FIITJEE SAMPLE PAPER

(FIITJEE Talent Reward Exam - 2021)

for **students presently in**

Class 9 (Paper 2)

Time: 3 Hours (1:45 pm – 4:45 pm) | **Code** | **9009** | *Maximum Marks: 272*

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 55 Minutes on Section-I, 45 Minutes on Section-II, 40 Minutes on Section-III and 40 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 12	**+1**	**0**
	CHEMISTRY	(PART-B)	13 to 24	**+1**	**0**
	MATHEMATICS	(PART-C)	25 to 36	**+1**	**0**
	BIOLOGY	(PART-D)	37 to 48	**+1**	**0**
SECTION – II	PHYSICS	(PART-A)	49 to 52	**+4**	**–1**
	CHEMISTRY	(PART-B)	53 to 56	**+4**	**–1**
	MATHEMATICS	(PART-C)	57 to 60	**+4**	**–1**
	BIOLOGY	(PART-D)	61 to 68	**+4**	**–1**
SECTION – III	PHYSICS	(PART-A)	69 to 74	**+3**	**–1**
	CHEMISTRY	(PART-B)	75 to 80	**+3**	**–1**
	MATHEMATICS	(PART-C)	81 to 86	**+3**	**–1**
	BIOLOGY	(PART-D)	87 to 92	**+3**	**–1**
SECTION – IV	PHYSICS	(PART-A)	93 to 97	**+3**	**0**
	CHEMISTRY	(PART-B)	98 to 102	**+3**	**0**
	MATHEMATICS	(PART-C)	103 to 107	**+3**	**0**
	PHYSICS	(PART-D)	108 to 110	**+3**	**0**
	CHEMISTRY	(PART-E)	111 to 113	**+3**	**0**
	MATHEMATICS	(PART-F)	114 to 116	**+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. 108 to 116.**

Note: *Please check this Question Paper contains all **116** 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 **108 to 116**

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:

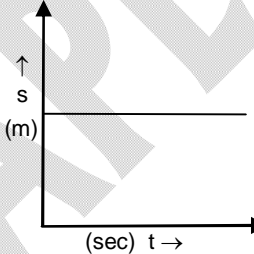If answer is 2.

Correct method:

⓪ ① ❷ ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

Recommended Time: 55 Minutes for Section – I

Section – I

PHYSICS – (PART – A)

*This part contains **12 Multiple Choice Questions** number **1 to 12.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

1. A passenger in a moving bus tosses a ball. If the ball falls behind him, the bus must be moving with.
   (A) Deceleration   (B) Uniform speed
   (C) Acceleration   (D) None of these

2. An object will continue moving uniformly until.
   (A) The resultant force on it begins to decrease
   (B) The resultant force on it is zero
   (C) The resultant force is at certain angle to the motion
   (D) The resultant force is increasing continuously

3. Newton's second law gives the measure of
   (A) Angular momentum   (B) Acceleration
   (C) Force   (D) Momentum

4. The weight of a body at the centre of the earth is
   (A) Zero   (B) Infinite
   (C) Same as on surface   (D) Equal to mass

5. The minimum velocity of projection for a body to move out from the earth's gravitational pull is called.
   (A) Orbital velocity   (B) Escape velocity
   (C) Angular velocity   (D) Terminal velocity

6. Time period of a simple pendulum inside a satellite orbiting earth is
   (A) Zero   (B) infinite
   (C) T   (D) 2 T

Space for Rough Work

7. A stone is dropped from the top of a tower. Its velocity after its has fallen 20 m is
    $\left(\text{Take g} = 10 \text{ m/s}^2\right)$
    (A) 5 m/s   (B) 10 m/s
    (C) 30 m/s   (D) 20 m/s

8. A box of mass 2 kg was moving horizontally with a velocity of 6 m/sec is stopped by friction in 10 sec. The coefficient of friction is (Take g = 10 m/s^2)
    (A) 0.01   (B) 0.03
    (C) 0.06   (D) 0.05

9. A bus moving with a speed of 108 km/hr, can be stopped by brakes after at least 12 m. If the same bus is moving at a speed of 144 km/hr, the minimum stopping distance is approximately
    (A) 24.5 m   (B) 27.5 m
    (C) 21.3 m   (D) 29 m

10. What does the given displacement – time graph represent about velocity.
    (A) Body is moving with certain velocity
    (B) Body is at Rest
    (C) Body is accelerating
    (D) Body is deceleration

11. A boy is moving at a speed of 2m/sec for 10 minutes and then at 4 m/sec for next 10 minutes. The average speed of the boy will be.
    (A) 4 m/sec   (B) 3 m/sec
    (C) 2 m/sec   (D) 6 m/sec

12. When a bus suddenly takes a turn, the passengers are thrown outwards because of
    (A) Inertia of direction   (B) Acceleration of motion
    (C) Speed of motion   (D) Both (B) and (C)

Space for Rough Work

CHEMISTRY – (PART – B)

*This part contains **12 Multiple Choice Questions** number **13 to 24**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

13. Dalton put forward his atomic theory of matter in the year
    (A) 1608   (B) 1708
    (C) 1808   (D) None of these

14. Foam is a type of colloid in which the dispersion medium and the dispersed phase are respectively :
    (A) Solid and solid   (B) Solid and liquid
    (C) Liquid and solid   (D) Liquid and gas

15. One major drawback of Dalton's theory was, he proposed
    (A) All atoms of an element have exactly the same mass
    (B) Atoms are indivisible.
    (C) Atoms of different element have different masses
    (D) All of these

16. The movement of colloidal particles towards one of the electrodes under the influence of an electric field is :
    (A) Electrolysis   (B) Anodizing
    (C) Catenisation   (D) Electrophoresis

17. A 0.01% (by mass) solution of sodium chloride is prepared. Which of the following represent the correct composition?
    (A) 1.0 g of NaCl + 100 g of water   (B) 0.10 g of NaCl + 100 g of water
    (C) 0.01 g of NaCl + 99.99 g of water   (D) 0.10 g of NaCl + 99.90 g of water

18. One atomic mass unit is defined as exactly
    (A) One-sixth the mass of an atom of C-12
    (B) One twelfth the mass of an atom of C-12
    (C) Six times the mass of an atom of C-12
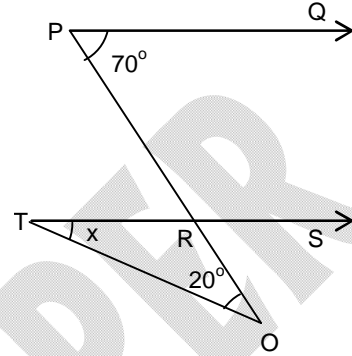   (D) Twelve times the mass of an atom of C-12

Space for Rough Work

19. Two chemical species X & Y combine together to form a product P which contains both X & Y.
X + Y → P. X and Y cannot be broken down into simpler substances by simple chemical reactions. Which of the following (concerning the species X, Y and P) are correct?
(i) P is a compound   (ii) X and Y are compounds
(iii) X & Y are elements   (iv) P has a fixed composition
(A) (i), (ii) & (iii)   (B) (i), (ii) & (iv)
(C) (ii), (iii) & (iv)   (D) (i), (iii) and (iv)

20. Aqueous urea solution is 20% by mass of solution. Calculate percentage by mass of solvent :
(A) 75%   (B) 15%
(C) 25%   (D) 65%

21. Calculate the number of moles of helium present in 6.46 g. (Atomic weight of helium is 4 amu)
(A) 16.15   (B) 1.615
(C) 161.5   (D) 0.1615

22. Laws of chemical combination were established by
(A) Theory   (B) Experiment
(C) Hypothesis   (D) None

23. The atomicity of noble gases is
(A) 0   (B) 1
(C) 2   (D) 8

24. Solutions which distil without any change in composition or temperature, are called :
(A) Saturated   (B) Supersaturated
(C) Ideal   (D) Azeotrope

Space for Rough Work

MATHEMATICS – (PART – C)

*This part contains **12 Multiple Choice Questions** number **25 to 36**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*
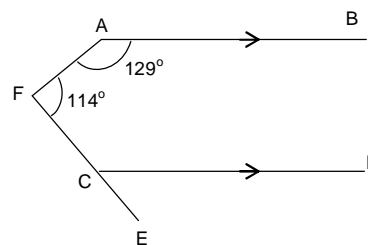
25. In figure, PQ||RS, $\angle QPR = 70°, \angle ROT = 20°$, find the value of x
    (A) 20°   (B) 70°
    (C) 110°   (D) 50°

26. ABC is an equilateral triangle of side $4\sqrt{3}$ cm. P, Q and R are midpoints of AB, CA and BC respectively. Find the area of ΔPQR

    (A) $\dfrac{\sqrt{3}}{4}$ cm^2 (B) $3\sqrt{3}$ cm^2

    (C) $2\sqrt{3}$ cm^2 (D) $\dfrac{\sqrt{3}}{2}$ cm^2

27. The point of intersection of the angle bisectors of the vertices of a triangle is known as
    (A) incentre   (B) circumcentre
    (C) orthocenter   (D) centroid

28. Find the mode of the given data.
    7, 4, 3, 5, 6, 3, 3, 2, 4, 3, 4, 3, 3, 4, 4, 3, 2, 2, 4, 3, 5, 4, 3, 4, 3, 4, 3, 1, 2, 3
    (A) 3   (B) 4
    (C) 5   (D) 2

29. If $\Delta ABC \cong \Delta LKM$, then which side of ΔLKM is equal to side AC of ΔABC?
    (A) LK   (B) LM
    (C) KM   (D) None of these

Space for Rough Work

30. The square of distance between (1, –1) and (2, 3) is
(A) 5   (B) 10
(C) 17   (D) 13

31. The lines $x = 7$ and $y = -9$ intersect at point
(A) (0, 0)   (B) (–7, 9)
(C) (–9, 7)   (D) (7, –9)

32. If y – axis works as a mirror then the image of point (5, 2) is
(A) (–5, –2)   (B) (5, –2)
(C) (–5, 2)   (D) None of these

33. If all the three medians of a triangle are equal, then the triangle is
(A) equilateral triangle   (B) isosceles triangle
(C) scalene acute triangle   (D) right angled triangle

34. If the mean of 11, 15, 17, $y + 1$, 19, $y - 2$, 3 is 14, then the value of y is
(A) 17   (B) 18
(C) 9   (D) 11

35. In an equilateral triangle ABC, P is a point in such an way that $PA^2 = PB^2 + PC^2$ then the value of $\angle BPC$ is
(A) 120°   (B) 150°
(C) 145°   (D) 135°

36. AB, CD are parallel. The angle ECD is equal to
(A) 52^0 (B) 88^0
(C) 44^0 (D) 63^0

Space for Rough Work

BIOLOGY – (PART – D)

This part contains **12 Multiple Choice Questions** number **37 to 48.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

37. During an injury nasal septum gets damaged and for its recovery which cartilage is preferred?
    (A) Elastic cartilage   (B) Hyaline cartilage
    (C) Calcified cartilage   (D) Fibrous cartilage

38. Mast cells of connective tissue contain:
    (A) Vasopressin and relaxin   (B) Heparin and histamine
    (C) Heparin and calcitonin   (D) Serotonin and melanin

39. Match the following and select the correct answer.
    (a) Centriole   (i)   Infoldings in mitochondria
    (b) Chlorophyll   (ii) Thylakoids
    (c) Cristae   (iii) Nucleic acids
    (d) Ribozyme   (iv) Basal body of cilia or flagella

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

40. Plasmodesmata are:
    (A) Locomotary structures
    (B) Membranes connecting the nucleus with plasmalemma
    (C) Connections between adjacent cells
    (D) Lignified cemented layers between cells

41. Magnification of microscope is
    (A) Ratio of size of retinal image seen with the instrument to the unaided eye
    (B) Ratio of size of retinal image seen with the unaided eye to the instrument
    (C) Ratio of retinal image with the instrument to the micrograph obtained
    (D) None of these

42. "Protein icebergs in a sea of lipids" means
    (A) Unit membrane concept   (B) Sandwich model
    (C) Fluid mosaic model   (D) None of these

Space for Rough Work

43.   Which type of tissue correctly matches with its location?

	Tissue	**Location**
(A)	Transitional epithelium	Tip of nose
(B)	Cuboidal epithelium	Lining of stomach
(C)	Smooth muscle	Wall of intestine
(D)	Areolar tissue	Tendons

44.   Compared to those of humans, the erythrocytes in frog are:
(A) Without nucleus but with haemoglobin   (B) Nucleated and with haemoglobin
(C) Very much smaller and fewer   (D) Nucleated and without haemoglobin

45.   Which of the following cell organelles is responsible for extracting energy from carbohydrates to form ATP?
(A) Ribosome   (B) Chloroplast
(C) Mitochondrion   (D) Lysosome

46.   The enzyme recombinase is required at which stage of meiosis?
(A) Pachytene   (B) Zygotene
(C) Diplotene   (D) Diakinesis

47.   Sometimes cell body of a neuron is also called
(i) Karyon   (ii) Perikaryon   (iii) Cyton   (iv) Perichondrion
(A) (i) and (ii)   (B) (ii) and (iii)
(C) (i) and (iii)   (D) (ii) and (iv)

48.   Which of the following tissue is related with storage of fats?
(A) Muscular Tissue   (B) Nervous Tissue
(C) Epithelial Tissue   (D) Connective Tissue

Space for Rough Work

Recommended Time: 45 Minutes for Section – II

Section – II

PHYSICS – (PART – A)

*This part contains **4 Multiple Choice Questions** number **49 to 52**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

49. A planet having a same density as that of earth but its radius is 4 times bigger than the radius of earth. If the acceleration due to gravity on the surface of earth is g and that on the surface of the planet is g', then.
    (A) g' = g/4
    (B) g' = 16 g
    (C) g' = 9 g
    (D) g' = 4 g

50. Weightlessness experienced while orbiting the earth in space ship is the result of
    (A) zero reaction force
    (B) centre of gravity
    (C) inertia
    (D) acceleration

51. A body of mass 4 kg moving on a horizontal rough surface with an initial velocity of 6 m/sec comes to rest after 2 seconds. The force of friction acting on the body was
    (A) 10 N
    (B) 8 N
    (C) 6 N
    (D) 12 N

52. Speeds of two identical cars are u and 2u at a specific instant. With similar retardation of both cars, find the ratio of the minimum distances in which the two cars can be stopped from the given instant is
    (A) 1 : 1
    (B) 1 : 8
    (C) 1 : 4
    (D) 1 : 16

Space for Rough Work

CHEMISTRY – (PART – B)

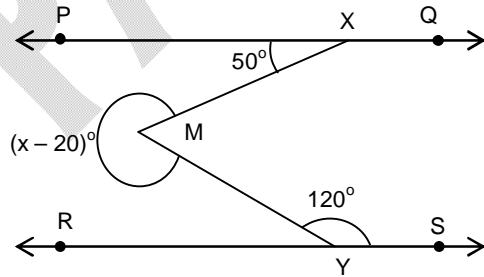53. Calculate the mass of cane sugar required to prepare 250 g of 25% cane sugar solution
    (A) 62.5 g   (B) 70.5 g
    (C) 187.5 g   (D) 18.75 g

54. If an atom has less electrons than normal then it gets
    (A) Positively charged
    (B) Negatively charged
    (C) Neutral
    (D) None of these

55. When excess of electrolyte is added to a colloid it
    (A) Coagulates   (B) Stabilises
    (C) Gets diluted   (D) Doesn't change

56. Boot polish contains:
    (A) Liquid dispersed phase in solid dispersion medium
    (B) Liquid dispersed phase in liquid dispersion medium
    (C) Solid dispersed phase in liquid dispersion medium
    (D) Gas dispersed phase in liquid dispersion medium

Space for Rough Work

MATHEMATICS – (PART – C)

*This part contains **4 Multiple Choice Questions** number **57 to 60**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

57. The coefficient of x^2 in $\left(3x + x^3\right)\left(x + \dfrac{1}{x}\right)$ is

    (A) 3   (B) 1
    (C) 4   (D) 2

58. Converting $1.3\overline{45}$ into a fraction, we get

    (A) $\dfrac{1345}{900}$ (B) $\dfrac{1332}{990}$

    (C) $\dfrac{1345}{990}$ (D) $\dfrac{1332}{900}$

59. If BE and CF are two equal altitudes of a triangle ABC, then triangle ABC is
    (A) scalene triangle   (B) isosceles triangle
    (C) equilateral triangle   (D) none of these

60. In figure, if $PQ \parallel RS$ and $\angle MXP = 50°$ and $\angle MYS = 120°$, find the value of x.
    (A) 240°
    (B) 225°
    (C) 270°
    (D) 315°

Space for Rough Work

BIOLOGY – (PART – D)

*This part contains **8 Multiple Choice Questions** number **61 to 68**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

61. Cellular organelles with membranes are:
    (A) Nuclei, ribosomes & mitochondria
    (B) Chromosomes, ribosomes & endoplasmic reticulum
    (C) Endoplasmic reticulum, ribosomes & nuclei
    (D) Lysosomes, Golgi apparatus & mitochondria

62. Extra nuclear inheritance is a consequence of presence of genes in:
    (A) Mitochondria & chloroplasts   (B) Endoplasmic reticulum & mitochondria
    (C) Ribosomes & chloroplast   (D) Lysosomes & ribosomes

63. Ribosomal RNA is actively synthesised in:
    (A) Lysosomes   (B) Nucleolus
    (C) Nucleoplasm   (D) Ribosomes

64. Condensation of chromosome with visible centromere occurs during
    (A) G1-phase   (B) G2-phase
    (C) S-phase   (D) M-phase

65. Meaningful girdling (ringing) experiments cannot be done on sugarcane because
    (A) Phloem is present inside the xylem   (B) It cannot tolerate the injury
    (C) Vascular bundles are scattered   (D) Plants are very delicate

66. Which of the following characteristics are applicable to smooth muscle fibres?
    (I) Voluntary
    (II) Uninucleate
    (III) Spindle shaped
    (A) I only   (B) II only
    (C) II and III only   (D) I, II and III

67. The age of the tree can be determined by:
    (A) Measuring its diameter   (B) Counting the number of annual rings
    (C) Counting the number of leaves   (D) Finding out the number of branches

68. Mostly, the flesh of the fruit is made of _____.
    (A) Collenchyma   (B) Meristem
    (C) Collenchyma   (D) Parenchyma

Space for Rough Work

Recommended Time: 40 Minutes for Section – III

Section – III

PHYSICS – (PART – A)

This part contains 6 Multiple Choice Questions number 69 to 74. Each question has 4 choices (A), (B), (C) and (D), out of which ONLY ONE is correct.

69. A ball is dropped from a height of 20 m how much time it will take to reach the ground.
(Take g = 10 m/sec^2)
(A) 1 sec (B) 2 sec
(C) 3 sec (D) 4 sec

70. When a body is projected at a certain angle with the horizontal (ground) then the acceleration acting on the body in horizontal direction is.
(A) 10 m/sec^2 (B) 20 m/sec^2
(C) zero (D) 30 m/sec^2

71. A ball is thrown with a velocity of 10 m/sec making an angle of 30° with horizontal. It will hit the ground after (g = 10 m/sec^2)
(A) 1 sec (B) 2 sec
(C) 3 sec (D) 4 sec

72. Which of the following is a self adjusting force.
(A) static friction (B) sliding friction
(C) limiting friction (D) all of these

73. A car travelling at a speed of 30 m/sec is brought to a halt in 4 m. By applying brakes. If the same car is travelling at 60 m/sec. It can be brought to halt with in.
(A) 10 m (B) 20 m
(C) 45 m (D) 16 m

74. A force of 20 N acts on a body of mass 40 kg for 20 seconds. Change in its momentum is.
(A) 100 kg m/sec (B) 200 kg m/sec
(C) 400 kg m/sec (D) 1600 kg m/sec

Space for Rough Work

CHEMISTRY – (PART – B)

*This part contains **6 Multiple Choice Questions** number **75 to 80**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

75. Ozone has got
    (A) Two oxygen atoms combined together
    (B) Three oxygen atoms combined together
    (C) Four oxygen atoms combine together
    (D) None of these

76. The number of electrons in 8 gm H_2S are (atomic number S = 16)

    (A) $8N_A$
    (B) $\dfrac{144}{34}N_A$

    (C) $\dfrac{18}{34}N_A$
    (D) $16N_A$

77. How many moles of gas are there which occupies a volume of 4.48 litre at STP?
    (A) 5 moles
    (B) 4 moles

    (C) $\dfrac{1}{5}$ moles
    (D) $\dfrac{1}{4}$ moles

78. Which of the following sample has maximum number of molecules?
    (A) 18 gm H_2O
    (B) 4 gm H_2
    (C) 0.5 gm H_2S
    (D) 25.5 gm NH_3

79. Which of the following sample has maximum number of atoms?
    (A) 18 gm H_2O
    (B) 4 gm H_2
    (C) 0.5 gm H_2S
    (D) 25.5 gm NH_3

80. What is the weight of a sample containing 2 moles of CO_2 + 44.8 litre of N_2 at STP?
    (A) 88 gm
    (B) 144 gm
    (C) 56 gm
    (D) 116 gm

Space for Rough Work

MATHEMATICS – (PART – C)

*This part contains **6 Multiple Choice Questions** number **81 to 86**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*
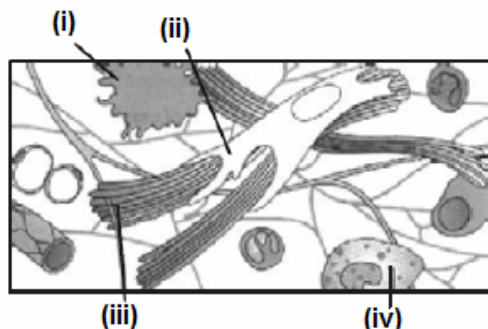
81. If $(2x + 17)^o$, $(x + 4)^o$ are complementary, find x:
    (A) 63° (B) 53°
    (C) 35° (D) 23°

82. An angle is 30° more than one half of its complement. Find the angle in degree:
    (A) 60° (B) 50°
    (C) 45° (D) 80°

83. The measure of an angle, if six times its complement is 12° less than twice its supplement, is:
    (A) 58°   (B) 48°
    (C) 38°   (D) 78°

84. If ABC and DEF are two triangles such that $\triangle ABC \cong \triangle FDE$ and AB = 5cm, ∠B = 40° and ∠A = 80°. Then which of the following is true.
    (A) DE = 5cm, ∠F = 80°   (B) DE = 5cm, ∠E = 60°
    (C) FD = 5cm, ∠C = 40°   (D) DF = 5cm, ∠D = 40°

85. Internal bisectors of angles ∠B and ∠C of a triangle ABC meet at O. If ∠BAC = 80°, then the value of ∠BOC is
    (A) 120°   (B) 140°
    (C) 110°   (D) 130°

86. The ortho centre of a right angled triangle lies
    (A) outside the triangle   (B) at the right angular vertex
    (C) on its hypotenuse   (D) within the triangle

Space for Rough Work

BIOLOGY – (PART – D)

*This part contains **6 Multiple Choice Questions** number **87 to 92**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

87. Given below is the diagrammatic sketch of a certain type of connective tissue. Identify the parts labelled (i), (ii), (iii) and (iv) and select the right option about them.
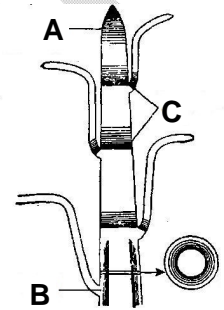

	(i)	(ii)	(iii)	(iv)
(A)	Macrophage	Fibroblast	Collagen fibres	Mast cell
(B)	Mast cell	Macrophage	Fibroblast	Collagen fibres
(C)	Macrophage	Collagen fibres	Fibroblast	Mast cell
(D)	Mast cell	Collagen fibres	Fibroblast	Marophage

88. An epithelial tissue which has thin flat cells, arranged edge to edge so as to appear like closely packed tiles, is found to be present at:
(A) Outer surface of ovary
(B) Inner lining of fallopian tube
(C) Inner lining of stomach
(D) Inner lining of cheeks

89. Arrange the following events of meiosis in correct sequence:
(i) Crossing over
(ii) Synapsis
(iii) Terminalisation of chiasmata
(iv) Disappearance of nucleolus
(A) (i) - (iii) - (ii) - (iv)
(B) (ii) - (i) - (iv) - (iii)
(C) (iv) - (ii) - (i) - (iii)
(D) (iii) - (i) - (ii) - (iv)

Space for Rough Work

90. Meiosis I is reductional division. Meiosis II is equational division due to:
    (A) Pairing of homologous chromosomes   (B) Crossing over
    (C) Separation of chromatids   (D) Disjunction of homologous chromosomes

91. With reference to cell theory consider the following statements
    (i) Theodore Schwann, a German Botanist and Schleiden a German Zoologist proposed the cell theory.
    (ii) Cell theory was universally accepted.
    (iii) The spontaneous generation concept of cell theory was discarded by Rudolf Virchow.
    (iv) Cell theory was challenged on many grounds.
    Which of the above statement/s is/are correct?
    (A) (i), (ii) and (iii) only   (B) (i), (ii), (iii) and (iv) only
    (C) (ii), (iii) and (iv) only   (D) (ii) and (iii) only

92. The given figure shows the position of different meristems as seen in a longitudinal section of the main axis. Identify A, B and C
    (A) A = Lateral meristem, B = Intercalary meristem, C = Apical meristem
    (B) A = Apical meristem, B = Lateral meristem, C = Intercalary meristem
    (C) A = Apical meristem, B = Intercalary meristem, C = Lateral meristem
    (D) A = Intercalary meristem, B = Lateral meristem, C = Apical meristem

Space for Rough Work

Recommended Time: 40 Minutes for Section – IV

Section – IV

PHYSICS – (PART – A)

*This part contains **5 Multiple Choice Questions** number **93 to 97.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

93. A ball is thrown vertically upwards at a velocity of u from the ground. The magnitude of velocity at same position when coming down will be
    (A) 3 u   (B) 4 u
    (C) 6 u   (D) u

94. Mass of the object is 2 kg on earth. The mass of same object on Jupiter will be
    (A) 10 kg   (B) 20 kg
    (C) 50 kg   (D) 2 kg

95. The acceleration due to gravity on a planet depends on its.
    (A) Mass   (B) Radius
    (C) Both (A) and (B)   (D) None of these

96. Which law states that every action has equal and opposite reaction.
    (A) First law of motion   (B) Second law of motion
    (C) Third law of motion   (D) Conservation of momentum

97. An external force of 20 N is acting on a box and it is accelerating at 2 m/sec^2 on a frictionless surface. The mass of a box is
    (A) 40 kg   (B) 20 kg
    (C) 10 kg   (D) 5 kg

Space for Rough Work

CHEMISTRY – (PART – B)

*This part contains **5 Multiple Choice Questions** number **98 to 102**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*
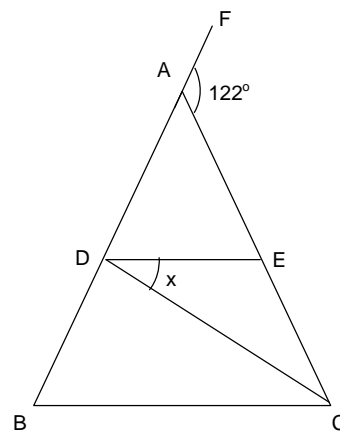
98. The total number of moles of O-atom in 16 gm of SO_2 are
    (A) 0.25 moles
    (B) 0.33 moles
    (C) 1 mole
    (D) 0.5 moles

99. NO reacts with O_2 to form NO_2 when 10 g of NO_2 is formed during the reaction, the mass of O_2 consumed is
    (A) 1.90 g
    (B) 5.0 g
    (C) 3.48 g
    (D) 13.9 g

100. How many grams of phosphoric acid (H_3PO_4) would be needed to neutralise 100 g of magnesium hydroxide ($Mg(OH)_2$).
    (A) 66.7 g
    (B) 252
    (C) 112.6 g
    (D) 168 g

101. Find the ratio of no of molecules contained in 1 gm of NH_3 and 1 gm N_2
    (A) 20 : 17
    (B) 28 : 17
    (C) 17 : 28
    (D) 14 : 17

102. The largest number of molecule is in
    (A) 28 gm of CO
    (B) 46 gm of C_2H_5OH
    (C) 36 gm of H_2O
    (D) 54 gm of N_2O_5

Space for Rough Work

MATHEMATICS – (PART – C)

This part contains 5 Multiple Choice Questions number 103 to 107. Each question has 4 choices (A), (B), (C) and (D), out of which ONLY ONE is correct.

103. If $x = 7 + 4\sqrt{3}, y = 7 - 4\sqrt{3}$, Then $\dfrac{1}{x} + \dfrac{1}{y} = $

    (A) 11   (B) 14

    (C) 8   (D) $8\sqrt{3}$

104. ABC is an equilateral triangle. P and Q are two points on $\overline{AB}$ and $\overline{AC}$ respectively such that $\overline{PQ} \parallel \overline{BC}$. If $\overline{PQ}$ = 5cm then area of $\triangle APQ$ is:

    (A) $\dfrac{25}{4}$ sq.cm   (B) $\dfrac{25}{\sqrt{3}}$ sq. cm

    (C) $\dfrac{25\sqrt{3}}{4}$ sq. cm   (D) $25\sqrt{3}$ sq. cm

105. In a $\triangle PQR$, PS is bisector of $\angle P$ such that S lies on QR and $\angle Q = 70^{\circ}$ and $\angle R = 30^{\circ}$, then:

    (A) QS > PQ > PR   (B) QS < PQ < PR

    (C) PQ > QS > SR   (D) PQ < QS < SR

106. There are two positive integers X and Y. When X is divided by 237, the remainder is 192. When Y is divided by 117, the quotient is same but the remainder is 108. The remainder when the sum of X and Y is divided by 118 is

    (A) 58   (B) 64

    (C) 70   (D) cannot say

107. In the given figure, AB = AC, BC = CD and DE ∥ BC, $\angle FAE = 122^{\circ}$. Find the measure of x.

    (A) 62°

    (B) 29°

    (C) 58°

    (D) 74°

Space for Rough Work

PHYSICS – (PART – D)

*This part contains **3 Numerical Based Questions** number **108 to 110**. Each question has **Single Digit Answer 0 to 9**.*

108. A body of mass 3 kg moves with an acceleration of 3 m/sec^2. The change of momentum per unit time is P (kg m/sec). What is the value of P?

109. The weight of a body at earth's surface is 10 N. At a depth half way to the centre of the earth. Its Weight (in Newton) is found to be X. What is the value of X? (assuming uniform density of earth) (g = 10 m/sec^2)

110. The force exerted on an object is 100 N for 0.05 sec, the impulse exerted (in N-sec) on the object is.

Space for Rough Work

CHEMISTRY – (PART – E)

This part contains **3 Numerical Based Questions** *number* **111 to 113.** *Each question has* **Single Digit Answer 0 to 9.**

111. The number of moles in 500 g of limestone is _____.

112. How many atoms are present in a molecule of acetic acid.

113. Identify the number of physical properties from the following :
Corrosion, Fluidity, Rancidity, Ductility, Reactivity, Solubility

Space for Rough Work

MATHEMATICS – (PART – F)

This part contains **3 Numerical Based Questions** *number* **114 to 116**. *Each question has* **Single Digit Answer 0 to 9**.

114. If the two sides of a triangle are 8 cm and 3 cm, then what can be the smallest integral value of the third side.

115. If A(1, 5), B(2, 0) and C(6, 2) are the vertices of ∆ABC, find the length of median through A.

116. Find the number of real values of x for which $|x - 3| + (x - 3)^2 + \sqrt{x - 3} + |x + 3| = 0$.

Space for Rough Work

FIITJEE SAMPLE PAPER – 2021
(FIITJEE Talent Reward Exam - 2021)
for **students presently in**
Class 9 (Paper 2)
ANSWERS

1.	C	2.	B	3.	C	4.	A
5.	B	6.	B	7.	D	8.	C
9.	C	10.	B	11.	B	12.	A
13.	C	14.	D	15.	D	16.	D
17.	C	18.	B	19.	D	20.	C
21.	B	22.	B	23.	B	24.	D
25.	D	26.	B	27.	A	28.	A
29.	B	30.	C	31.	D	32.	C
33.	A	34.	A	35.	B	36.	D
37.	B	38.	B	39.	A	40.	C
41.	A	42.	C	43.	C	44.	B
45.	C	46.	A	47.	B	48.	D
49.	D	50.	A	51.	D	52.	C
53.	A	54.	A	55.	A	56.	A
57.	C	58.	B	59.	A	60.	C
61.	D	62.	A	63.	B	64.	D
65.	C	66.	C	67.	B	68.	D
69.	B	70.	C	71.	A	72.	A
73.	D	74.	C	75.	B	76.	B
77.	C	78.	B	79.	D	80.	B
81.	D	82.	B	83.	B	84.	D
85.	D	86.	B	87.	A	88.	D
89.	C	90.	C	91.	C	92.	B
93.	D	94.	D	95.	C	96.	C
97.	C	98.	D	99.	C	100.	C
101.	B	102.	C	103.	B	104.	C
105.	B	106.	B	107.	C	108.	9
109.	5	110.	5	111.	5	112.	8
113.	3	114.	6	115.	5	116.	0