19}$  (B)  $2 \times 10^{19}$   
(C)  $3 \times 10^{19}$  (D)  $7.68 \times 10^{20}$
10. Choose the correct statement.  
(I) A geyser converts electrical energy to heat.  
(II) Electricity helps us to reduce physical work and time consumption.  
(III) An electric bulb converts electrical energy to light energy.  
(A) Only (I) and (II) are correct. (B) Only (II) and (III) are correct.  
(C) Only (I) and (III) are correct. (D) (I), (II) and (III) are correct.
11. Two resistances of values  $40 \Omega$  each are connected in parallel to a cell of voltage 110 V. Calculate total current in the circuit.  
(A) 4 A (B) 4.5 A  
(C) 10 A (D) 5.5 A
12. If 5 A current flow through a fan under voltage 220 V. Calculate resistance of bulb?  
(A)  $55 \Omega$  (B)  $44 \Omega$   
(C)  $1100 \Omega$  (D)  $110 \Omega$
13. Which of the following statement is false?  
(A) Rubber is a bad conductor of electricity  
(B) In general, metals are good conductor of electricity  
(C) Our body is a bad conductor of electricity  
(D) The bulb glows only when current flows through the circuit
14. When an appliance is connected to a 12 V battery then 0.15 A current flows through it. What is the resistance of the appliance?  
(A)  $18 \Omega$  (B)  $1.8 \Omega$   
(C)  $80 \Omega$  (D)  $40 \Omega$
15. In an electrical circuit 15 C charge passes through a point in 10 sec. Calculate current in the circuit.  
(A) 15 A (B) 10 A  
(C) 1.5 A (D) 1 A

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*Space For Rough Work*

## SECTION – III CHEMISTRY

1. Which of the following is not a form of precipitation?  
(A) Hail (B) Snow  
(C) Rain (D) River
2. The substance used for disinfecting water is  
(A) U.V rays (B) Ozone  
(C) Chlorine (D) All of the above
3. Which of the following is not responsible for water shortage?  
(A) Rapid growth of industries (B) increasing population  
(C) heavy rainfall (D) mismanagement of water resources
4. World water day celebrated on  
(A) 22<sup>nd</sup> March (B) 24 March  
(C) 28<sup>th</sup> February (D) 1<sup>st</sup> March
5. What is the effect on the rate of evaporation if the humidity in the surroundings increased?  
(A) Increases (B) Decreases  
(C) Remains constant (D) First decreases then increases
6. The process in which water drops become bigger and fall as rain is  
(A) precipitation (B) condensation  
(C) infiltration (D) evaporation
7. Find the odd one out.  
(A) Cotton (B) Nylon  
(C) Jute (D) Wool
8. The source of water for a natural spring is  
(A) well (B) river  
(C) lake (D) ground water
9. Match the column:

Column - I		Column - II	
(1)	Evaporation	(p)	Release of energy
(2)	Fusion	(q)	Continuous process
(3)	Respiration	(r)	Surface phenomenon
(4)	Water cycle	(s)	Energy absorption

- (A) 1 – s, 2 – p, 3 – r, 4 – q  
(C) 1 – p, 2 – s, 3 – q, 4 – r

- (B) 1 – q, 2 – r, 3 – s, 4 – p  
(D) 1 – r, 2 – s, 3 – p, 4 – q

*Space For Rough Work*

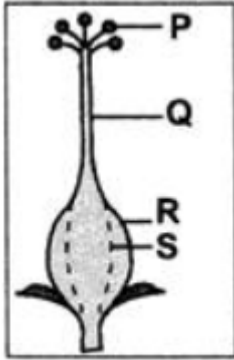
10. Which of the following sources of water is not used for drinking purpose due to dissolved salts present in them?  
(A) Rain water (B) Sea water  
(C) Spring water (D) River water
11. Which among the following is a poor conductor of electricity?  
(A) Saline water (B) Tap water  
(C) River water (D) Distilled water
12. The method that is used to separate water particles from clothes while drying in washing machine is  
(A) Filtration (B) Evaporation  
(C) Sedimentation (D) Centrifugation
13. What is the name of the insoluble substance which settles to the bottom of its container?  
(A) Solute (B) Sediment  
(C) Solvent (D) None of these
14. Which of the following is a pure substance?  
(A) Air (B) Water  
(C) Milk (D) None of these
15. Which of the following will allow water to seep easily?  
(A) Marble (B) Cement  
(C) Grass lawn (D) PVC Floor

*Space For Rough Work*

**SECTION – IV  
BIOLOGY**

1. Which of the following plant has edible stem?  
(A) Carrot (B) Radish  
(C) Potato (D) Cauliflower
2. Snail moves with the help of its –  
(A) shell (B) bone  
(C) Muscular foot (D) Whole body
3. Which bone protects the lower abdominal organs such as the urinary bladder, rectum and uterus?  
(A) Sternum (B) Pelvic bone  
(C) Spine (D) Skull
4. In which of the following animals exoskeleton is found?  
(A) Cockroaches (B) Snakes  
(C) Fishes (D) All the above
5. Which is the characteristic feature of the lamina of a leaf?  
(A) The main vein present on the mid rib of the leaf.  
(B) Broad expanded green part of the leaf.  
(C) Small leaves at the base of petioles.  
(D) Chloroplast which contains the chlorophyll pigment.
6. Out of twelve pairs of ribs \_\_\_\_ pairs are not joined to the breastbone.  
(A) Two (B) Three  
(C) Four (D) Five
7. Read the following statements:–  
(1) Plants cannot obtain nitrogen from stomata.  
(2) Rhizobium bacteria undertake Nitrogen fixation in leguminous plants  
  
Which of the above is correct?  
(A) 1 (B) 2  
(C) both 1 & 2 (D) none
8. Radius, ulna, humerus are bones present in \_\_\_\_\_ part of man.  
(A) Hip (B) Neck  
(C) Arm (D) Vertebral column
9. How are 'floating ribs' different from other ribs in human skeleton system?  
(A) The ends do not attach to sternum at all  
(B) The ends attach to sternum  
(C) The ends indirectly attach to sternum  
(D) They are flexible as they have elastic cartilage attached to them

10. Identify P, Q, R and S in the given figure.



- (A) P-style, Q-stigma, R-ovule, S-ovary  
 (B) P-stigma, Q-style, R-ovary, S-ovule  
 (C) P-style, Q-ovary, R-ovule, S-ovary  
 (D) P-style, Q-ovule, R-ovary, S-ovary

11. \_\_\_\_\_ is also known as tailbone.

- (A) Cervical  
 (B) Thoracic  
 (C) Sacrum  
 (D) Coccyx

12. Gliding joint allows which type of movement.

- (A) Only backward and forward movement  
 (B) Movement in all directions  
 (C) Side-to-side as well as backward and forward movement  
 (D) No movement

13. Which type of joint is there between upper arm bone and lower arm bone?

- (A) Hinge joint  
 (B) Fixed joint  
 (C) Pivot joint  
 (D) Ball and socket joint

14. Match the following:

Column A		Column B	
(i)	Collar bone	[a]	Ulna
(ii)	Forearm bone	[b]	Femur
(iii)	Thigh bone	[c]	Clavicle
(iv)	Lower leg bone	[D]	Tibia

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

15. Which one among the following statements is correct for the human skull?

- (A) Skull is a soft structure surrounds the spinal cord.  
 (B) Supper part of skull, made up of 10 bones Joined together  
 (C) The face and Jaw contain 14 bones.  
 (D) The lower jaw bone is immovable.

# FIITJEE INTERNAL TEST

Batch: NWCMLG425A1

PHASE TEST – III

QP CODE: 100865

## Scholastic Aptitude Test

### Answers SECTION – I MATHEMATICS

1.	D	2.	C	3.	B	4.	B
5.	A	6.	D	7.	D	8.	D
9.	C	10.	A	11.	C	12.	C
13.	A	14.	A	15.	B	16.	B
17.	B	18.	B	19.	D	20.	B
21.	C	22.	C	23.	C	24.	B
25.	B	26.	C	27.	C	28.	B
29.	D	30.	C	31.	C	32.	D
33.	A	34.	B	35.	C	36.	A
37.	B	38.	B	39.	B	40.	B
41.	C	42.	B	43.	D	44.	D
45.	B						

### SECTION – II PHYSICS

1.	B	2.	B	3.	B	4.	B
5.	B	6.	A	7.	B	8.	A
9.	C	10.	D	11.	D	12.	B
13.	C	14.	C	15.	C		

### SECTION – III CHEMISTRY

1.	D	2.	D	3.	C	4.	A
5.	B	6.	A	7.	B	8.	D
9.	D	10.	B	11.	D	12.	D
13.	B	14.	B	15.	C		

### SECTION – IV BIOLOGY

1.	C	2.	C	3.	B	4.	A
5.	D	6.	A	7.	C	8.	C
9.	A	10.	B	11.	D	12.	C
13.	A	14.	B	15.	C		

# Answers & Solutions

## SECTION – I

### MATHEMATICS

1. **D**

$$\text{Sol. } \frac{1 \text{ second}}{1 \text{ hour}} = \frac{1}{3600}$$

2. **C**

$$\text{Sol. } \frac{75}{2} + 7.5 = 37.5 + 7.5 = 45$$

3. **B**

Sol.  $A : B = 8 : 15$ ,  $B : C = 5 : 8$ ,  $C : D = 4 : 5$  then  $A : D$

$$\frac{A}{B} = \frac{8}{15} \quad \frac{B}{C} = \frac{5}{8} \quad \frac{C}{D} = \frac{4}{5}$$

$$\frac{A}{D} = \frac{A}{B} \times \frac{B}{C} \times \frac{C}{D} = \frac{8}{15} \times \frac{5}{8} \times \frac{4}{5} = \frac{4}{15}$$

$$(A : D = 4 : 15)$$

4. **B**

$$\text{Sol. } \frac{5}{7} \times \frac{4}{15} \times x = 8 + \frac{2}{5} \times \frac{4}{9} \times x$$

$$\frac{4x}{21} = 8 + \frac{8x}{45}$$

$$\frac{4x}{21} - \frac{8x}{45} = 8$$

$$\frac{60x - 56x}{315} = 8$$

$$\frac{4x}{315} = 8$$

$$x = 315 \times 2 = 630$$

$$\text{Half of the number} = \frac{1}{2} \times x = \frac{1}{2} \times 630 = 315$$

5. **A**

$$\text{Sol. } 6.7 \times 2^{\text{nd}} \text{ number} = 2864.25$$

$$2^{\text{nd}} \text{ number} = \frac{2864.25}{6.7}$$

$$2^{\text{nd}} \text{ number} = 427.5$$

6. **D**

Sol. Since measurement units are different. So ratio cannot be determined.

7. **D**

Sol.  $\frac{3}{4} = 0.75$

$$\frac{4}{5} = 0.8$$

$$\frac{5}{6} = 0.83$$

$$\frac{6}{7} = 0.85$$

Then greatest fraction will be  $\frac{6}{7}$

8. **D**

Sol.  $u - v = 3x^2 - 2xy + y^2 - 2x^2 - 5xy + 7y^2$   
 $= x^2 - 7xy + 8y^2$

9. **C**

Sol.  $2 : x + 3 = 5 : x + 12$   
 $2 \times (x + 12) = 5 \times (x + 3) \Rightarrow x = 3$

10. **A**

Sol.  $\frac{1}{3} = 0.33$

$$\frac{2}{5} = 0.4$$

$$\frac{3}{5} = 0.6$$

$$\frac{4}{7} = 0.57$$

$$\frac{5}{6} = 0.83$$

$$\frac{6}{7} = 0.85$$

$$\frac{1}{3} < \frac{2}{5} < \frac{4}{7} < \frac{3}{5} < \frac{5}{6} < \frac{6}{7}$$

11. **C**

Sol. For this, we need not to find the actual product of all the numbers given, we multiply just unit digits of each number given and consider units digit of the product.

$$\text{So, } = 8 \times 7 \times 9 \times 1$$

$$= 56 \times 9$$

$$\text{Again } 6 \times 9 = 54$$

$$\therefore \text{the unit digit in the product of } 468 \times 507 \times 369 \times 981 = 4$$

12. **C**

Sol.  $64 = 2x + 4x + 6x$   
 $12x = 64$

$$x = \frac{64}{12} = \frac{16}{3}$$



$$\text{Smallest part} = 2x = 2 \times \frac{16}{3} = \frac{32}{3} = 10\frac{2}{3}$$

13. **A**

$$\text{Sol. } \frac{-5}{12} - \left(-\frac{3}{4}\right) = \frac{-5+9}{12} = \frac{4}{12} = \frac{1}{3}$$

14. **A**

$$\text{Sol. } 1 \div \frac{5}{7} \times \frac{63}{10} - \frac{2}{9}$$

$$1 \div \frac{9}{2} - \frac{2}{9} = \frac{2}{9} - \frac{2}{9} = 0$$

15. **B**

$$\text{Sol. } 1 \text{ minute} = \frac{1500}{45}$$

$$1 \text{ minute} = \frac{100}{3}$$

$$120 \text{ minutes} = \frac{100}{3} \times 120 = 4000$$

(2 hr = 4000 newspapers)

16. **B**

$$\text{Sol. } \frac{\frac{3}{8}}{\frac{1}{12}} = \frac{9}{2}$$

17. **B**Sol. Coefficient of  $x^2y^2$  in  $-25x^2y^2z$  is  $-25z$ .18. **B**

Sol. Prime Number = 2, 3, 5, 7

Composite numbers = 4, 6, 8, 9, 10

Ratio = 4 : 5

19. **D**

$$\text{Sol. } \frac{1\frac{1}{2}}{x} = \frac{2}{3} \Rightarrow \frac{3}{2x} = \frac{2}{3} \Rightarrow x = \frac{9}{4}$$

20. **B**

$$\text{Sol. } x = \frac{0.0007}{0.01} = 0.07$$

21. **C**  
 Sol.  $2 : x = 1 : 2$   
 $\Rightarrow 2 \times 2 = x \times 1$   
 $\Rightarrow x = 4$   
 Now,  $4 : y = 2 : 3$   
 $\Rightarrow y = \frac{4 \times 3}{2} = 6$

22. **C**  
 Sol.  $\frac{1}{3 - \frac{1}{2 - \frac{7}{5}}} = \frac{1}{3 - \frac{5}{3}} = \frac{1}{\frac{4}{3}} = \frac{3}{4}$

23. **C**  
 Sol.  $1.09 < 1.089$

24. **B**  
 Sol.  $15 \times x = 35 \times 234 \Rightarrow x = \frac{35 \times 234}{15} = 546$

25. **B**  
 Sol. Since  $\frac{2}{3}$  is largest so it will be in rightmost position on number line.

26. **C**  
 Sol.  $2 + 0.2 + 0.02 + 0.002 + 0.0002$   
 $2.2222$

27. **C**  
 Sol.  $\frac{18}{x} = \frac{x}{8} \Rightarrow x^2 = 144 \Rightarrow x = 12$

28. **B**  
 Sol.  $\frac{720 \div 144}{864 \div 144} = \frac{5}{6}$

29. **D**  
 Sol.  $\frac{1050.051}{100} = 50 \frac{5}{100}$   
 $50 \frac{5}{100} = 50 \frac{1}{20}$   
 Sum =  $50 \frac{5}{100} = 50 \frac{1}{20}$

30. **C**

Sol.  $\frac{3A}{60} = \frac{4B}{60} = \frac{5C}{60}$   
 $\Rightarrow \frac{A}{20} = \frac{B}{15} = \frac{C}{12} \Rightarrow A : B : C = 20 : 15 : 12$

31. **C**

Sol.  $3\frac{1}{2} = \frac{7}{2}$

$$\frac{21}{6} = \frac{7}{2}$$

$$\frac{35}{10} = \frac{7}{2}$$

$$\frac{18}{4} = \frac{9}{2}$$

then  $\frac{18}{4}$  improper fraction is not equivalent to  $3\frac{1}{2}$ .

32. **D**

Sol.  $\frac{1}{4} + \left[ \frac{1}{4} - \left\{ \frac{1}{4} + \left( \frac{1}{4} - \frac{1}{4} - \frac{1}{4} \right) \right\} \right]$

$$\Rightarrow \frac{1}{4} + \left[ \frac{1}{4} - \left\{ \frac{1}{4} + \frac{1}{4} \right\} \right]$$

$$\Rightarrow \frac{1}{4} + \left[ \frac{1}{4} - \frac{1}{2} \right] = \frac{1}{4} - \frac{1}{4} = 0$$

33. **A**

Sol. Cost of 125 mangoes = ₹165

$$\text{Cost of 1 mango} = \frac{165}{125} = ₹1.32$$

34. **B**

Sol. Let numerator = x

$$\Rightarrow \text{denominator} = 2x - 2$$

$$\text{Fraction} = \frac{x}{2x - 2}$$

**A.T.Q**

$$\frac{x + 3}{2x - 2 + 3} = \frac{2}{3}$$

$$\Rightarrow 3x + 9 = 4x + 2$$

$$\Rightarrow x = 7$$

35. **C**

Sol.  $219 \times 17 = 3723$ , then  $\frac{17}{10} \times \frac{219}{10}$

$$= \frac{17 \times 219}{100} = \frac{3723}{100} = 37.23$$

36. **A**  
Sol.  $a+b=6k$   
 $b+c=7k$   
 $c+a=8k$

$$2(a+b+c) = 21k$$

$$a+b+c = 14$$

$$k = \frac{4}{3}$$

$$2(6k+c) = 21k$$

$$6k+c=14$$

$$6 \times \frac{4}{3} + c = 14$$

$$8+c=14 \Rightarrow c=6$$

37. **B**

Sol.  $1+1 \div \left\{ 1+1 \div \left( 1+\frac{1}{3} \right) \right\}$

$$\Rightarrow 1+1 \div \left\{ 1+1 \div \frac{4}{3} \right\}$$

$$\Rightarrow 1+1 \div \left\{ 1+\frac{3}{4} \right\}$$

$$\Rightarrow 1+1 \div \frac{7}{4} = 1+\frac{4}{7} = \frac{11}{7}$$

38. **B**

Sol.  $42 = 50 - 10 + 2 = \text{XLII}$

39. **B**

Sol. Number of sides of octagon = 8

$$\text{Each exterior angle} = \frac{360}{8} = 45^\circ$$

$$\text{Each interior angle} = 135^\circ$$

$$\text{Ratio} = 45 : 135$$

$$\text{Ratio} = 1 : 3$$

40. **B**

Sol.  $x = (-23) + 22 + (-23) + 22 + \dots$  upto 40 terms.

$$x = (-23) + 22 + (-23) + 22 + \dots$$

$= -1 - 1 - 1 - 1 \dots$  up to 20 terms

$$x = -20$$

$y = 11 + (-10) + 11 + (-10) \dots$  upto to 20 terms

$y = 1 + 1 + \dots$  up to 10 terms

$$y = 10$$

$$y - x = 10 - (-20) = 10 + 20 = 30$$

41. **C**

Sol.  $(n - 2) \times 180 = 1260^\circ \Rightarrow n = 9$

each exterior angle  $= \frac{360}{9} = 40^\circ$

42. **B**

Sol.  $\frac{11+t}{23+t} = \frac{4}{7}$

$$77 + 7t = 92 + 4t$$

$$3t = 92 - 77 = 15$$

$$t = 5$$

43. **D**

Sol.  $\frac{22}{3} \times \frac{21}{4} - \frac{57}{7} \times \frac{42}{19}$

$$\Rightarrow \frac{77}{2} - 18$$

$$\Rightarrow \frac{77 - 36}{2} = \frac{41}{2} = 20\frac{1}{2}$$

44. **D**

Sol.  $0.3x - 0.28x = 1.16 - 0.4$

$$0.02x = 0.76$$

$$x = 38$$

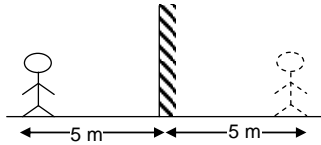
45. **B**

Sol. Mean proportional between 3 and 75

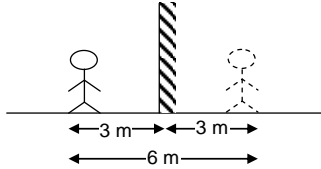
$$\text{Mean proportional} = \sqrt{3 \times 75} = 5 \times 3 = 15$$

## SECTION – II PHYSICS

1. B  
Sol. **Case-I**



**Case-II**



2. B

Sol. An instrument used to measure electric current is known as ammeter.

3. B

Sol. Objects with similar nature of charges repel each other.

4. B

Sol. Ammonium chloride (NH<sub>4</sub>Cl) paste is used as an electrolyte in a dry cell.

5. B

Sol. In a dry cell a zinc container works as a negative terminal and a carbon rod works as a positive terminal.

6. A

Sol. Quantities which are represented by magnitude and direction both, are called vector quantities.

7. B

Sol. Resistance of each part  $= \frac{R}{2}$   

$$\frac{1}{R_P} = \frac{1}{(R/2)} + \frac{1}{(R/2)} \Rightarrow \frac{1}{R_P} = \frac{2}{R} + \frac{2}{R} \Rightarrow R_P = \frac{R}{4}$$
 Now,

8. A

Sol. 
$$\text{Average speed} = \frac{\text{Total distance covered}}{\text{Total time taken}} = \frac{2V_1V_2}{V_1 + V_2} = \frac{2 \times 40 \times 60}{40 + 60} = 48 \text{ km/hr}$$

9. C

Sol. 
$$Q = It \Rightarrow ne = IT \Rightarrow n = \frac{IT}{e} = \frac{4.8 \times 1}{1.6 \times 10^{-19}} \Rightarrow n = 3 \times 10^{19}$$

10. D

Sol. Electrical energy helps to save time and reduce physical work. It can be converted into various other forms with the help of suitable devices.

11. D

Sol.  $R_p = \frac{40}{2} = 20\Omega$

$V = 110\text{ V}$

$I = \frac{V}{R_p} = \frac{110}{20} = 5.5\text{ A}$

12. B

Sol. By Ohm's law,  $V = IR$

$\Rightarrow R = \frac{V}{I} = \frac{220}{5} = 44\Omega$

13. C

Sol. Human body is a conductor of electricity.

14. C

Sol.  $I = \frac{V}{R} = \frac{12}{0.15} = \frac{1200}{15} = 80\text{ A}$

15. C

Sol.  $Q = 15\text{ C}, t = 10\text{ sec}$

Now,  $I = \frac{Q}{t} = \frac{15}{10} = 1.5\text{ A}$

**SECTION – III  
CHEMISTRY**

1. D  
Sol. River is not a form of precipitation.
2. D  
Sol. The substance used for disinfecting water are U.V rays, ozone & chlorine.
3. C  
Sol. Heavy rainfall is not responsible for water shortage.
4. A  
Sol. World water day is celebrated on 22<sup>nd</sup> March.
5. B  
Sol. Rate of evaporation decreases if the humidity in the surroundings increased.
6. A  
Sol. The process in which water drops become bigger and fall as rain is precipitation.
7. B  
Sol. The odd one out among these options is nylon because it is the only synthetic fiber other are natural fibres.
8. D  
Sol. The source of water for a natural spring is ground water.
9. D  
Sol. Evaporation → Surface phenomenon  
Fusion → Energy absorption  
Respiration → Release of energy  
Water cycle → Continuous process
10. B  
Sol. Sea water contains salt and that is the major reason that it cannot be used for drinking purpose.
11. D  
Sol. Distilled water is a poor conductor of electricity.
12. D  
Sol. The method that is used to separate water particles from clothes while drying in washing machine is Centrifugation.
13. B  
Sol. Sediment settles to the bottom of its container.
14. B  
Sol. Water is a pure substance.
15. C  
Sol. Grass lawn will allow water to seep easily.



**SECTION – IV  
BIOLOGY**

1. **C**  
Sol. **Potato** has edible stem tuber.
2. **C**  
Sol. Snail moves with the help of its **muscular foot**.
3. **B**  
Sol. **Pelvic bone** protects the lower abdominal organs such as the urinary bladder, rectum and uterus.
4. **A**  
Sol. Exoskeleton is found in **cockroaches**.
5. **D**
6. **A**  
Sol. Out of twelve pairs of ribs **two** pairs are not joined to the breastbone.
7. **C**  
Sol. (1) Plants cannot obtain nitrogen from stomata.  
(2) Rhizobium bacteria undertake Nitrogen fixation in leguminous plants
8. **C**  
Sol. Radius, ulna, humerus are bones present in **arm** of man.
9. **A**  
Sol. 'Floating ribs' different from other ribs in human skeleton system because the ends do not attach to sternum at all.
10. **B**  
Sol. In the given figure P-stigma, Q-style, R- ovary, S-ovule
11. **D**  
Sol. **Coccyx** is also known as tailbone.
12. **C**  
Sol. Gliding joint allows side-to-side as well as backward and forward movement.
13. **A**  
Sol. Like the radius, the ulna has joints at the elbow and wrist. The joint between the ulna and humerus is a hinge type of joint.
14. **B**  
Sol. **i–c, ii–a, iii–b, iv–d**
15. **C**