

FIITJEE INTERNAL TEST

Batch: NWCMUT426A1_PT-1
NSEJS

Paper Code
100702

Time: 1.30 Hours

Maximum Marks: 180

A. Question Paper Format

1. The question paper consists of 4 **parts** (Physics -**Section-I**, Chemistry - **Section-II**, Mathematics- **Section-III** and Biology- **Section IV**) and each part consists of **four sections**.
2. **Each Section** contains **15** multiple choice questions. Each question has 4 choices (A), (B), (C) and (D) for its answer, out of which **only one is correct**.

B. Marking scheme:

1. For each question in **Section I, II, III & IV** you will be awarded **3 marks** if you darken only the bubble corresponding to the correct answer and **zero mark** if no bubbles are darkened. In all other cases, **minus one (-1) mark** will be awarded.

Enrolment No. :	<input type="text"/>
Name :
Batch : Date:

SECTION – I PHYSICS

1. (I) Boiling is a quick process but evaporation is a slow process.
 (II) Boiling occurs at the surface but evaporation occurs throughout the liquid.
 (III) Boiling occurs at a fixed temperature called boiling point but evaporation takes places at various temperature.
 (A) (I), (II) and (III) are correct. (B) (I) and (II) are correct only.
 (C) (II) and (III) are correct only (D) (I) and (III) are correct only.

2. 273.15 K is called triple point of water, why?
 (A) because ice melts at 273.15 K
 (B) because water freezes at 273.15 K.
 (C) because water gets evaporated at 273.15 K.
 (D) because water exists in all the three states at 273.15 K.

3. The melting and boiling points of three substances are shown below:

Substance	Boiling Point	Melting Point
A	105°C	100°C
B	89°C	72°C
C	100°C	97°C

What will be the state of the substances at 98°C?

	A	B	C
(A)	Gas	Liquid	Solid
(B)	Liquid	Solid	Gas
(C)	Solid	Gas	Solid
(D)	Solid	Gas	Liquid

4. A Celsius and a Fahrenheit thermometer are dipped in boiling water. The water temperature is lowered until the Fahrenheit thermometer registers 140°F. What is the temperature registered by Celsius thermometer
 (A) 40° (B) 30° (C) 60° (D) 80°

5. If we take 15 g of water and supply 60 calorie of heat to it then what will be the rise in temperature? (take specific heat of water as 1 cal g⁻¹ °C⁻¹)
 (A) 4°C (B) 4K (C) both (A) and (B) (D) none of these

6. A 100 g iron ball is cooled down from 100°C to 30°C. Calculate the loss of heat if specific heat of iron is 4.8 × 10² J kg⁻¹ °C⁻¹.
 (A) 3360000 Joule (B) 3360 Joule (C) 336 Joule (D) 33.6 Joule

7. Boiling water is changing into steam. The specific heat of boiling water is
 (A) One (B) Two (C) Zero (D) infinity

Space For Rough Work

8. Which of the following combinations of properties would be most desirable for a cooking pot?
(A) High specific heat and low conductivity. (B) Low conductivity and low specific heat.
(C) Low specific heat and high conductivity. (D) High conductivity and high specific heat.
9. The unit of latent heat is
(A) Cal-gm (B) Cal/°C (C) Cal/gm (D) °C
10. Find a temperature at which both Celsius and Fahrenheit scale has same value?
(A) 40°C (B) -40°C (C) 0°C (D) 273 K
11. The number of gradations on a Fahrenheit scale, between the melting point of ice and boiling point of water is _____.
(A) 100 (B) 180 (C) 212 (D) 32
12. Which of the following will cause more severe burn
(A) steam at 100°C (B) boiling water (C) water at 95°C (D) none of these
13. A beaker is completely filled with water at 4°C. It will overflow:
(A) When heated but not when cooled (B) When cooled but not when heated
(C) Neither when heated nor when cooled (D) Both when heated or cooled
14. One joule is approximately equal to
(A) 0.28 Cal (B) 0.32 Cal (C) 0.24 Cal (D) 4.2 Cal
15. Which of the following statements about thermal conductivity is correct?
(A) steel > wood > water (B) steel > water > wood
(C) water > steel > wood (D) water > wood > steel

SECTION – II CHEMISTRY

1. Usually wool is obtained from sheep. Which one of the following animal also provides wool?
(A) Cat (B) Monkey
(C) Cow (D) Alpaca
2. Silk is formed from the secretion of silkworm. The secretion hardens on exposure to
(A) air (B) humidity
(C) sunlight (D) steam
3. Which one of the following has a sour taste?
(A) Common salt (B) Baking soda
(C) Tamarind (D) Soap

Space For Rough Work

4. Turmeric mixed with water form a yellow paste. This substance turns soap solution to
 (A) red (B) blue
 (C) green (D) yellow
5. The acid produced naturally in our stomach is
 (A) acetic acid (B) hydrochloric acid
 (C) sulphuric acid (D) nitric acid
6. The silk covering spun by the silkworm of silk moth is called:
 (A) Cocoon (B) Laptoon
 (C) Shetoot (D) Mulbery
7. Pattanwadi is an Indian breed of sheep found in which region of India?
 (A) Kerala (B) Himachal
 (C) Gujarat (D) Punjab
8. The substance phenolphthalein is
 (A) an acid (B) a base
 (C) an indicator (D) a salt
9. Lohi and Nali are breeds of
 (A) Camel (B) Sheep
 (C) Goat (D) Yak
10. Name the fibre which is made of protein?
 (A) Rayon (B) Silk
 (C) Nylon (D) Terylne
11. Salts are formed by
 (A) neutralization process (B) decomposition
 (C) hydrolysis process (D) dehydration
12. pH of tomato juice is 4, that means it is _____ in nature
 (A) basic (B) neutral
 (C) acidic (D) none of these
13. A solution of sodium chloride will turn
 (A) Red litmus blue
 (B) Blue litmus red
 (C) Red litmus orange
 (D) Not change the colour of either red or blue litmus

Space For Rough Work

14. Which of the following fibres are spun and woven into woolen?
(A) Longer fibres (B) Shorter fibres
(C) Fluffy fibres (D) None of these
15. In which of the following process, threads are taken out from the cocoons?
(A) Switching (B) Shearing
(C) Reeling (D) Spinning

SECTION – III MATHEMATICS

1. A dice is rolled. The probability of getting an even prime is _____.
(A) $\frac{1}{6}$ (B) $\frac{1}{3}$ (C) $\frac{1}{2}$ (D) $\frac{5}{6}$
2. If the sum of two consecutive odd numbers is 68, then the smallest number is _____.
(A) 33 (B) 40
(C) 35 (D) 30
3. What do we get if we add -1 thirty times?
(A) 30 (B) 1
(C) -1 (D) -30
4. The product of two decimals is 1.8576. If one of the decimals is 0.54, then the other decimal number is _____.
(A) 3.14 (B) 3.04
(C) 3.44 (D) 3.54
5. If the mean of five observations $x, x+2, x+4, x+6, x+8$ is 11, then the mean of first three observations is _____.
(A) 9 (B) 4
(C) 2 (D) 3
6. One-third of Mohit's marks in Mathematics exceeds half of his marks in English by 30. If he got 240 marks in the two subjects together, how many marks did he get in English?
(A) 42 (B) 50 (C) 60 (D) 180
7. Simplify: $39 - \left[23 - \left\{ 29 - (17 - \overline{9 - 3}) \right\} \right]$
(A) -56 (B) 35
(C) 34 (D) -48

Space For Rough Work

8. A sugar bag contains 30 kg of sugar. After consuming $\frac{2}{3}$ of it, how much sugar is left in the bag?
(A) 15 kg (B) 30 kg
(C) 20 kg (D) 10 kg
9. If mean and median of a given data are 4 and 5 respectively, then the mode is _____.
(A) 6 (B) 7
(C) 8 (D) 9
10. The sum of three consecutive natural numbers is 30. Find the smallest numbers?
(A) 11 (B) 10
(C) 8 (D) 9
11. If the sum of two numbers is 10 and their difference is 4, then the product of the numbers is _____.
(A) 12 (B) 4
(C) 21 (D) 10
12. Find the value of $3 + \frac{1}{5 + \frac{1}{2 + \frac{1}{10}}}$
(A) $\frac{329}{115}$ (B) $\frac{366}{115}$ (C) $\frac{365}{110}$ (D) $\frac{315}{105}$
13. Find the probability that a leap year selected at random will contain 53 Sundays.
(A) $\frac{1}{2}$ (B) $\frac{1}{53}$ (C) $\frac{2}{7}$ (D) $\frac{1}{7}$
14. A teacher has 45 chocolates. After giving two chocolates to each student, teacher is left with 7 chocolates. How many students are there in the class?
(A) 20 (B) 19
(C) 25 (D) none of these
15. If a, b, c, d, e are 5 consecutive odd numbers, then their average is _____.
(A) a (B) b (C) c (D) d

Space For Rough Work

SECTION – IV
BIOLOGY

1. What is the full form of ATP?
(A) Adenosine diphosphate (B) Adenosine phosphate
(C) Adenosine triphosphate (D) None of these
2. Which of the following raw materials is available in the air for photosynthesis?
(A) Oxygen (B) Carbon dioxide
(C) Nitrogen (D) Hydrogen
3. In which mode of nutrition an organism de-rives its food from the body of another living organism without killing it?
(A) Saprotrophic nutrition (B) Parasitic nutrition
(C) Holozoic nutrition (D) Autotrophic nutrition
4. Which of the following statements about the autotrophs is incorrect?
(A) They synthesise carbohydrates from carbon dioxide and water in the presence of sunlight and chlorophyll
(B) They store carbohydrates in the form of starch
(C) They convert carbon dioxide and water into carbohydrates in the absence of sunlight
(D) They constitute the first trophic level in food chains
5. What is the term for the semi-solid mixture of food and digestive juices that are formed in the stomach?
(A) Chyme (B) Bolus
(C) Feces (D) None of these
6. Which of the following pair of teeth differ in structure but are similar in function?
(A) canines and incisors (B) molars and premolars
(C) incisors and molars (D) premolars and canines
7. Which enzyme is responsible for breaking down carbohydrates in the mouth?
(A) Amylase (B) Protease
(C) Lipase (D) Pepsin
8. What do guard cells do?
(A) Protect the plant from insects
(B) Regulate the opening and closing of stomata
(C) Absorb minerals from the soil
(D) Capture light energy
9. What is the procedure for ingesting food known as _____?
(A) Digestion (B) Assimilation
(C) Ingestion (D) Egestion
10. In amoeba, food is digested in _____.
(A) Food vacuole (B) Mitochondria
(C) Endoplasmic reticulum (D) Plastid
11. During photosynthesis, the oxygen in glucose comes from
(A) CO₂ (B) Water
(C) Both CO₂ and water (D) Oxygen via air

12. The number of water molecules required in the chemical reactions to produce one molecule of glucose during photosynthesis is:
(A) Six (B) Twelve
(C) Eighteen (D) Twenty-four
13. The undigested semi solid food is called _____.
(A) Anus (B) Faeces
(C) Rectum (D) Villi
14. Mark the correct statements:
(A) Light reaction takes place in grana
(B) External factor required for photosynthesis are chlorophyll
(C) In parasitic mode of nutrition, organisms take the complex organic food materials into their body by the process of ingestion
(D) All of these
15. Mark the incorrect statement:
(A) Carbohydrates and fats are the nutrients which are used by organism mainly as source of energy
(B) When iodine is added to the starch, it becomes blue-black in colour
(C) Both (A) and (B)
(D) Plants obtain CO₂ from soil through structures called root hairs

Space For Rough Work

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Answers

Paper Code
100702

**SECTION – I
PHYSICS**

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

**SECTION – II
CHEMISTRY**

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

**SECTION – III
MATHEMATICS**

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

**SECTION – IV
BIOLOGY**

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

Answers & Solutions

SECTION – I

PHYSICS

1. D

Sol. Knowledge based.

2. D

Sol. AT 0°C or 273.15 K, water exists in form of ice, water & vapour.

3. D

Sol. Melting point of A is 100°C, so it is solid at 98°C. Boiling point of B is 89°C, so it is gas at 98°C. Melting point of C is 97°C, so at 98°C, it is liquid.

4. C

Sol. $\frac{C}{100} = \frac{F - 32}{180} = \frac{140 - 32}{180} = 60^\circ\text{C}$

5. C

Sol. $m = 15 \text{ gm}$, $H = 60 \text{ Calories}$, $s = 1 \text{ Cal g}^{-1} \text{ }^\circ\text{C}^{-1}$

$$H = ms\Delta t \Rightarrow \Delta t = \frac{H}{ms} = \frac{60}{15 \times 1} = 4^\circ\text{C}$$

Rise in 4°C & 4K is same.

6. B

Sol. $m = 100 \text{ gm} = 0.1 \text{ Kg}$

$$\Delta t = (100 - 30)^\circ\text{C} = 70^\circ\text{C}$$

$$s = 4.8 \times 10^2 \text{ J Kg}^{-1} \text{ }^\circ\text{C}^{-1}$$

$$H = ms\Delta t = 0.1 \times 4.8 \times 10^2 \times 70$$

$$\Rightarrow H = 3360 \text{ Joule}$$

7. D

Sol. Temperature of boiling water can't be raised by any amount of heat.

So, specific heat = infinity.

8. C

Sol. With high conductivity, a pot transfers most of heat energy to food. With low specific heat, less heat is required to raise temperature of pot.

9. C

Sol. $H = mL \Rightarrow L = \frac{H}{m} = \frac{\text{Calorie}}{\text{Kg}}$ or $\frac{\text{Calorie}}{\text{gm}}$

10. B

Sol. $\frac{F - 32}{180} = \frac{C}{100}$

$$\text{According to question } F = C, \frac{C - 32}{180} = \frac{C}{100}$$

$$\Rightarrow C - 32 = \frac{9C}{5}$$

$$\Rightarrow \frac{9C}{5} - C = -32$$

$$\Rightarrow \frac{4C}{5} = -32$$

$$\Rightarrow C = \frac{-32 \times 5}{4} = -40^{\circ}\text{C}$$

11. B

Sol. Number of gradations = boiling point – freezing point = $212^{\circ}\text{F} - 32^{\circ}\text{F} = 180$

12. A

Sol. Steam contains latent heat of vapourization.

13. D

Sol. As density of water is maximum at 4°C & volume is minimum at 4°C .

14. C

Sol. $1 \text{ cal} = 4.18 \text{ J} \Rightarrow 1 \text{ J} = \frac{1}{4.18} = 0.24$

15. B

Sol. Metals are conductor & non-metals are insulators.

SECTION – II CHEMISTRY

1. D
Sol. Alpaca wool is a type of wool that is derived from the fibers that naturally grow on alpacas.
2. A
Sol. The secretion hardens on exposure to air.
3. C
Sol. Tamarind has a sour taste.
4. A
Sol. The colour of turmeric change from yellow to red in basic solution.
5. B
Sol. The acid produced naturally in our stomach is hydrochloric acid.
6. A
Sol. The silk covering spun by the silkworm of silk moth is called Cocoon.
7. C
Sol. Pattanwadi is an Indian breed of sheep found in Gujarat state of India.
8. C
Sol. The substance phenolphthalein is an indicator.
9. B
Sol. Lohi and Nali are breeds of Sheep.
10. B
Sol. Silk is made of protein.
11. A
Sol. Salts are formed by neutralization process.
12. C
Sol. pH of tomato juice is 4, that means it is acidic in nature.
13. D
Sol. As sodium chloride is neutral it will not change the colour either red or blue litmus solution.
14. B
Sol. Shorter fibres are spun and woven into woolen.
15. C
Sol. By reeling threads are taken out from the cocoons.

SECTION – III MATHEMATICS

1. A

Sol. Even prime = 2

$$P(\text{getting an even prime}) = \frac{1}{6}$$

2. A

Sol. Let one of the odd number be x .Then, the next consecutive odd numbers = $x + 2$

Now,

Sum of two consecutive odd numbers = 68

$$\Rightarrow x + (x + 2) = 68$$

$$\Rightarrow 2x + 2 = 68$$

We have,

$$2x + 2 = 68$$

$$\Rightarrow 2x = 68 - 2 \quad [\text{On transposing 2 on R.H.S.}]$$

$$\Rightarrow 2x = 66$$

$$\Rightarrow \frac{2x}{2} = \frac{66}{2} \quad [\text{Dividing both sides by 2}]$$

$$\Rightarrow x = 33.$$

Thus, one odd number = 33

Other odd number = $x + 2 = 33 + 2 = 35$, smallest number = 33

3. D

Sol. $(-1) + (-1) + (-1) \dots \dots \dots 30$ times

$$= (-1) \times 30$$

$$= -30$$

4. C

Sol. We have,

Product of the given decimals = 1.8576

One decimal = 0.54

$$\therefore \text{The other decimal} = \frac{1.8576}{0.54}$$

$$= \left(\frac{1.8576 \times 100}{0.54 \times 100} \right) = \frac{185.76}{54} = 3.44$$

Hence, the other decimal = 3.44

5. A

Sol. Mean = $\frac{(x) + (x + 2) + (x + 4) + (x + 6) + (x + 8)}{5}$

$$11 \times 5 = 5x + 20$$

$$\frac{55 - 20}{5} = x$$

$$x = \frac{35}{5} = 7$$

Observations are 7, 9, 11, 13, 15

$$\text{Mean of first three observations } \bar{x} = \frac{7 + 9 + 11}{3} = \frac{27}{3} = 9$$

6. C

Sol. Let Mohit get x marks in English.
Marks in mathematics = $(240 - x)$

$$\frac{1}{3}(240 - x) = \frac{x}{2} + 30$$

$$\frac{240 - x}{3} = \frac{x + 60}{2}$$

$$480 - 2x = 3x + 180$$

$$5x = 300$$

$$x = 60$$

7. **C**

Sol. We have, $39 - \left[23 - \left\{ 29 - (17 - \overline{9 - 3}) \right\} \right]$

$$= 39 - \left[23 - \left\{ 29 - (17 - 6) \right\} \right] \quad \text{[Removing vinculum]}$$

$$= 39 - \left[23 - \left\{ 29 - 11 \right\} \right] \quad \text{[Removing parentheses]}$$

$$= 39 - [23 - 18] \quad \text{[Removing braces]}$$

$$= 39 - 5 = 34$$

8. **D**

Sol. Total quantity of sugar = 30 kg

Consumed = $\frac{2}{3}$ of 30 kg

$$= \frac{2}{3} \times 30$$

$$= 20 \text{ kg}$$

$$\text{Sugar left in bag } (30 - 20) \text{ kg} = 10 \text{ kg}$$

9. **B**

Sol. Mode = 3 Median - 2 Mean

$$= 3(5) - 2(4)$$

$$= 15 - 8$$

$$= 7$$

10. **D**

Sol. Let the smallest natural number be x .

\therefore the next natural number is $x + 1$ and the third natural number is $x + 1 + 1 = x + 2$.

Given, the sum of these three consecutive numbers = 30

$$\therefore x + (x + 1) + (x + 2) = 30$$

$$\Rightarrow 3x + 3 = 30$$

$$\Rightarrow 3x + 3 - 3 = 30 - 3$$

$$\Rightarrow 3x = 27$$

$$\Rightarrow \frac{3x}{3} = \frac{27}{3} = 9$$

$$\Rightarrow x = 9$$

\therefore The required natural numbers are $x, x + 1, x + 2 = 9, 9 + 1, 9 + 2$

$$= 9, 10, 11$$

Smallest number = 9.

11. **C**

Sol. $x + y = 10$ - - - (1)

$$x - y = 4 \quad \text{--- (2)}$$

from (1) and (2), we get
 $x = 7, y = 3$
 $\therefore xy = 21$

12. B

Sol. $3 + \frac{1}{5 + \frac{1}{\frac{20+1}{10}}} = 3 + \frac{1}{5 + \frac{10}{21}} = 3 + \frac{1}{\frac{105+10}{21}}$

$$= 3 + \frac{21}{115} \Rightarrow \frac{345+21}{115} = \frac{366}{115}$$

13. C

Sol. Number of days in a leap year = 366 i.e., 52 weeks + 2 days.
 Now 2 days can form following possible pairs: (Sunday, Monday), (Monday, Tuesday), (Tuesday, Wednesday), (Wednesday, Thursday), (Thursday, Friday), (Friday, Saturday), (Saturday, Sunday)

$$\text{Required probability} = \frac{2}{7}$$

14. B

Sol. Let x be the number of students in the class
 $\Rightarrow 2x + 7 = 45$
 $\therefore x = 19$

15. C

Sol. $b = a + 2$
 $c = a + 4$
 $d = a + 6$
 $e = a + 8$

$$\text{Average} = \frac{a + a + 2 + a + 4 + a + 6 + a + 8}{5}$$

$$\text{Average} = \frac{5a + 20}{5}$$

$$\text{Average} = \frac{5(a + 4)}{5}$$

$$\text{Average} = a + 4 = c$$

SECTION – IV BIOLOGY

1. C
Sol. The full form of ATP is “Adenosine triphosphate”.
2. B
Sol. Carbon dioxide is available in the air for photosynthesis.
3. B
Sol. In parasitic nutrition an organism de-rives its food from the body of another living organism without killing it.
4. C
Sol. The incorrect statement is:
- They convert carbon dioxide and water into carbohydrates in the absence of sunlight.
5. A
Sol. Chyme is the term for the semi-solid mixture of food and digestive juices that are formed in the stomach.
6. B
Sol. The pair of teeth differ in structure but are similar in function is molars and premolars.
7. A
Sol. Amylase is responsible for breaking down carbohydrates in the mouth.
8. B
Sol. Guard cells regulate the opening and closing of stomata.
9. C
Sol. The procedure for ingesting food is known as ingestion.
10. A
Sol. In amoeba, food is digested in food vacuole.
11. A
Sol. During photosynthesis, the oxygen in glucose comes from CO₂
12. B
Sol. The number of water molecules required in the chemical reactions to produce one molecule of glucose during photosynthesis is twelve.
13. B
Sol. The undigested semi solid food is called faeces.
14. A
Sol. The correct statements is:
- Light reaction takes place in grana.
15. D
Sol. The incorrect statement is:
- Plants obtain CO₂ from soil through structures called root hairs.