FIITJEE SAMPLE PAPER

(FIITJEE Talent Reward Exam - 2021)

for students presently in

Class 10 (Paper 2)

Time: 3 Hours (1:45 pm – 4:45 pm) | **Code 1010** | *Maximum Marks: 246*

Instructions:

Caution: Class, Paper, Code as given above MUST be correctly marked on the answer OMR sheet before attempting the paper. Wrong Class, Paper or Code will give wrong results.

1. **You are advised to devote 20 Minutes on Section-I, 40 Minutes on Section-II, 60 Minutes on Section-III and 60 Minutes on Section-IV.**
2. **This Question paper consists of 4 sections. Marking scheme is given in table below:**

Section	Subject		Question no.	Marking Scheme for each question	
				Correct answer	Wrong answer
SECTION – I	PHYSICS	(PART-A)	1 to 5	+2	–0.5
	CHEMISTRY	(PART-B)	6 to 10	+2	–0.5
	MATHEMATICS	(PART-C)	11 to 15	+2	–0.5
SECTION – II	PHYSICS	(PART-A)	16 to 23	+3	–1
	CHEMISTRY	(PART-B)	24 to 31	+3	–1
	MATHEMATICS	(PART-C)	32 to 39	+3	–1
SECTION – III	PHYSICS	(PART-A)	40 to 45	+3	–1
	CHEMISTRY	(PART-B)	46 to 51	+3	–1
	MATHEMATICS	(PART-C)	52 to 57	+3	–1
	PHYSICS	(PART-D)	58 to 59	+3	0
	CHEMISTRY	(PART-E)	60 to 61	+3	0
	MATHEMATICS	(PART-F)	62 to 63	+3	0
SECTION – IV	PHYSICS	(PART-A)	64 to 68	+3	0
	CHEMISTRY	(PART-B)	69 to 73	+3	0
	MATHEMATICS	(PART-C)	74 to 78	+3	0
	PHYSICS	(PART-D)	79 to 81	+3	0
	CHEMISTRY	(PART-E)	82 to 84	+3	0
	MATHEMATICS	(PART-F)	85 to 87	+3	0

3. Answers have to be marked on the OMR sheet. The Question Paper contains blank spaces for your rough work. No additional sheets will be provided for rough work.
4. Blank papers, clip boards, log tables, slide rule, calculator, cellular phones, pagers and electronic devices, in any form, are not allowed.
5. **Before attempting paper write your OMR Answer Sheet No., Registration Number, Name** and **Test Centre** in the space provided at the bottom of this sheet.
6. **See method of marking of bubbles at the back of cover page for question no. 58 to 63 and 79 to 87.**

Note: ***Please check this Question Paper contains all 87 questions in serial order. If not so, exchange for the correct Question Paper.***

OMR Answer Sheet No. : _____

Registration Number : _____

Name of the Candidate : _____

Test Centre : _____

For questions **58 to 63 and 79 to 87**

Numerical based questions single digit answer 0 to 9

Example 1:

If answer is 6.

Correct method:

⓪ ① ② ③ ④ ⑤ ❻ ⑦ ⑧ ⑨

Example 2:

If answer is 2.

Correct method:

⓪ ① ❷ ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

SAMPLE PAPER

Recommended Time: 20 Minutes for Section – I

Section – I

PHYSICS – (PART – A)

*This part contains **5 Multiple Choice Questions** number **1 to 5.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

1. A body can be negatively charged by
   (A) Giving excess of electrons to it
   (B) Removing some electrons from it
   (C) Giving some protons to it
   (D) Removing some neutrons from it

2. The work done in carrying a charge Q once around a circle of radius r about a charge q at the centre is
   (A) $\frac{qQ}{4\pi\varepsilon_0}$
   (B) $\frac{qQ}{4\pi\varepsilon_0}\frac{1}{\pi r}$
   (C) $\frac{qQ}{4\pi\varepsilon_0}\left(\frac{1}{2\pi r}\right)$
   (D) 0

3. Two lines of force due to a bar magnet
   (A) Intersect at the neutral point
   (B) Intersect near the poles of the magnet
   (C) Intersect on the equatorial axis of the magnet
   (D) Do not intersect at all

4. Magnetic field at the centre of a circular coil of radius r, through which a current I flows is
   (A) Directly proportional to r
   (B) Inversely proportional to I
   (C) Directly proportional to I
   (D) Directly proportional to I^2

5. What is the unit of power of a lens?
   (A) Metre
   (B) Diopter
   (C) Watt
   (D) None of these

Space for Rough Work

SAMPLE PAPER

CHEMISTRY – (PART – B)

*This part contains **5 Multiple Choice Questions** number **6 to 10.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

6. The chemical formula of lead (II) sulphate is
   (A) Pb_2SO_4 (B) $Pb(SO_4)_4$
   (C) $PbSO_4$ (D) $Pb_2(SO_4)_3$

7. The electrolytic decomposition of water gives H_2 and O_2 in the ratio of
   (A) 1 : 2 by volume (B) 2 : 1 by volume
   (C) 8 : 1 by mass (D) 1 : 2 by mass

8. Acid used for manufacture of fertilizers and explosives is
   (A) Nitric acid (B) Sulphuric acid
   (C) Phosphoric acid (D) Hydrochloric acid

9. The correct order of size for oxygen, species O, O^-, O^+ is
   (A) O > O– > O^+ (B) O > O^+ > O^-
   (C) O^+ > O^- > O (D) O^- > O > O^+

10. Set of elements having one electron in their valence shell is
   (A) Cl, Br, I (B) Na, Mg, Al
   (C) B, Al, Ga (D) K, Rb, Cs

Space for Rough Work

SAMPLE PAPER

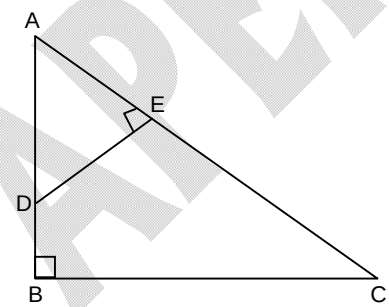
MATHEMATICS – (PART – C)

*This part contains **5 Multiple Choice Questions** number **11 to 15.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

11. The HCF of two numbers obtained in three steps of division is 7 and the first 3 quotient are 2, 4 and 6 respectively. The numbers are
(A) 189, 392 (B) 175, 392
(C) 168, 385 (D) none of these

12. If $ax^2 + 2a^2x + b^3$ is divisible by x + a then which condition must be true, [a, b > 0]
(A) a + b = 0 (B) $a^2 + 2ab + b^2 = 0$
(C) $a^2 - ab + b^2 = 0$ (D) a = b

13. In the given figure, ∠ABC = ∠AED = 90°. Consider the following statement
I: ABC and AED are similar triangles
II: The four points B, C, E and D will lie on a circle.
Which one is true
(A) Only I
(B) Only II
(C) Both I and II
(D) none



14. If secA + tanA = x then secA =
(A) $\frac{x^2-1}{x}$ (B) $\frac{x^2-1}{2x}$
(C) $\frac{x^2+1}{x}$ (D) $\frac{x^2+1}{2x}$

15. If $\sqrt[3]{a}+\sqrt[3]{b}+\sqrt[3]{c}=0$ then $(a + b + c)^3$ =
(A) 27abc (B) 3abc
(C) 9abc (D) abc

Space for Rough Work

SAMPLE PAPER

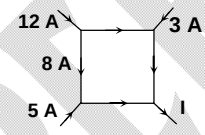
Recommended Time: 40 Minutes for Section – II

Section – II

PHYSICS – (PART – A)

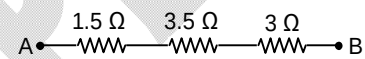
*This part contains **8 Multiple Choice Questions** number **16 to 23.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

16. Figure shows a network of currents. The magnitude of currents is shown here. The current I will be



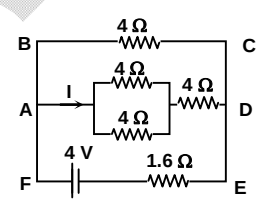
(A) –3A (B) 3A
(C) 13 A (D) 20 A

17. Find the total resistance between points A and B



(A) 1 Ω (B) 4 Ω
(C) 5.5 Ω (D) 8 Ω

18. In the circuit shown, the value of I in ampere is



(A) 1 (B) 0.60
(C) 0.4 (D) 1.5

19. A helium nucleus makes a full rolation in a circle of radius 0.8 metre in two seconds. The value of the magnetic field B at the centre of the circle will be

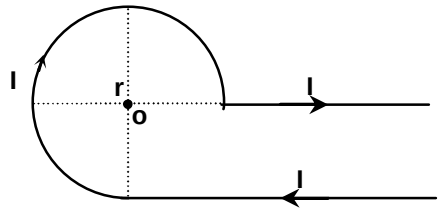
(A) $\frac{10^{-19}}{\mu_0}$ (B) $10^{-19}\ \mu_0$

(C) $2\times10^{-10}\ \mu_0$ (D) $\frac{2\times10^{-10}}{\mu_0}$

Space for Rough Work

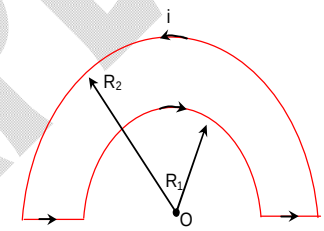
SAMPLE PAPER

20. Current 'I' is flowing in a conductor shaped as shown in the figure. The radius of the curved part is r and the length of straight portion is very large. The value of the magnetic field at the centre O will be



(A) $\frac{\mu_0 I}{4\pi r}\left(\frac{\pi}{2}+1\right)$
(B) $\frac{\mu_0 I}{4\pi r}\left(\frac{\pi}{2}-1\right)$
(C) $\frac{\mu_0 I}{4\pi r}\left(\frac{3\pi}{2}+1\right)$
(D) $\frac{\mu_0 I}{4\pi r}\left(\frac{3\pi}{2}-1\right)$

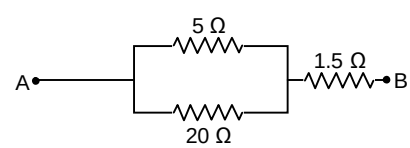
21. The magnetic induction at the centre O in the figure shown is



(A) $\frac{\mu_0 i}{4}\left(\frac{1}{R_1}-\frac{1}{R_2}\right)$
(B) $\frac{\mu_0 i}{4}\left(\frac{1}{R_1}+\frac{1}{R_2}\right)$
(C) $\frac{\mu_0 i}{4}\left(R_1-R_2\right)$
(D) $\frac{\mu_0 i}{4}\left(R_1+R_2\right)$

22. The focal length of a concave mirror is 25 cm. What is the radius of curvature of this mirror?
(A) 50 cm
(B) 12.5 cm
(C) 75 cm
(D) 25 cm

23. Find the total resistance between A and B.
(A) 3.5 Ω
(B) 2.5 Ω
(C) 1.5 Ω
(D) 5.5 Ω



Space for Rough Work

SAMPLE PAPER

CHEMISTRY – (PART – B)

*This part contains **8 Multiple Choice Questions** number **24 to 31.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

24. Write values of a, b and c if following chemical reaction is balanced.
$aMg + bO_2 \rightarrow cMgO$
(A) a=1, b=2, c=2
(B) a=2, b=1, c=2
(C) a=2,b=2,c=2
(D) a=1,b=2.c=1

25. Because of the formation of which of the following, lime water turns milky when carbon dioxide is passed in it?
(A) Calcium carbonate
(B) Calcium bicarbonate
(C) Calcium hydroxide
(D) Sodium carbonate

26. Phenolphthalein in acidic solution is
(A) Colorless
(B) Pink colored
(C)Yellow colored
(D) Orange colored

27. A substance that donates a pair of electrons to form coordinate covalent bond is called
(A) Lewis acid
(B) Lewis base
(C) Bronsted-Lowry acid
(D) Bronsted-Lowry base

28. The nature of calcium phosphate present in tooth enamel is
(A) Basic
(B) Amphoteric
(C) Acidic
(D) Neutral

29. An element reacts with oxygen to give a compound with a high melting point. The compound is soluble in water. The element is likely to be
(A) Calcium
(B) Carbon
(C) Iron
(D) Silicon

30. The general formula $C_nH_{2n}O_2$ could be for open chain
(A) Diketones
(B) Carboxylic acids
(C) Diols
(D) Dialdehydes

31. The compound which contains all the four 1°, 2°, 3° & 4° carbon atom is
(A) 2, 3-dimethylpentane
(B) 3-chloro-2, 3-dimethylpentane
(C) 2, 3, 4-trimethylpentane
(D) 3, 3-dimethylpentane

Space for Rough Work

SAMPLE PAPER

MATHEMATICS – (PART – C)

*This part contains **8 Multiple Choice Questions** number **32 to 39.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

32. A bag contains three green, four blue and two orange marbles. If a marble is picked at random, then the probability that it is not an orange marble, is

(A) $\frac{1}{4}$ (B) $\frac{1}{3}$

(C) $\frac{4}{9}$ (D) $\frac{7}{9}$

33. If $0° < x < 45°$ and $45° < y < 90°$ then which one of the following must be correct

(A) sinx = siny (B) sinx < siny

(C) sinx > siny (D) sinx $\geq$ siny

34. If the number 2345p60q is exactly divisible by 3 and 5 then maximum value of p + q is

(A) 13 (B) 10

(C) 11 (D) 12

35. A vertical tower PQ subtends equal angle of 30° at each of the two places A and B, 60 meter apart on the ground. If AB subtends an angle of 60° at P(the foot of the tower) then the height of the tower is

(A) $20\sqrt{3}$ meter (B) 20 meter

(C) $60\sqrt{3}$ meter (D) 60 meter

Space for Rough Work

SAMPLE PAPER

36. If α, β, γ are the zeros of the polynomial $x^3 + 4x + 1$ then $(\alpha + \beta)^{-1} + (\beta + \gamma)^{-1} + (\gamma + \alpha)^{-1} =$
(A) 2 (B) 3
(C) 4 (D) 5

37. ABC is a right angled triangle at A and AD is perpendicular to the hypotenuse. Then $\frac{BD}{CD}$ is equal to
(A) $\left(\frac{AB}{AC}\right)^2$ (B) $\left(\frac{AB}{AD}\right)^2$
(C) $\frac{AB}{AC}$ (D) $\frac{AB}{AD}$

38. If $\sec\alpha$ and $\operatorname{cosec}\alpha$ are the roots of the equation $x^2 - px + q = 0$ then
(A) $p^2 + q^2 = 2q$ (B) $p^2 - q^2 = 2q$
(C) $p^2 + q^2 = 2p$ (D) $p^2 - q^2 = 2p$

39. If the ratio of the roots of polynomial $x^2 + bx + c$ is the same as that of the ratio of the roots of $x^2 + qx + r$ then
(A) $br^2 = qc^2$ (B) $cq^2 = rb^2$
(C) $q^2c^2 = b^2r^2$ (D) $bq = rc$

Space for Rough Work

SAMPLE PAPER

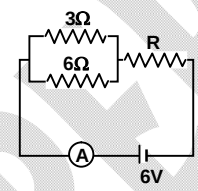
Recommended Time: 60 Minutes for Section – III

Section – III

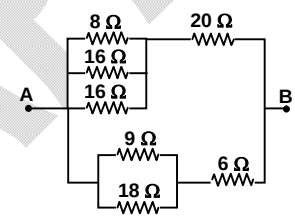
PHYSICS – (PART – A)

*This part contains **6 Multiple Choice Questions** number **40 to 45.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

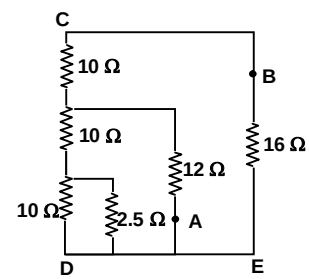
40. If the ammeter in the given circuit reads 2A, the resistance R is:
(A) 1 ohm (B) 2 ohm
(C) 3 ohm (D) 4 ohm



41. The equivalent resistance of the network shown in the figure between the points A and B is
(A) 6 Ω (B) 8 Ω
(C) 16 Ω (D) 24 Ω



42. What is the equivalent resistance across the points A and B in the given circuit.
(A) 8 Ω (B) 12 Ω
(C) 16 Ω (D) 32 Ω

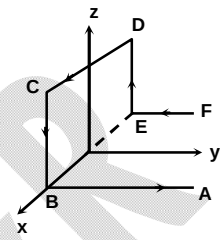


Space for Rough Work

SAMPLE PAPER

43. A straight wire of length 0.5 m and carrying a current of 1.2 A is placed in uniform magnetic field of induction 2T. The magnetic field is perpendicular to the length of the wire. The force on the wire is
(A) 2.4 N (B) 1.2 N
(C) 3.0 N (D) 2.0 N

44. A wire ABCDEF (with each side of length L) bent as shown in the figure and carrying a current I is placed in a uniform magnetic induction B parallel to the positive y-direction. The force experienced by the wire is …….. in the ……..direction.
(A) ILB, +ve z-axis (B) ILB, –ve z-axis
(C) –ILB, +ve z-axis (D) zero



45. An object is placed between focus and pole of a concave mirror than the size of its image will be
(A) Diminished (B) Same size as object
(C) No image will formed (D) Enlarged

Space for Rough Work

SAMPLE PAPER

CHEMISTRY – (PART – B)

*This part contains **6 Multiple Choice Questions** number **46 to 51.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

46. Which of the following oxide(s) of iron would be obtained on prolonged reaction of iron with steam?
(A) FeO
(B) Fe_2O_3
(C) Fe_3O_4
(D) Fe_2O_3 and Fe_3O

47. When copper oxide is heated with hydrogen, copper metal and water are formed. Which of the following is oxidising agent in this reaction?
(A) Copper oxide
(B) Hydrogen
(C) Copper
(D) Water

48. Which of the following is true?
(A) Colour of basic copper carbonate is green
(B) Malachite is an ore of Copper
(C) Zinc is more reactive than Copper
(D) All of these

49. Substances that react with both acids and bases are called
(A) Neutral
(B) Conjugate bases
(C) Amphoteric substances
(D) Conjugate acids

50. When crystals of lead nitrate are heated strongly in a dry test tube
(A) Crystals immediately melt
(B) A brown residue is left
(C) White fumes appear in the tube
(D) A yellow residue is left

51. Which among the following alloys contain mercury as one of its constituents?
(A) Stainless steel
(B) Alnico
(C) Solder
(D) Zinc amalgam

Space for Rough Work

SAMPLE PAPER

MATHEMATICS – (PART – C)

*This part contains **6 Multiple Choice Questions** number **52 to 57.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

52. If $1 < a < 2$ then $\sqrt{a-2\sqrt{a-1}}-\sqrt{a+2\sqrt{a-1}}$ can be

(A) 2 (B) $-2\sqrt{a-1}$

(C) 0 (D) $\sqrt{(a-1)}$

53. The three degree polynomial f(x) has roots of the equation 3, – 3 and – k. Given that the coefficient of x^3 is 2 and f(x) has a remainder of 8 when divided by x + 1, the value of k is

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

(C) $\frac{1}{5}$ (D) 2

54. The number of integers 'a' ($1 \le a \le 200$) such that a^a is a perfect square are

(A) 105 (B) 103

(C) 107 (D) 109

55. If a, b are zeros of $f(x) = x^2 + px + 1$ and c, d are the zeros of $g(x) = x^2 + qx + 1$ then the value of $E = (a - c)(b - c)(a + d)(b + d)$ is

(A) $p^2 - q^2$ (B) $q^2 - p^2$

(C) $q^2 + p^2$ (D) none of these

56. Honey goes to school by a car driven by his driver or uses his bicycle. Probability that he will use the car is $\frac{3}{7}$. What is the probability that he will use his bicycle for going to the school?

(A) $\frac{1}{7}$ (B) $\frac{6}{7}$

(C) $\frac{4}{7}$ (D) $\frac{5}{7}$

57. The value of $\left[\left(1-\frac{1}{n+1}\right)+\left(1-\frac{2}{n+1}\right)+.....+\left(1-\frac{n}{n+1}\right)\right]$ is

(A) $\frac{n}{2}$ (B) n

(C) n + 1 (D) 2n

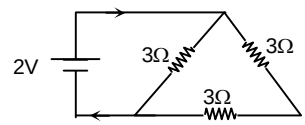
Space for Rough Work

SAMPLE PAPER

PHYSICS – (PART – D)

*This part contains **2 Numerical Based Questions** number **58 to 59.** Each question has **Single Digit Answer 0 to 9.***

58. Find the total current (in ampere) in the circuit shown.



59. A current of 3A is flowing in a linear conductor having a length of 40 cm. The conductor is placed in a magnetic field of strength 500 gauss and makes an angle of 30^0 with the direction of the field. It experience a force of magnitude $X \times 10^{-2}$ N. What is the value of X?

Space for Rough Work

SAMPLE PAPER

CHEMISTRY – (PART – E)

*This part contains **2 Numerical Based Questions** number **60 to 61.** Each question has **Single Digit Answer 0 to 9.***

60. pH (power of Hydrogen) value of black coffee is

61. In general, the number of electrons in the outermost shell of a halogen non-metal atom is

Space for Rough Work

SAMPLE PAPER

MATHEMATICS – (PART – F)

*This part contains **2 Numerical Based Questions** number **62 to 63.** Each question has **Single Digit Answer 0 to 9.***

62. If $a^{x-1} = bc$, $b^{y-1} = ac$, $c^{z-1} = ab$ such that x, y, z $\in$ integer then value of xy + yz + zx – xyz is

63. In an equilateral triangle the circumradius is n times inradius then 'n' is equal to

Space for Rough Work

SAMPLE PAPER

Recommended Time: 60 Minutes for Section – IV

Section – IV

PHYSICS – (PART – A)

*This part contains **5 Multiple Choice Questions** number **64 to 68.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

64. Two thin lenses of focal length f_1 and f_2 are in contact and coaxial with each other. The focal length of this combination is :–

(A) $\sqrt{\frac{f_1}{f_2}}$ (B) $\sqrt{\frac{f_2}{f_1}}$

(C) $\frac{f_1 + f_2}{f_2}$ (D) $\frac{f_1 f_2}{f_1 + f_2}$

65. A light ray is incident on a plane mirror at an angle of incidence of 45°. What is the angle of reflection for this ray

(A) 30° (B) 45°

(C) 54° (D) 20°

66. 10,000 alpha particles per minute are passing through a straight tube of radius r. The resulting electric current is approximately:

(A) 0.5×10^{-16} amp. (B) 2×10^{12} amp.

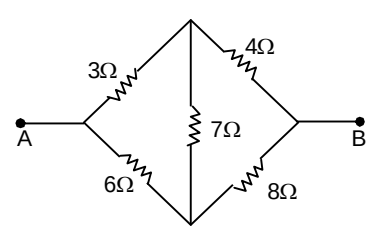
(C) 0.5×10^{12} amp. (D) 2×10^{-12} amp.

67. A wire X is having half the diameter and half the length of a wire Y of similar material. The ratio of resistance of X to that of Y is

(A) 8 : 1 (B) 4 : 1

(C) 2 : 1 (D) 1 : 1

68. Five resistances have been connected as shown in figure. The effective resistance between A & B is



(A) $\frac{14}{3}\ \Omega$ (B) $\frac{20}{3}\ \Omega$

(C) 14 Ω (D) 21 Ω

Space for Rough Work

SAMPLE PAPER

CHEMISTRY – (PART – B)

*This part contains **5 Multiple Choice Questions** number **69 to 73.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

69. What happens when calcium is treated with water?
(i) It does not react with water
(ii) It reacts violently with water
(iii) It reacts less violently with water
(iv) Bubbles of hydrogen gas formed stick to the surface of calcium
(A) (i) and (iv) (B) (ii) and (iii)
(C) (i) and (ii) (D) (iii) and (iv)

70. Blue gold is an alloy of
(A) Gold and aluminum (B) Gold and indium
(C) Gold and silver (D) Gold and copper

71. pH at which methyl orange shows red colour is:
(A) 7 (B) 14
(C) 3 (D) 9

72. When acid reacts with metal carbonate, products are
(A) Salt (B) Water
(C) Carbon dioxide (D) All of these

73. Hydrolysis of water is which type of following reactions?
(A) Endothermic (B) Decomposition
(C) Both (A) and (B) (D) Combination

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MATHEMATICS – (PART – C)

*This part contains **5 Multiple Choice Questions** number **74 to 78.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

74. If $x = a(1 + \cos\theta\cos\phi)$, $y = b(1 + \cos\theta\sin\phi)$ and $z = c(1 + \sin\theta)$ then which of the following is correct

(A) $\frac{x^2}{a^2}+\frac{y^2}{b^2}+\frac{z^2}{c^2}=1$

(B) $\frac{(x-a)^2}{a}+\frac{(y-b)^2}{b}+\frac{(z-c)^2}{c}=1$

(C) $x^2 + y^2 + z^2 = a^2 + b^2 + c^2$

(D) $\left(\frac{x-a}{a}\right)^2+\left(\frac{y-b}{b}\right)^2+\left(\frac{z-c}{c}\right)^2=1$

75. If $x\cos A - y\sin A = 0$ and $x\sin A + y\cos A = b$, then,

(A) $x^2 - y^2 = a^2 - b^2$

(B) $a^2 + y^2 = a^2 + b^2$

(C) $x^2 + y^2 = a^2 - b^2$

(D) $x^2 - y^2 = a^2 + b^2$

76. E is a point on side CA of a equilateral triangle ABC such that $BE \perp CA$, then $AB^2 + BC^2 + CA^2$ is

(A) $2BE^2$

(B) $3BE^2$

(C) $4BE^2$

(D) $6BE^2$

77. If $a\cos\theta - b\sin\theta = c$, then $a\sin\theta + b\cos\theta =$

(A) $\pm\sqrt{a^2+b^2+c^2}$

(B) $\pm\sqrt{a^2+b^2-c^2}$

(C) $\pm\sqrt{c^2-a^2-b^2}$

(D) $\pm\sqrt{-c^2-b^2-a^2}$

78. If two zeroes of a cubic polynomial $ax^3 + bx^2 + cx + d$ are each equal to zero, then the third zero is

(A) $-\frac{d}{a}$

(B) $\frac{c}{a}$

(C) $\frac{-b}{a}$

(D) $\frac{b}{9}$

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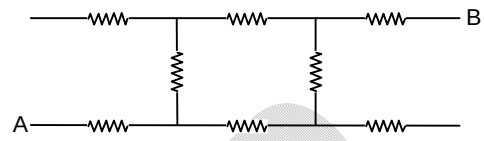
SAMPLE PAPER

PHYSICS – (PART – D)

*This part contains **3 Numerical Based Questions** number **79 to 81.** Each question has **Single Digit Answer 0 to 9.***

79. In the network shown here, each resistance is of 1 Ω. The equivalent resistance between the points A and B (in ohms) is?



80. Two particles A and B enter a region of uniform magnetic field after being accelerated through the same potential difference. They describe circular paths of radius 4 m and 2 m respectively. They have the equal charge. Find the ratio of mass of A to the mass of B.

81. Two cencetric coils, each of radius 2πcm and number of turns one are placed at right angle to each other. The currents flowing in coil are 3 A and 4 A respectively. The magnetic field induction (in $\frac{Wb}{m^2}$) at the centre of coils is $B \times 10^{-5}$, B is :–

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CHEMISTRY – (PART – E)

*This part contains **3 Numerical Based Questions** number **82 to 84.** Each question has **Single Digit Answer 0 to 9.***

82. Determine the oxidation number of **manganese** in the products as per given equation.
$H^+ + 2H_2O + 2MnO_4^- + 5SO_2 \longrightarrow$ Products (in acidic solution)

83. If the H^+ concentration is 0.000001 M, what is the pOH of the solution?

84. $CuFeS_X$ (copper pyrite) is an ore of copper. What is the value of 'X' here?

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MATHEMATICS – (PART – F)

*This part contains **3 Numerical Based Questions** number **85 to 87.** Each question has **Single Digit Answer 0 to 9.***

85. If $\sin\theta + \sin^2\theta + \sin^3\theta = 1$, then the value of $\cos^6\theta - 4\cos^4\theta + 8\cos^2\theta$ is x. Find x

86. In an equilateral triangle ABC, D is a point on side BC such that BD = $\frac{1}{3}$ BC, then $9 \times \frac{AD^2}{AB^2}$ =

87. In $\sin(A + B) = 1$, and $\cos(A - B) = \frac{\sqrt{3}}{2}$, $0 \le (A + B) \le 90$, $A \ge B$, then the value of a is

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SAMPLE PAPER

FIITJEE SAMPLE PAPER – 2021

(FIITJEE Talent Reward Exam - 2021)

for students presently in

Class 10 (Paper 2)

ANSWERS

1.	**A**	2.	**D**	3.	**D**	4.	**C**
5.	**B**	6.	**C**	7.	**B**	8.	**A**
9.	**D**	10.	**D**	11.	**B**	12.	**D**
13.	**C**	14.	**D**	15.	**A**	16.	**D**
17.	**D**	18.	**C**	19.	**B**	20.	**C**
21.	**A**	22.	**A**	23.	**D**	24.	**B**
25.	**A**	26.	**A**	27.	**B**	28.	**A**
29.	**A**	30.	**B**	31.	**B**	32.	**D**
33.	**B**	34.	**A**	35.	**A**	36.	**C**
37.	**A**	38.	**B**	39.	**B**	40.	**A**
41.	**B**	42.	**A**	43.	**B**	44.	**A**
45.	**D**	46.	**C**	47.	**A**	48.	**D**
49.	**C**	50.	**B**	51.	**D**	52.	**B**
53.	**A**	54.	**C**	55.	**B**	56.	**C**
57.	**A**	58.	**1**	59.	**3**	60.	**5**
61.	**7**	62.	**0**	63.	**2**	64.	**D**
65.	**B**	66.	**A**	67.	**C**	68.	**A**
69.	**D**	70.	**B**	71.	**C**	72.	**D**
73.	**C**	74.	**D**	75.	**B**	76.	**C**
77.	**B**	78.	**C**	79.	**3**	80.	**4**
81.	**5**	82.	**2**	83.	**8**	84.	**2**
85.	**4**	86.	**7**	87.	**3**		

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