

# FIITJEE INTERNAL TEST

Batches: NWUT123A1R,A1W

## 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.

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

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

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## SECTION – I MATHEMATICS

1. The angles of a triangle are,  $3x^\circ$ ,  $(2x - 7)^\circ$ ,  $(4x - 11)^\circ$  then smallest angle of the triangle is  
 (A)  $77^\circ$  (B)  $37^\circ$   
 (C)  $80^\circ$  (D)  $66^\circ$

1. B

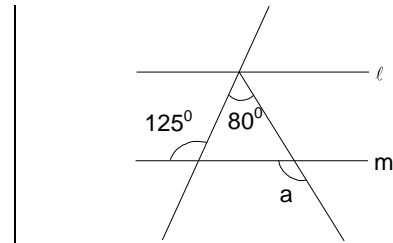
2. If  $\angle A = 30^\circ$ ,  $\angle B = 60^\circ$ ,  $\angle C = 70^\circ$  then the triangle formed is  
 (A) acute angle triangle (B) Obtuse angle triangle  
 (C) triangle not formed (D) None of these

2. C

3. The following criteria need not be a criteria for congruency of triangle is  
 (A) SAS (B) AAS  
 (C) AAA (D) R.H.S

3. C

4. In the adjoining figure  $\ell \parallel m$ , the value of a is  
 (A)  $205^\circ$  (B)  $135^\circ$   
 (C)  $70^\circ$  (D)  $105^\circ$



4. B

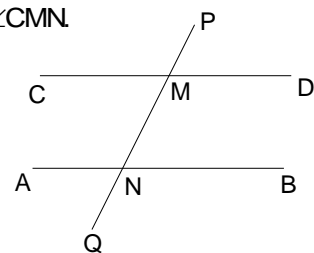
5. If  $x = 2$ ,  $y = 3$  then  $y^x - x^y$  is  
 (A) 1 (B) 2  
 (C) 13 (D) 15

5. A

6. If one angle of a triangle is greater than the sum of the other two angles, the triangle must be  
 (A) acute angle triangle (B) right angle triangle  
 (C) obtuse triangle (D) None of these

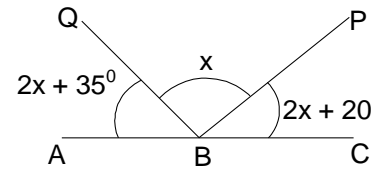
6. C

7. In the figure,  $AB \parallel CD$  and PQ is a transversal if  $\angle ANM = 3\angle CMN$ .  
 Then  $\angle BNQ$  is  
 (A)  $45^\circ$  (B)  $135^\circ$   
 (C)  $120^\circ$  (D)  $60^\circ$



7. B
8. In  $\triangle ABC$ ,  $\angle A = 76^\circ$ , the external bisector of  $\angle B$  and  $\angle C$  meet at O then  $\angle BOC$  is  
 (A)  $128^\circ$  (B)  $120^\circ$   
 (C)  $64^\circ$  (D)  $52^\circ$

8. D
9. The value of x in the following diagram is  
 (A) 30 (B) 40  
 (C) 25 (D) 50



9. C
10. One angle of a triangle is  $20^\circ$  more than the other if third angle is  $50^\circ$  then one angle is  
 (A)  $50^\circ$  (B)  $70^\circ$   
 (C)  $45^\circ$  (D)  $75^\circ$

10. D
11. In  $\triangle ABC$  and  $\triangle DEF$  it is given that  $\triangle ABC \cong \triangle DEF$  in order that  $\angle A$  must be equal to  
 (A)  $\angle E$  (B)  $\angle D$   
 (C)  $\angle F$  (D) can't say

11. B
12. In  $\triangle ABC$  the length of two sides are 5 cm and 9 cm then the length of the third side may be  
 (A) 4cm (B) 7cm  
 (C) 14cm (D) 18cm

12. B
13. The complementary angle of the supplementary angle of an angle is  $20^\circ$  then the angle be  
 (A)  $20^\circ$  (B)  $70^\circ$   
 (C)  $120^\circ$  (D)  $110^\circ$

13. D
14. If an angle is 5 times its complementary angle then its supplementary angle is  
 (A)  $165^\circ$  (B)  $150^\circ$   
 (C)  $75^\circ$  (D)  $105^\circ$

14. D
15. The point of concurrence of medians is called  
 (A) centroid (B) Incetnre  
 (C) orthocenter (D) circumcentre

15. A

16. The natural number 1 is  
 (A) composite number (B) prime number  
 (C) neither prime nor composite (D) always a prime number

16. C

17.  $\frac{p}{q}$  form of the number  $0.6\overline{72}$

- (A)  $\frac{672}{990}$  (B)  $\frac{672}{999}$   
 (C)  $\frac{37}{55}$  (D)  $\frac{11}{18}$

17. C

18. The fraction which lies exactly in the middle of  $\frac{1}{3}$  and  $\frac{5}{12}$  is

- (A)  $\frac{3}{7}$  (B)  $\frac{3}{8}$   
 (C)  $\frac{2}{5}$  (D)  $\frac{3}{5}$

18. B

19. The value of  $0.2\overline{4} + 0.2\overline{}$  is

- (A)  $0.4\overline{4}$  (B)  $0.4\overline{7}$   
 (C)  $0.4\overline{6}$  (D)  $0.4\overline{6}$

19. C

20. a, b, c, d and e are five consecutive even number then their mean is

- (A) a (B) a + 2  
 (C) a + 4 (D) can't say

20. C

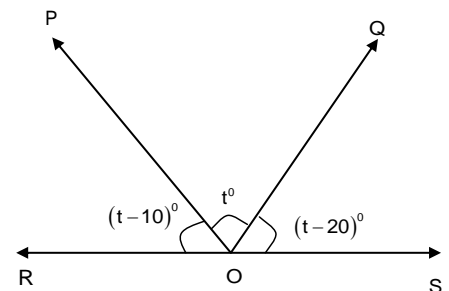
21. When 35 is subtracted from a number it reduces to its four fifth. What is four fifth of that number

- (A) 175 (B) 35  
 (C) 120 (D) 140

21. D

22. In the figure,  $\angle POR =$  \_\_\_\_\_

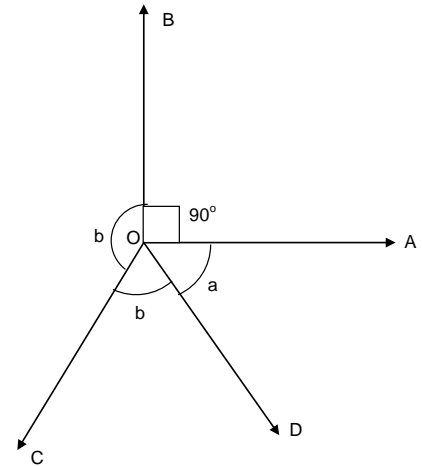
- (A) 50 (B) 60  
 (C) 70 (D) 80



22. B

23. In the figure below, if  $b - a = 45^\circ$ , then  $\angle COD =$  \_\_\_\_\_

- (A)  $45^\circ$  (B)  $65^\circ$   
 (C)  $105^\circ$  (D)  $115^\circ$



23. C

24. In  $\triangle ABC$ ,  $\angle A = 60^\circ$ ,  $\angle C = 70^\circ$ , then exterior angle 'B' is \_\_\_\_\_

- (A)  $120^\circ$  (B)  $60^\circ$   
 (C)  $70^\circ$  (D)  $130^\circ$

24. D

25. In  $\triangle ABC$ ,  $AB = 4\text{cm}$ ,  $BC = 7\text{cm}$ , then third side can be

- (A) 13 cm (B) 1 cm  
 (C) 3 cm (D) 6 cm

25. D

26. In  $\triangle ABC$ ,  $\angle A = (2x - 3)^\circ$ ,  $\angle B = (4x + 5)^\circ$ ,  $\angle C = (3x - 2)^\circ$  then difference between the greatest and smallest angle is

- (A)  $37^\circ$  (B)  $48^\circ$   
 (C)  $85^\circ$  (D)  $37^\circ$

26. B

27. Point of concurrency of altitudes in a triangle is called \_\_\_\_\_

- (A) orthocenter (B) incentre  
 (C) circum - centre (D) centroid

27. A

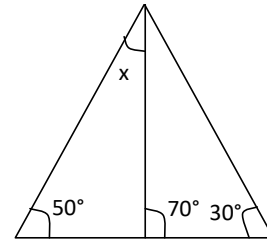
28. The point of concurrency of angle bisectors in a triangle is called as

- (A) orthocentre (B) incentre  
 (C) circumcentre (D) centroid

28. B

29. In given figure angle  $x$  is  
 (A)  $20^\circ$   
 (C)  $40^\circ$

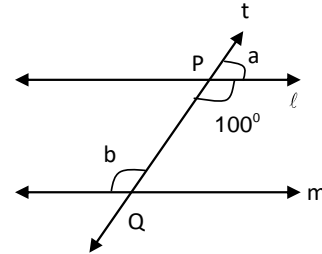
- (B)  $10^\circ$   
 (D)  $60^\circ$



29. A

30. In the given figure  $l \parallel m$ . Find the value of  $b - a$ .  
 (A)  $10^\circ$   
 (C)  $15^\circ$   
 (D)  $25^\circ$

- (B)



30. B

31. In an isosceles triangle  $ABC$  with  $AB = AC$ , if  $BD$  and  $CE$  are its altitudes, then  
 (A)  $BD = CE$   
 (C)  $BD > CE$

- (B)  $BD > CE$   
 (D) none of these

31. A

32. To form a triangle, the length  $a, b, c$  of the sides must satisfy  
 (A)  $a + b > c$  only  
 (C)  $a + b > c, b + c > a, c + a > b$

- (B)  $a + b > c$  and  $b + c > a$  only  
 (D) none of these

32. C

33. If  $\triangle ABC \cong \triangle PQR$ , then which of the following is true?

- (A)  $AB = RP$   
 (C)  $CA = RP$

- (B)  $AC = RQ$   
 (D)  $CB = QP$

33. C

34. Two equilateral triangles are congruent if

- (A) their sides are equal  
 (C) their sides are proportional

- (B) their angles are equal  
 (D) their areas are proportional

34. A

35. It is not possible to construct a triangle if its sides are:

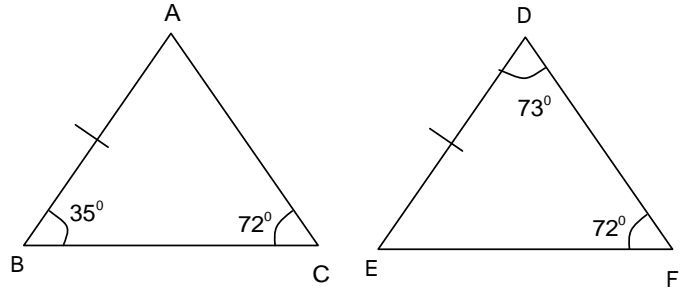
- (A) 8.3 cm, 3.4 cm, 6.1 cm  
 (C) 3 cm, 5 cm, 5 cm

- (B) 6 cm, 7 cm, 10 cm  
 (D) 5.4 cm, 2.3 cm, 3.1 cm

35. D

36. In the given figure,  $\triangle ABC \cong \triangle DEF$  by

- (A) SAS congruence rule
- (B) ASA congruence rule
- (C) SSS congruence rule
- (D) RHS congruence rule



36. B

37. Difference of two sides of a triangle is zero. The angle opposite to these are

- (A) equal
- (B) different
- (C) greater than third
- (D) none of these

37. A

38. Find the complement of  $47^\circ$

- (A)  $57^\circ$
- (B)  $53^\circ$
- (C)  $43^\circ$
- (D)  $47^\circ$

38. C

39. The sum of all angles around a point is

- (A)  $90^\circ$
- (B)  $180^\circ$
- (C)  $360^\circ$
- (D) none of these

39. C

40. Which of the following is a Pythagorean triplet?

- (A) 9, 40, 41
- (B) 6, 7, 10
- (C) 8, 10, 12
- (D) 11, 5, 13

40. A

41. If one angle of a triangle equals the sum of the other two angles, the triangle must be:

- (A) scalene
- (B) right angled
- (C) obtuse angles
- (D) acute angled

41. B

42. The mean of 5 numbers is 18. If one number is excluded, their mean is 16. Then excluded number is

- (A) 20
- (B) 26
- (C) 10
- (D) None

42. B

43. If  $\frac{2x-1}{3} + 1 = \frac{x-2}{3} + 2$ , then  $x =$

- (A) 2
- (B) 0
- (C) 3
- (D) None

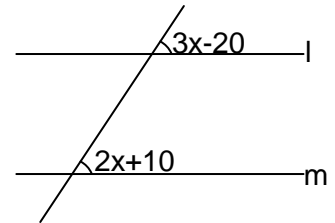
43. A

44. A ladder 25m long reaches a window of a building, 20m above the ground, the distance of the foot of the ladder from the building is  
 (A) 15m (B) 20m  
 (C) 30m (D) None

44. A

45. If  $l \parallel m$  then  $x$  equals  
 (A) 60  
 (C) 20  
 these

(B) 30  
 (D) none of



45. B



**SECTION – II  
PHYSICS**

1. Which of the following is a vector quantity?

- (A) Speed (B) Distance  
(C) Displacement (D) Mass

1. C

Sol. Displacement is a vector quantity.

2. Cyclones have a \_\_\_\_\_ pressure area surrounded by a \_\_\_\_\_ pressure area.

- (A) high, low (B) low, high  
(C) high, equal (D) none of these

2. B

Sol. Cyclones are created when centre of low pressure develops with a system of high pressure surrounding it.

3. Simple pendulum was invented by:

- (A) William Harvey (B) Edison  
(C) Galileo Galilei (D) Isaac Newton

3. C

Sol. Simple pendulum was invented by Galileo Galilei.

4. Tip of a second clock moves in:

- (A) Periodic motion (B) Oscillatory motion  
(C) Circular motion (D) Linear motion

4. C

Sol. Tip of a second clock moves in circular motion.

5. Speed with direction is called:

- (A) Velocity (B) Movement  
(C) Displacement (D) Momentum

5. A

Sol. Speed with direction is called velocity.

6. Total distance traveled by a moving body never be zero but total displacement:

- (A) Never be zero (B) May be zero  
(C) Always greater than zero (D) Always zero

6. B

Sol. Total distance traveled by a moving body never be zero but total displacement may be zero.

7. Average speed is equal to:

- (A) Total speed / total time (B) Velocity / time  
(C) Distance traveled / hour (D) Total distance traveled / total time taken

7. D

Sol. Average speed = total distance traveled / total time taken

8. A car traveled 54 km in 30 minute, the average speed of the car is:  
 (A) 54 km/hrs (B) 108 km/hrs  
 (C) 38 km/hrs (D) 27 km/hrs

8. B

Sol. Average speed =  $\frac{54}{0.5} = 108 \text{ km/h}$

9. The time taken by earth to complete one revolution around the sun is called:  
 (A) One year (B) Half month  
 (C) One month (D) One decade

9. A

Sol. The time taken by earth to complete one revolution around the sun is called one year.

10. A particle complete two round on a circular track of radius R. Displacement & distance travelled are:  
 (A) zero, zero (B) zero,  $4\pi R$   
 (C)  $2\pi R$ , zero (D)  $2\pi R$ ,  $2\pi R$

10. B

Sol. distance  $\rightarrow 4\pi R$   
 displacement  $\rightarrow$  zero

11. A particle travels 100 km along a curved path. Its displacement will be:  
 (A) Equal to 100 km (B) Greater than 100 km  
 (C) Less than 100 km (D) None of these

11. C

Sol. Displacement is the shortest straight line path between initial & final position.

12. The value of absolute zero temperature is:  
 (A)  $-273^\circ\text{C}$  (B)  $273^\circ\text{F}$   
 (C)  $-273^\circ\text{K}$  (D)  $273^\circ\text{K}$

12. A

Sol. The value of absolute zero temperature is  $-273^\circ\text{C}$ .

13. The quantity of heat required to raise the temperature of one gram of a substance through  $1^\circ\text{C}$   
 (A) latent heat (B) electric heat  
 (C) specific heat (D) all of the above

13. C

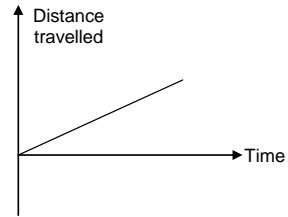
Sol. The quantity of heat required to raise the temperature of one gram of a substance through  $1^\circ\text{C}$  is called specific heat.

14. A body covers half of the distance with a speed of 4 m/s and the remaining distance at a speed of 6 m/s, then the average speed of the body is  
 (A) 4.8 m/s (B) 5.1 m/s  
 (C) 4.2 m/s (D) none of these

14. A

Sol. Average speed = total distance / total time  $\Rightarrow \frac{S}{\frac{S}{2 \times 4} + \frac{S}{2 \times 6}} = \frac{24}{5} = 4.8 \text{ m/s}$

15. The graph shows that particle is:  
(A) at rest  
(B) Moving with uniform (non-zero) speed  
(C) Moving with uniform (non-zero) acceleration  
(D) Moving with varying speed



15. B  
Sol. Slope of distance – time graph gives speed.

**SECTION – III  
CHEMISTRY**

1. Kinetic energy of molecules is directly proportional to  
(A) temperature (B) pressure  
(C) both (A) and (B) (D) atmospheric pressure
1. A
2. Which of the following set of substance can undergo sublimation  
(i) Iodine & Camphor (ii) Naphthalene & Sodium chloride  
(iii) Ammonium chloride & iodine (iv) Sand & Camphor  
(A) i & iii (B) ii & iii  
(C) i & iv (D) ii & iv
2. A
3. The intermolecular spaces are the highest in  
(A) solids (B) liquids  
(C) gases (D) fluids
3. C
4. Liquid to gas change is  
(A) liquification (B) melting  
(C) boiling (D) none of them
4. C
5. Chalk powder is ..... in water.  
(A) soluble (B) insoluble  
(C) miscible (D) none of these
5. B
6. In which medium, diffusion is the fastest?  
(A) gas in gas (B) liquid in liquid  
(C) solid in liquid (D) solid in solid
6. A
7. The process of taking out filaments from the cocoons is  
(A) grading (B) filature  
(C) weaving (D) throwing
7. B
8. The spreading out and mixing of a substance with another substance due to motion is called  
(A) boiling (B) diffusion  
(C) melting (D) none of them
8. B

9. Low grade silk yarn is spun from  
(A) damaged cocoons (B) outer portion of cocoon  
(C) inner portion of cocoons (D) all of these
9. D
10. Phenolphthalein remains..... in acidic and neutral solutions.  
(A) colourless (B) pink  
(C) red (D) green
10. A
11. Paheli's mother made a concentrated sugar syrup by dissolving sugar in hot water. On cooling, crystals of sugar got separated. This indicates a:  
(A) physical change that can be reversed  
(B) chemical change that can be reversed  
(C) physical change that cannot be reversed  
(D) chemical change that cannot be reversed
11. A
12. A Chemical Change May Involve:  
(A) Change in colour only (B) Change in temperature only  
(C) Evolution of gas only (D) All of these
12. D
13. The neutralization reaction between an acid and a base is a type of:  
(A) Double displacement reaction (B) Displacement reaction  
(C) Addition reaction (D) Decomposition reaction
13. A
14. Which of the following will be observed if an apple slice is left exposed to air?  
(A) It undergoes oxidation and become brown in colour  
(B) Appearance of brown colour on the surface of apple slice is caused by a chemical reaction between air and enzymes  
(C) both (A) & (B) are correct  
(D) None of these
14. C
15. When magnesium is burnt, heat and light are produced. The burning of magnesium is a  
(A) reversible change (B) physical change  
(C) chemical and exothermic change (D) chemical and endothermic change
15. C

## SECTION – IV BIOLOGY

1. The gills help the fish to  
 (A) Take in oxygen from air (B) Take in oxygen dissolved in water  
 (C) Absorb nutrients present in water (D) Release waste substance in water

1. B  
 Sol. The gills help the fish to take in oxygen dissolved in water.

2. Yeast are used to make  
 (A) Curd (B) Wine and beer  
 (C) Bakery items (D) Both (B) and (C)

2. D  
 Sol. Yeast are used to make wine and beer and bakery items.

3. The small opening in the body of a cockroach are called:  
 (A) Holes (B) Spiracles  
 (C) Tracks (D) Pores

3. B  
 Sol. The small opening in the body of a cockroach are called spiracles.

4. Opening to the trachea is covered by a small flap of tissues termed as the \_\_\_\_\_.  
 (A) Pharynx (B) Trachea  
 (C) Epiglottis (D) Larynx

4. C  
 Sol. Opening to the trachea is covered by a small flap of tissues termed as the epiglottis.

5. Match the following:

Column – A		Column – B	
(i)	Diaphragm	(a)	Inhale-Exhale
(ii)	Leaves	(b)	Fermentation
(iii)	Yeast	(c)	Stomata
(iv)	Breathing	(d)	Chest cavity
(v)	Moist skin	(e)	Earthworm

- (A) (i)-(d); (ii)-(c); (iii)-(b); (iv)-(a); (v)-(e) (B) (i)-(e); (ii)-(d); (iii)-(a); (iv)-(c); (v)-(b)  
 (C) (i)-(a); (ii)-(d); (iii)-(b); (iv)-(c); (v)-(e) (D) (i)-(a); (ii)-(d); (iii)-(b); (iv)-(c); (v)-(a)

5. A  
 Sol. Diaphragm → Chest cavity; Leaves → Stomata; Yeast → Fermentation; Breathing → Inhale-Exhale; Moist skin → Earthworm.

6. Penguins are found in:  
 (A) Desert (B) Tropical rainforest  
 (C) Antarctic regions (D) None of these

6. C  
 Sol. Penguins are found in Antarctic regions.

7. What is the percentage of CO<sub>2</sub> in the air we breathe out?  
(A) 0.03% (B) 4%  
(C) 6% (D) 2%
7. A  
Sol. We breathe out 0.03% of CO<sub>2</sub> in the air.
8. When breakdown of glucose occurs with the use of oxygen, it is called:  
(A) anaerobic respiration (B) aerobic respiration  
(C) regular respiration (D) all of these
8. B  
Sol. When breakdown of glucose occurs with the use of oxygen, it is called aerobic respiration.
9. Respiratory part of man is  
(A) Skin (B) Gills  
(C) Lungs (D) None of these
9. C  
Sol. Respiratory part of man is lungs.
10. Which of the following is not an element of weather?  
(A) Humidity (B) Temperature  
(C) Soil (D) Rain
10. C  
Sol. Soil is not an element of weather.
11. Birds are adapted to fly because of:  
(A) Streamlined body (B) Light bones  
(C) Feathers and wings (D) All of these
11. D  
Sol. Birds are adapted to fly because of streamlined body, light bones and feathers and wings.
12. A carnivore with stripes on its body moves very fast while catching its prey. It is likely to be found in  
(A) Tropical rainforest (B) Deserts  
(C) Oceans (D) Polar region
12. A  
Sol. A carnivore with stripes on its body moves very fast while catching its prey. It is likely to be found in tropical rainforest.
13. A disease caused by protein deficiency is:  
(A) Scurvy (B) Kwashiorkor  
(C) Anemia (D) Rickets
13. B  
Sol. A disease caused by protein deficiency is kwashiorkor.
14. The tiny pores present in the leaves of the parts for exchange of gases are called:  
(A) Stomata (B) Trachea  
(C) Chloroplast (D) Spiracles

14. A  
Sol. The tiny pores present in the leaves of the parts for exchange of gases are called stomata.
15. Protection mechanism in animals:  
(A) Hiding (B) Camouflage  
(C) Produce poisoning stings (D) All of these
15. D  
Sol. Protection mechanism in animals hiding, camouflage and produce poisoning stings.