FIITJEE INTERNAL TEST

Batches: Udaya Two Year (1921) & Udaya One Year (2021)

N S E J S

(PHASE –VII & III)

Paper Code

Time: 1:30 Hr *Maximum Marks: 180*

A. Question Paper Format

1. The question paper consists of 4 **parts** (Physics -**Section-I**, Chemistry - **Section-II**, Biology-**Section–** III and Mathematics- **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. :

Name : . . . . . .

Batch : . . . . . **Date:**. . . . . .

SECTION – I

Physics

1. The point inside the earth at which a movement occurs and trigger an earthquake is called
   (A) Dip (B) Epicentre
   (C) Focus (D) Strike

1. C

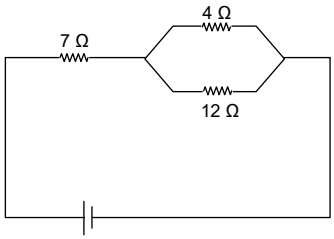
2. The resistance of a bulb rated 80 W, 240 V is
   (A) 240 Ω (B) 480 Ω
   (C) 720 Ω (D) 960 Ω

2. C

3. A copper wire of resistance 5 Ω get stretched to three times its initial length. What will be the resistance of the stretched wire?
   (A) 5 Ω (B) 15 Ω
   (C) 45 Ω (D) (5/3) Ω

3. C

4. What is the equivalent resistance in the given circuit?
   (A) 23Ω
   (B) 10 Ω
   (C) 21Ω
   (D) 75 Ω



4. B

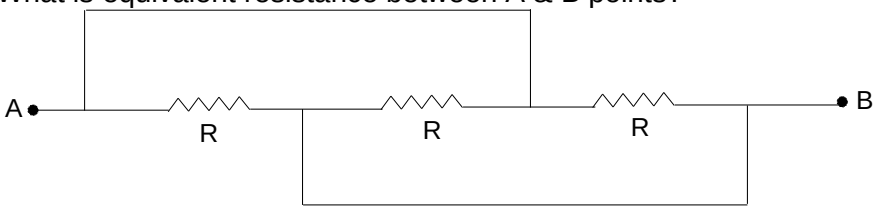
5. Which of the following effect caused on passing electric current through an electrolyte
   (A) magnetic effect (B) chemical effect
   (C) heating effect (D) none of these

5. B

6. Which of the following is caused due to the accumulation of charges in clouds
   (A) lightning (B) charging
   (C) rubbing (D) raining

6. A

7. What is equivalent resistance between A & B points?



   (A) 3R (B) $\frac{R}{3}$

   (C) $\frac{2R}{3}$ (D) None

7. B

8. A resistor of 80 Ω is connected to a cell and the potential difference across the resistor is 40 V. Then the amount of current that flows through the given resistor is _____ A.
   (A) 0.25 (B) 0.5
   (C) 5.0 (D) 2.5

8. B

9. If two resistors of resistance 30 Ω and 40 Ω are connected in parallel across a battery, then the ratio of potential difference across them is _____.
(A) 1 : 1 (B) 2 : 1
(C) 3 : 4 (D) 4 : 3

9. A

10. The electrical energy consumed by a 30 W bulb in 5 minutes is _____.
(A) 9000 KJ (B) 9 KJ
(C) 9000 MJ (D) 9 MJ

10. B

11. The S.I unit of electric charge is _____.
(A) Ampere (B) Volt
(C) Joule (D) Coulomb

11. D

12. The process of electrolysis is used in _____.
(A) Electroplating (B) Metallurgy
(C) Electric printing (D) All the above

12. D

13. Two wires of same material and length have the radius of their cross sections as r and 2r, respectively. The ratio of their resistances is
(A) 2 : 1 (B) 4 : 1
(C) 1 : 4 (D) 3 : 2

13. B

14. When lightning strikes a tree, there is an electric discharge between:
(A) two charged clouds (B) a charged cloud and the earth
(C) a charged cloud and the tree (D) the tree and the earth

14. C

15. In a parallel circuit of bulbs,
(A) Same current exists in all the bulbs
(B) Voltage across each bulb remains the same
(C) Failure of any bulb leads to a break in the circuit
(D) All the above

15. B

SECTION – II
Chemistry

1. An ideal fuel is one which
   (A) does not leave behind undesirable substances
   (B) provides heat and light on combustion
   (C) has a very high ignition temperature
   (D) All of the above.

1. A

2. How has the use of CNG in automobiles has reduced pollution in the cities?
   (A) It produces less amount of sulphur dioxide and chlorine
   (B) It does not leave any residue or smoke after burning in the engine
   (C) It produces large amount of carbon dioxide
   (D) none of the above.

2. B

3. Acid rain which is very harmful for crops, buildings and soil is formed by dissolving
   (A) sulphur and nitrogen oxides released during the combustion of fuels
   (B) hydrogen and water released during combustion of fuels
   (C) metal oxides present in the soil
   (D) unburnt carbon particles released during combustion of fuels

3. A

4. Example of rapid combustion is
   (A) forest fire (B) fire on gas stove
   (C) burning of gun powder (D) none of these

4. B

5. Monomer of PAN polymer is
   (A) ethene (B) acryonitrile
   (C) adipic acid (D) caprolactum

5. B

6. When combustible substances combines with oxygen they
   (A) produces only sound (B) produces only light
   (C) may produces sound and light both (D) may produces sound, light & heat all

6. D

7. If calorific value of methane is 890 kJ/mole. Then 32 g of methane will produce
   (A) 1780 kJ/mole (B) 1335 kJ/mole
   (C) 445 kJ/mol (D) none of these

7. A

8. Combustion of C_3H_6 in excess supply of oxygen is

   $C_3H_6 + O_2 \xrightarrow{\text{excess}} \_\_\_\_\_$

   (A) $3CO_2 + 6H_2O$ (B) $3CO + 3H_2O$
   (C) $3CO_2 + 3\ H_2O$ (D) $3CO + 6H_2O$

8. C

9. Reason of flame in a combustion is
   (A) volatile inflammable gases (B) high calorific value
   (C) ignition temperature (D) none of these

9. A

10. Combustion of coke produces
(A) flames (B) no flames
(C) sound (D) none of these
10. B

11. Which one of the following burning substances cannot be extinguished by using water?
(A) Cloth (B) Charcoal
(C) Oil (D) Wood
11. C

12. Which is the hottest part of a candle flame?
(A) Wick zone (B) Inner zone
(C) Outer zone (D) Middle zone
12. C

13. Which among the following fraction of fractional distillation of petroleum produced at lowest temperature?
(A) Kerosene (B) Diesel
(C) Asphalt (D) Fuel Oil
13. A

14. Burning of which element leads to acid rain
(A) sulphur (B) magnesium
(C) calcium (D) none of these
14. A

15. Black soot which is deposited on kerosene lamps after burning is called
(A) coke (B) lampblack
(C) gas carbon (D) charcoal
15. B

SECTION – III

Biology

1. Longest cell in the human body is:
(A) Red blood cell (B) White blood cell
(C) Nerve cell (D) Muscle cell

1. C
Sol. Longest cell in the human body is nerve cell.

2. Match the column-I with column-II

Column – I	Column – II
(p) Cell wall	(i) Semi-permeable membrane
(q) Cell membrane	(ii) Osmoregulation
(r) Contractile vacuole	(iii) Permeable membrane
(s) Lysosomes	(iv) Digestive enzymes

(A) (p)→(i), (q)→(ii), (r)→(iii), (s)→(iv) (B) (p)→(i), (q)→(iii), (r)→(iv), (s)→(ii)
(C) (p)→(iii), (q)→(ii), (r)→(i), (s)→(iv) (D) (p)→(iii), (q)→(i), (r)→(ii), (s)→(iv)

2. D
Sol. Cell wall → Permeable membrane, Cell membrane → Semi-permeable membrane, Contractile vacuole → Osmoregulation, Lysosomes → Digestive enzymes, Ribosomes → Protein synthesis.

3. A plant cell differs from an animal cell in the absence of:
(A) Endoplasmic Reticulum (B) Mitochondria
(C) Ribosome (D) Centrioles

3. D
Sol. A plant cell differs from an animal cell in the absence of centrioles.

4. The term ‘Cell’ was given by:
(A) Leeuwenhoek (B) Robert Hooke
(C) Rudolf Virchow (D) Robert Brown

4. B
Sol. The term ‘Cell’ was given by Robert Hooke.

5. Dictyosomes are also called:
(A) Lysosomes (B) Ribosomes
(C) Golgi bodies (D) Mitochondria

5. C
Sol. Dictyosomes are also called golgi bodies.

6. Rough ER differs from smooth ER due to the presence of:
(A) DNA (B) Nucleus
(C) Ribosomes (D) Lysosome

6. C
Sol. Rough ER differs from smooth ER due to the presence of ribosomes.

7. A prokaryotic cell lacks:
(A) True nucleus (B) Nuclear membrane
(C) Membrane bound organelles (D) All of these

7. D
Sol. A prokaryotic cell lacks true nucleus, nuclear membrane and membrane bound organelles.

8. Controlling centre of cell is:
(A) Nucleus (B) Nucleolus
(C) Mitochondria (D) Ribosomes

8. A
Sol. Controlling centre of cell is nucleus.

9. Kitchen of the cell is:
(A) Mitochondria (B) ER
(C) Chloroplast (D) Golgi apparatus

9. C
Sol. Kitchen of the cell is chloroplast.

10. Which set among the following is a single membraned cell organelles?
(A) Nucleus, Nucleolus, Mitochondria (B) Mitochondria, Ribosome, Chloroplast
(C) Lysosomes, ER, Golgi body (D) Chloroplast, ER, Golgi body

10. C
Sol. The set of Lysosomes, ER and Golgi body are the single membraned cell organelles.

11. Oxysomes occurs in the:
(A) Golgi apparatus (B) Mitochondria
(C) Lysosome (D) Centrosome

11. B
Sol. Oxysomes occurs in the mitochondria.

12. Unicellularity is found in:
(A) Bacteria (B) Amoeba
(C) Cyanobacteria (D) All of these

12. D
Sol. Unicellularity is found in bacteria, amoeba and cyanobacteria.

13. Suffix ‘S’ in ribosome indicates:
(A) Sedimentation coefficient (B) Svedberg’s unit
(C) ATP synthesis (D) Both (B) and (C)

13. D
Sol. Suffix ‘S’ in ribosome indicates Svedberg’s unit and ATP synthesis.

14. Plant cells generally have:
(A) Large central vacuoles (B) Small vacuoles
(C) No vacuole at all (D) All equal sized vacuoles

14. A
Sol. Plant cells generally have large central vacuoles.

15. Phagocytosis is also known as:
(A) Cell drinking (B) Cell eating
(C) Exocytosis (D) None of these

15. B

Sol. Phagocytosis is also known as cell eating.

SECTION – IV

Mathematics

1. If $a + b + c = 5$ and $a^2 + b^2 + c^2 = 24$, then $\frac{1}{2}(ab + bc + ca)$ is

   (A) 1 (B) $\frac{1}{2}$ (C) $\frac{1}{8}$ (D) $\frac{1}{4}$

1. D

2. $(x^4 + 1)(x^2 + 1)(x + 1)(x - 1)$ is equal to

   (A) $x^4 - 1$ (B) $x^8 - 1$ (C) $x^4 + 1$ (D) none of these

2. B

3. Factorize $\left[-(a+b)^2 + \frac{4c^2}{49}\right]$:

   (A) $\left[\frac{2c}{7} - a - b\right]^2$ (B) $\left[\frac{2c}{7} - a + b\right]^2$

   (C) $\left(\frac{2c}{7} - a - b\right)\left(\frac{2c}{7} + a + b\right)$ (D) $\left(\frac{2c}{7} - a + b\right)\left(\frac{2c}{7} + a - b\right)$

3. C

4. $x^2 + 4y^2 - 9z^2 - 4xy = ?$

   (A) $(x + 2y - 3z)^2$ (B) $(x - 2y + 3z)(x - 2y - 3z)$

   (C) $(x + 2y)(3z - 2xy)$ (D) None of these

4. B

5. $\frac{\sqrt[3]{x} \times \sqrt[4]{x^3} \times \sqrt[8]{x^{10}}}{x^{3/5} \times x} = ?$

   (A) $x^{\frac{13}{15}}$ (B) x^{15}

   (C) $x^{\frac{11}{15}}$ (D) 1

5. C

6. The value of the expression $\frac{3^{x+4} - 6 \times 3^{x+1}}{3^{x+2}}$ is

   (A) 5 (B) 7

   (C) 1 (D) –1

6. B

7. Simplify $\left(\frac{81}{16}\right)^{-3/4} \times \left[\left(\frac{25}{9}\right)^{-3/2} \div \left(\frac{5}{2}\right)^{-3}\right]$

   (A) $\frac{1}{2^2}$ (B) $\frac{1}{2^3}$

   (C) 2^3 (D) 1

7. D

8. $4^{10} + 4^{10} + 4^{10} + 4^{10} = ?$

   (A) 4^{40} (B) 16^{10}

   (C) 2^{30} (D) 2^{22}

8. D

9. In 160 litres of a mixture, the ratio of milk and water is 7 : 3. How much water should be mixed so that the ratio of milk and water becomes 7 : 4.
(A) 16 litre (B) 20 litre (C) 18 litre (D) none of these

9. A

10. A sold a watch to B at a gain of 10% and B sold it to C at a loss of 10%. If C paid Rs. 990 for it, then the price paid by A to buy the watch is:
(A) Rs. 900 (B) Rs. 950
(C) Rs. 990 (D) Rs. 1000

10. D

11. If 11% of a number exceeds 7% of the same number by 18, then number is
(A) 72 (B) 360
(C) 450 (D) 720

11. C

12. In an election a candidate who gets 84% of the votes is elected by a majority of 476 votes. What is the total number of votes polled?
(A) 600 (B) 700
(C) 500 (D) 800

12. B

13. If $x^2 + \frac{1}{x^2} = \frac{17}{4}$ then $x - \frac{1}{x} = ?$
(A) $-\frac{\sqrt{17}}{2}$ (B) $\frac{3}{2}$
(C) $\frac{5}{2}$ (D) $\frac{\sqrt{17}}{2}$

13. B

14. $(256)^{0.16} \times (256)^{0.09}$
(A) 4 (B) 16
(C) 64 (D) 256.25

14. A

15. If $x + \frac{1}{x} = 5$ then $x^3 + \frac{1}{x^3} = ?$
(A) 125 (B) 120
(C) 115 (D) 110

15. D

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PHASE – VII & III

QP CODE:

NSEJS

Answer key
Physics

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