FIITJEE SAMPLE PAPER

(FIITJEE Talent Reward Exam-2020)

for students presently in

Class 11 (Paper 1)

Time: 3 Hours (9:30 am – 12:30 pm)

Code 1100

Maximum Marks: 234

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 60 Minutes on Section-I, 90 Minutes on Section-II and 30 Minutes on Section-III.**

2. **This Question paper consists of 3 sections. Marking scheme is given in table below:**

Section	Subject	Question no.	Marking Scheme for each question	
			correct answer	wrong answer
SECTION – I	APTITUDE	1 to 30	**+3**	**0**
SECTION – II	PHYSICS (PART-A)	31 to 44	**+3**	**0**
	CHEMISTRY (PART-B)	45 to 58	**+3**	**0**
	MATHEMATICS (PART-C)	59 to 72	**+3**	**0**
SECTION – III	PHYSICS (PART-A)	73 to 78	**+1**	**–0.25**
	CHEMISTRY (PART-B)	79 to 84	**+1**	**–0.25**
	MATHEMATICS (PART-C)	85 to 90	**+1**	**–0.25**

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.

Note: ***Please check this Question Paper contains all 90 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 : _____

Recommended Time: 60 Minutes for Section – I

Section – I

APTITUDE TEST

*This section contains **30 Multiple Choice Questions** number **1 to 30**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

1. In the following number sequence, how many such even numbers are there which are exactly divisible by its immediate preceding number but not exactly divisible by its immediate following number?
   3 8 4 1 5 7 2 8 3 4 8 9 3 9 4 2 1 5 8 2
   (A) One (B) Two
   (C) Three (D) Four

2. Various terms of an alphabet series are given with one term is missing as shown by (?). Choose the missing term out of the given alternatives.
   BD, EG, HJ, ?
   (A) LN (B) LM
   (C) KM (D) KN

3. In the following question, select the word which cannot be formed using the letters of the given word.
   DICTIONARIES
   (A) CATION (B) SITE
   (C) DICTATE (D) TIRED

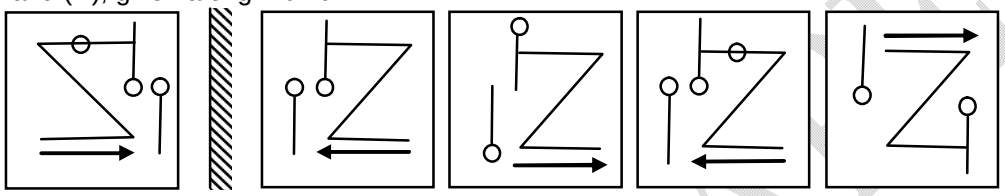
4. Three of the following four are alike in a certain way and so from a group. Which is the one that does not belong to the group?
   (A) America (B) India
   (C) Bangladesh (D) Pakistan

Space for Rough Work

5. A dot is placed in the figure marked as (X), this figure is followed by the four alternatives marked as (A), (B), (C), (D). One out of these four options contains the common region to circle, square & triangle similar to that of marked by dot in figure (X).

(X) (A) (B) (C) (D)

6. Choose the correct mirror – image of the figure (X) from amongst four alternatives (A), (B), (C) and (D), given along with it.



(X) (A) (B) (C) (D)

7. There is some relationship between the two terms to the left of : : and the same relationship holds between the two terms to its right. Find out the related term from the given alternatives.
JQXE : LSZG : : MTNL : ?
(A) OPVN (B) KRPN
(C) OVPN (D) OPLJ

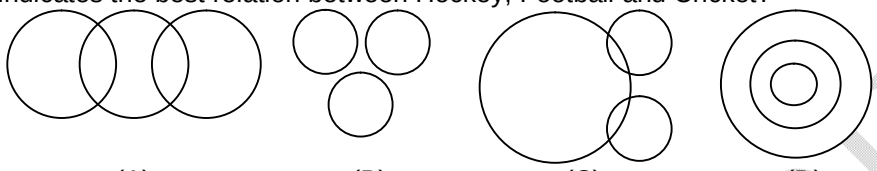
8. Arrange the given words in the sequence in which they occur in the dictionary.
1. Dragon 2. Draculla 3. Dormont 4. Drapery 5. Deviate
(A) 53214 (B) 53124
(C) 53421 (D) 53412

9. Three of the following four are alike in a certain way and so from a group. Which is the one that does not belong to the group?
(A) Quick : Fast (B) Lazy : Slow
(C) Credible : Deceptive (D) Exhaust : Tired

Space for Rough Work

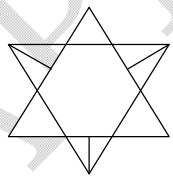
10. Which one set of letters when sequentially placed at the gaps in the given letter series shall complete it?
P_P_RPQ_S_Q_ST
(A) QRQPR (B) QQRPR
(C) PQPRR (D) PRQRQ

11. In this question given below contains three elements. These elements may or may not have some inter linkage. Each group of elements may fit into one of these diagrams at (A), (B), (C) and/or (D). You have to indicate the group of elements which correctly fits into the diagrams and indicates the best relation between Hockey, Football and Cricket?



(A) (B) (C) (D)

12. How many triangles are there in the given figure?
(A) 12
(B) 14
(C) 16
(D) 18



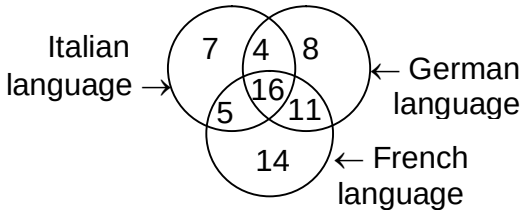
13. In a class of five students, P has more marks than Q and R does not have the least marks. S has more marks than T and T has more marks than P, who among them will have the least marks?
(A) P (B) Q
(C) S (D) T

14. In a certain code language, "CASIO" is written as "3119915". How is "CITIZEN" written in that code language?
(A) 295629134 (B) 3192295614
(C) 3912659214 (D) 3920926514

15. From a point, Lokesh starts walking towards south and after walking 30 metres he turns to his right and walks 20 metres, then he turns right again and walks 30 metres. He finally turns to his left and walk 40 metres. In which direction is he with reference to the starting point?
(A) North-West (B) East
(C) West (D) South

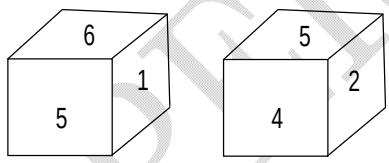
Space for Rough Work

16. In the given figure, how many people speak both Italian and French language?
(A) 21
(B) 16
(C) 27
(D) 20



17. If 6 * 9 – 4 = 58 and 3 * 9 – 7 = 34, then in the expression A * 4 – 9 = 91, what is the value of 'A'?
(A) 6.5 (B) 17.5
(C) 20.5 (D) 30.5

18. Two positions of a dice are shown below. What will come opposite to face containing '4'?
(A) 1
(B) 2
(C) 3
(D) 6



19. In the following question, correct the given equation by interchanging two numbers.
(8 x 3) ÷ 4 + 9 – 5 = 16
(A) 3 and 4 (B) 4 and 8
(C) 5 and 3 (D) 5 and 9

20. In a row of cars Maruti is 20th from the left end of row. Honda is 10th to the right from Maruti and is at the exact center of row. How many cars are there in the row?
(A) 54 (B) 59
(C) 57 (D) 56

21. X and Y are brothers. R is the father of Y. T is the sister of S who is maternal uncle of X. How is T related to R?
(A) Mother (B) Wife
(C) Sister (D) Brother

22. What will come in place of question mark (?) in the following series?
X2Z, B6D, ? , J14L, N18P
(A) F10H (B) F6H
(C) D5J (D) F18J

Space for Rough Work

23. If white is called blue, blue is called red, red is called yellow, yellow is called green, green is called black, black is called violet and violet is called orange, what would be the colour of human blood?
(A) Red (B) Yellow
(C) Orange (D) Green

24. How many times from 4 pm to 10 pm the hour and minute hands of a clock are at right angles?
(A) 9 (B) 11
(C) 10 (D) 6

Directions (Q.25 to Q.26): Study the following information carefully and answer the questions given below:
In an Exhibition seven cars of different companies - Cadillac, Ambassador, Fiat, Maruti, Mercedes, Bedford and Fargo are standing facing to East in the following order :
1. Cadillac is next to right of Fargo.
2. Fargo is fourth to the right of Fiat.
3. Maruti car is between Ambassador and Bedford.
4. Fiat which is third to the left of Ambassador, is at one end.

25. Which of the cars are on both the sides of cadillac car?
(A) Ambassador and Maruti (B) Maruti and Fiat
(C) Fargo and Mercedes (D) Ambassador and Fargo

26. Which of the following statement is correct?
(A) Maruti is next left of Ambassador (B) Bedford is next left of Fiat
(C) Bedford is at one end (D) Fiat is next second to the right of Maruti.

Space for Rough Work

Directions (Q.27 to Q.28): Each of the questions below consists of a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and give answer.

(A) if the data in statement I alone are sufficient to answer the question, while the data in statement II alone are not sufficient to answer the question.
(B) if the data in statement II alone are sufficient to answer the question, while the data in statement I alone are not sufficient to answer the question.
(C) if the data in both statements I and II together are not sufficient to answer the question.
(D) if the data in both statements I and II together are necessary to answer the question.

27. How many speeches were delivered in the two days' programme?
    I. 18 speakers were invited to give at least one speech (maximum of two speech), out of which one-sixth of the speakers could not come.
    II. One-third of the speakers who come gave two speeches each.

28. Statement: Six persons A, B, C, D, E, F are sitting in queue. All of them are facing south direction. Who among the following sits exactly between C and B?
    I. B sits at extreme end of the row. A sits second to the right of B. Only one person sits between A and C. E sits immediate right of C.
    II. E sits third to the right of D. Only one person sits between E and A. F sits to the right to E. C is an immediate neighbour of E.

Directions (Q.29 to Q.30): In this following questions two statements are given each followed by two conclusions I and II. You have to take the given statements to be true even if they seem to be at variance with commonly known facts. You have to decide which of the given conclusions, if any, follows from the given statements. Give answer:

(A) If only conclusion I follows
(B) If only conclusion II follows
(C) If neither conclusion I nor II follows
(D) If both conclusions I and II follow

29. **Statements:**
    All rackets are bats.
    All bats are wickets.
    Conclusions:
    I. Some wickets are rackets.
    II. All wickets are rackets.

30. **Statements:**
    All radios are electric goods.
    All tablelamps are electric goods.
    Conclusions:
    I. Some radios are tablelamps.
    II. Some tablelamps are radios.

Space for Rough Work

Recommended Time: 90 Minutes for Section – II

Section – II

PHYSICS – (PART – A)

*This part contains **14 Multiple Choice Questions** number **31 to 44.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

31. A shell is fired from a cannon with a velocity V (m/s) at an angle θ with the horizontal direction. At the highest point in its path, it explodes into two pieces of equal mass. One of the pieces retraces its path to the cannon and the speed (in m/s) of the other piece immediately after the explosion is

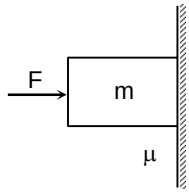
(A) $3V\cos\theta$ (B) $2V\cos\theta$

(C) $\frac{3}{2}V\cos\theta$ (D) $\frac{\sqrt{3}}{2}V\cos\theta$

32. The minimum value of F for which the block remains in equilibrium is

(A) $\frac{mg}{\mu}$ (B) $\frac{mg}{2\mu}$

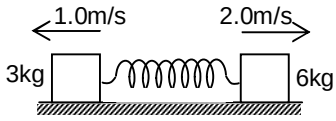
(C) $\frac{2mg}{\mu}$ (D) none of these



33. Under the action of a force, a 2 kg, body moves such that its position x as a function of time is given by $x = \frac{t^3}{3}$ the work done by the force in the first 2 sec is

(A) 1600 J (B) 160 J
(C) 16 J (D) 1.6 J

34. Two blocks of mass 3 kg and 6 kg respectively are placed on a smooth horizontal surface. They are connected by a light spring of force constant K = 200N/m. Initially the spring is unstretched. The indicated velocities are imparted to the blocks. The maximum extension of the spring will be



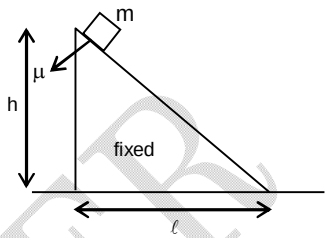
(A) 30 cm (B) 25 cm
(C) 20 cm (D) 15 cm

Space for Rough Work

35. Two particles of equal mass move in a circle of radius r under the action of their mutual gravitational attraction. If the mass of each particle is M, the speed of each particle is

(A) $\sqrt{\frac{GM}{r}}$ (B) $\sqrt{\frac{GM}{2r}}$ (C) $\sqrt{\frac{GM}{4r}}$ (D) $\sqrt{\frac{2GM}{r}}$

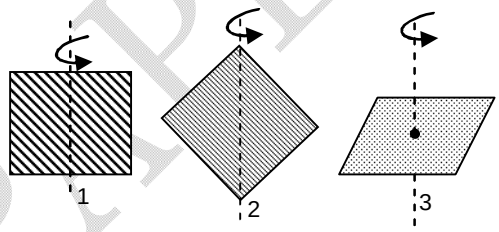
36. The block slides down the inclined plane when placed on the top of the incline. The speed of the block when it reaches the ground will be



(A) $\sqrt{g\ell + \mu gh}$ (B) $\sqrt{2gh - 2\mu g\ell}$

(C) $\sqrt{2g\ell - 2\mu gh}$ (D) $\sqrt{2gh + 2\mu g\ell}$

37. Three identical square plates rotate about the axes show in the figure in such a way that their kinetic energies are equal. Each of the rotation exes passes through the centre of the square. Then the ratio of angular speeds $\omega_1 : \omega_2 : \omega_3$ is :



(A) 1 : 1 : 1

(B) $\sqrt{2}:\sqrt{2}:1$

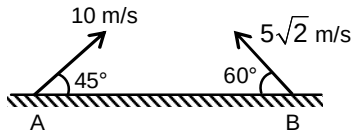
(C) $1:\sqrt{2}:1$

(D) $1:2:\sqrt{2}$

38. The path followed by A as seen from B will be

(A) Parabolic (B) Straight line

(C) Curvilinear (D) Cannot say



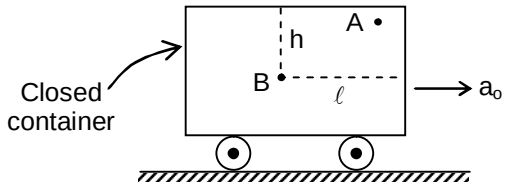
39. The equation of a wave is given by $y = a\sin\omega\left(\frac{x}{v} - k\right)$ where ω is angular velocity and v is the linear velocity. The dimensions of k will be

(A) $\left[T^2\right]$ (B) $\left[T^{-1}\right]$

(C) $\left[T\right]$ (D) [LT]

Space for Rough Work

40. A closed container completely filled with water is mounted on a cart. The cart moves with an acceleration a_0 on a plane horizontal road. What is the difference in pressure between points B and A shown in the figure?



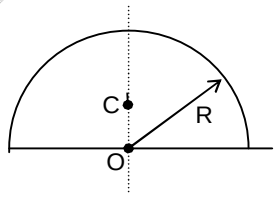
(A) pgh
(B) pg(h + L)
(C) pg(h – L)
(D) p(hg + a_0 L)

41. A man of mass M stands at one end of a plank of length L which lies at rest on a frictionless surface. The man walks to the other end of the plank. If the mass of the plank is M/3, the distance that the man moves relative to the ground is

(A) $\frac{3L}{4}$ (B) $\frac{4L}{5}$

(C) $\frac{L}{4}$ (D) $\frac{L}{3}$

42. The centre of mass of a half disc shown is at C while O is the centre, thus OC is



(A) R/2 (B) 2R/π

(C) $\frac{4R}{3\pi}$ (D) none of the above

43. A particle of mass m is moving with a velocity of $\left(4\hat{i} - \hat{j}\right)$ m/s when it hits a wall and rebounds with a velocity $\left(\hat{i} + 3\hat{j}\right)$ m/s. Then the impulse it receives is

(A) $m\left(3\hat{i} + 4\hat{j}\right)$ (B) $m\left(-3\hat{i} + 4\hat{j}\right)$

(C) $m\left(3\hat{i} - 4\hat{j}\right)$ (D) $-m\left(3\hat{i} + 4\hat{j}\right)$

44. A particle is moving on a curved path then
(A) rate of change of speed may be zero.
(B) rate of change of speed must not be zero.
(C) the component of acceleration perpendicular to velocity must be zero.
(D) the component of acceleration parallel to velocity must be zero.

Space for Rough Work

CHEMISTRY – (PART – B)

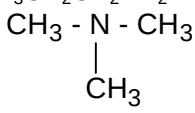
*This part contains **14 Multiple Choice Questions** number **45 to 58.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

45. If the radius of the first orbit of hydrogen atom be a_0, what will be the radius of its third orbit?
(A) $3a_0$ (B) $6a_0$
(C) $9a_0$ (D) $12a_0$

46. The energy change of which of the following processes is called ionization energy or ionization enthalpy? ['M' is a metal]
(A) $M(solid) \rightarrow M^+(gas) + e^-$ (B) $M(solid) + e^- \rightarrow M^-(gas)$
(C) $M(gas) \rightarrow M^+(gas) + e^-$ (D) $M(gas) + e^- \rightarrow M^-(gas)$

47. What is the bond angle of $BeCl_2$ molecule?
(A) 120° (B) 180°
(C) 109.5^o (D) 90°

48. Which of the following substance is most acidic in nature?
(A) CH_3OCH_2COOH (B) CH_3CH_2COOH
(C) O_2NCH_2COOH (D) $ClCH_2COOH$

49. Which of the following substance is most basic in gaseous state?
(A) $CH_3CH_2CH_2NH_2$ (B) $CH_3CH_2NHCH_3$
(C)  (D) CH_3CONH_2

50. Which of the following electronic transition in hydrogen atom forms a spectral line which belongs to Balmer series?
(A) $n = 3 \rightarrow n = 1$ (B) $n = 4 \rightarrow n = 2$
(C) $n = 5 \rightarrow n = 3$ (D) $n = 6 \rightarrow n = 4$

51. Which of the following atom can easily lose electron?
(A) Si (B) Na
(C) Mg (D) K

Space for Rough Work

52. What is the hybridization of nitrogen in NCl_3?

(A) sp (B) sp^2

(C) sp^3 (D) sp^3d

53. What volume of 0.4 M HCl solution can completely dissolve 0.96 gram of magnesium according to this reaction?

$$Mg + 2HCl \rightarrow MgCl_2 + H_2$$

(A) 100 mL (B) 200 mL

(C) 400 mL (D) 800 mL

54. A container contains 4 moles of H_2 and 2 moles of CH_4 gases at 600 mm Hg and 80°C? What is the partial pressure of CH_4 in the container?

(A) 300 mm Hg (B) 400 mm Hg

(C) 200 mm Hg (D) 100 mm Hg

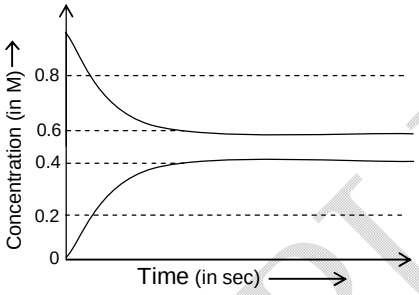
55. $HCN(aq) \rightleftharpoons H^+(aq) + CN^-(aq)$

The ionization constant (K_a) of above acid increases by

(A) adding more water (B) adding more HCN

(C) removing H^+ ions by adding bases (D) none of these

56.



Above graph is given for the following reversible reaction.

$X(g) \rightleftharpoons Y(g)$

The equilibrium constant K_C of above reaction is:

(A) $\frac{1}{4}$ (B) $\frac{3}{2}$

(C) $\frac{2}{3}$ (D) 4

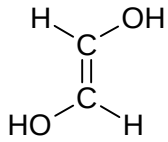
Space for Rough Work

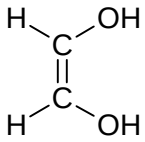
57. Which of the following has maximum dipole moment?

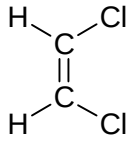
(A) CO_2 (B) BF_3

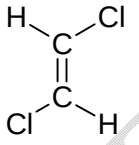
(C) NF_3 (D) CF_4

58. Which of the following substance should be added to H_3BO_3 solution in order to titrate it with NaOH?

(A) 

(B) 

(C) 

(D) 

Space for Rough Work

MATHEMATICS – (PART – C)

*This part contains **14 Multiple Choice Questions** number **59 to 72.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

59. The lines 2x – 3y = 5 and 3x – 4y = 7 are diameters of a circle having area as 154 sq. units. Then the equation of the circle is

(A) $x^2 + y^2 - 2x + 2y = 62$ (B) $x^2 + y^2 + 2x - 2y = 62$

(C) $x^2 + y^2 + 2x - 2y = 47$ (D) $x^2 + y^2 - 2x + 2y = 47$

60. If $y = \ln\left(\sqrt{x} + \sin^2 x\right)$, then $\frac{dy}{dx}$ is equal to

(A) $\frac{1}{\sqrt{x} + \sin^2 x}$ (B) $\frac{1}{\sqrt{x} + \sin^2 x}\left(\frac{1}{2\sqrt{x}} + \sin 2x\right)$

(C) $\frac{1}{\sqrt{x} + \sin^2 x}\left(\sin x + \cos^2 x\right)$ (D) $\frac{x + \cos x}{2\left(\sqrt{x} + \sin^2 x\right)}$

61. The value of θ satisfying $\sin 7\theta = \sin 4\theta - \sin\theta$, and $0 < \theta < \frac{\pi}{2}$ are

(A) $\frac{\pi}{9}, \frac{\pi}{4}$ (B) $\frac{\pi}{9}, \frac{\pi}{3}$

(C) $\frac{\pi}{9}, \frac{\pi}{6}$ (D) $\frac{\pi}{3}, \frac{\pi}{4}$

62. If distance between the foci of an ellipse is equal to its minor axis, then eccentricity of the ellipse is

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

(C) $\frac{1}{\sqrt{4}}$ (D) $\frac{1}{\sqrt{6}}$

Space for Rough Work

63. If the sum of the 10 terms of an A.P. is 4 times to the sum of its 5 terms, then the ratio of first term and common difference is
(A) 1 : 2 (B) 2 : 1
(C) 2 : 3 (D) 3 : 2

64. In an equilateral triangle, the in-radius, circum-radius and one of the ex-radii are in the ratio
(A) 1 : 3 : 5 (B) 1 : 2 : 3
(C) 1 : 3 : 7 (D) 3 : 7 : 9

65. In a G.P. if the $(m + n)^{th}$ term be p and $(m – n)^{th}$ term be q then the m^{th} term is
(A) $\sqrt{pq}$ (B) $\sqrt{p}/q$
(C) $\sqrt{q}/p$ (D) $\sqrt{p/q}$

66. If A, B and C are three sets such that $A \cap B = A \cap C$ and $A \cup B = A \cup C$, then
(A) $A = B$ (B) $A = C$
(C) $B = C$ (D) $A \cap B = \phi$

67. If $\frac{x+8}{x+2} > 1$ then
(A) $x > -2$ (B) $x < -2$
(C) $x \leq -2$ (D) None of these

68. The angle subtended by double ordinate of length 8a at the vertex of the parabola $y^2 = 4ax$ is
(A) 45° (B) 90°
(C) 60° (D) 30°

69. The latus rectum of the hyperbola $16x^2 - 9y^2 = 144$ is
(A) $\frac{16}{3}$ (B) $\frac{32}{3}$
(C) $\frac{8}{3}$ (D) $\frac{4}{3}$

Space for Rough Work

70. Circle $x^2 + y^2 - 4x - 8y - 5 = 0$ will intersect the line $3x - 4y = m$ in two distinct points, if -

(A) $-10 < m < 5$ (B) $9 < m < 20$

(C) $-35 < m < 15$ (D) $m \in \mathbb{R}$

71. If $\alpha + \beta = \pi/2$ and $\beta + \gamma = \alpha$, then $\tan\alpha$ equals

(A) $2(\tan\beta + \tan\gamma)$ (B) $\tan\beta + \tan\gamma$

(C) $\tan\beta + 2\tan\gamma$ (D) $2\tan\beta + \tan\gamma$

72. Let a_n be the n^{th} term of an A.P. If $\sum_{r=1}^{100} a_r = \alpha$, and $\sum_{r=1}^{100} a_{r+1} = \beta$ then the common difference of A.P. is

(A) $\beta - \alpha$ (B) $\alpha - \beta$

(C) $\frac{\alpha - \beta}{100}$ (D) $\frac{\beta - \alpha}{100}$

Space for Rough Work

Recommended Time: 30 Minutes for Section – III

Section – III

PHYSICS – (PART – A)

*This part contains **6 Multiple Choice Questions** number **73 to 78.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

73. Two satellites A and B go round a planet P in circular orbits having radii 4R and R respectively. If the speed of the satellite A is 3V, the speed of the satellite B will be
(A) 12 V (B) 6 V
(C) $\frac{4V}{3}$ (D) $\frac{3V}{2}$

74. A clay ball of mass m and speed v strikes another metal ball of same mass m, which is at rest. They stick together after collision. The kinetic energy of the system after collision is:
(A) $mv^2/2$ (B) $mv^2/4$
(C) $2mv^2$ (D) mv^2

75. A ball falls vertically downward and bounces off a horizontal floor. The speed of the ball just before reaching the floor (u_1) is equal to the speed just after leaving contact with the floor (u_2) ; $u_1 = u_2$. The corresponding magnitudes of accelerations are denoted respectively by a_1 and a_2. The air resistance during motion is proportional to speed and is not negligible. If g is acceleration due to gravity, then:
(A) $a_1 < a_2$ (B) $a_1 = a_2 \neq g$
(C) $a_1 > a_2$ (D) $a_1 = a_2 = g$

76. A boat crossing a river moves with a velocity v relative to still water. The river is flowing with a velocity v/2 with respect to the bank. The angle with respect to the flow direction with which the boat should move to minimize the drift is
(A) 30° (B) 60°
(C) 150° (D) 120°

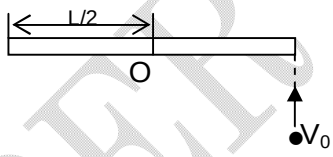
Space for Rough Work

77. A rod of length ℓ is standing vertically on a frictionless surface. It is disturbed slightly from this position. Let ω and α be the angular speed and angular acceleration of the rod, when the rod turns through an angle θ with the vertical, then the value of acceleration of centre of mass of the rod is

(A) $\frac{\ell\alpha}{2}\sin\theta+\frac{\omega^2\ell}{2}\cos\theta$ (B) $\frac{\omega^2\ell}{2}\sin\theta+\frac{\ell\alpha}{2}\cos\theta$

(C) $\frac{\ell\alpha}{2}\cos\theta$ (D) $\frac{\omega^2\ell}{2}\sin\theta$

78. A uniform rod of mass M and length L, which is free to rotate about a fixed vertical axis through O, is lying on a frictionless horizontal table. A particle of equal mass strikes the rod with a velocity V_0 and gets stuck to it. The angular velocity of the combination immediately after the collision is



(A) $\frac{3V_0}{4L}$ (B) $\frac{3V_0}{8L}$

(C) $\frac{3V_0}{2L}$ (D) none of these

Space for Rough Work

CHEMISTRY – (PART – B)

*This part contains **6 Multiple Choice Questions** number **79 to 84.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

79. H_2 gas is prepared in the laboratory by the reaction
(A) $Zn + H_2SO_4 \rightarrow ZnSO_4 + H_2$ (B) $C + H_2O \rightarrow CO + H_2$
(C) $3Fe + 4H_2O \rightarrow FeSO_4 + 4H_2$ (D) $H_2O \xrightarrow{\text{Electrolysis}} H_2 + O_2$

80. Which of the following contains species with the correct order of electron affinity?
(A) F > Cl (B) O > N
(C) $O^- > S^-$ (D) $Na > Na^+$

81. $Mg_3N_2 + H_2O \rightarrow X(\text{solution}) + Y(\text{gas})$
Gas (Y) in the above reaction is
(A) N_2 (B) NH_3
(C) NO (D) NO_2

82. Which of the following expression does **NOT** represent any gas velocity?
(A) $\sqrt{\frac{3RT}{M}}$ (B) $\sqrt{\frac{8RT}{\pi M}}$
(C) $\sqrt{\frac{2RT}{M}}$ (D) $\sqrt{\frac{3RT}{\pi M}}$

83. $CN^- + H_2O \rightleftharpoons HCN + OH^-$
What will be the ionization constant(K_a) of HCN if the hydrolysis constant(K_h) of above reaction is 10^{-8}?
(A) 10^{-4} (B) 10^{-6}
(C) 10^{6} (D) 10^{-10}

84. Which of the following compound on hydrolysis forms products that are polymerized to silicones?
(A) $SiCl_4$ (B) $(CH_3)_2SiCl_2$
(C) SiH_2Cl_2 (D) H_2SiF_6

Space for Rough Work

MATHEMATICS – (PART – C)

*This part contains **6 Multiple Choice Questions** number **85 to 90.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

85. If $\left|z^2-1\right|=\left|z^2\right|+1$, then z lies on

(A) the real axis
(B) the imaginary axis
(C) a circle
(D) an ellipse

86. $\underset{x\to 0}{\text{Lt}}\ \dfrac{4\sin^3 x-3\sin x}{x}$

(A) 3
(B) –3
(C) $\dfrac{1}{3}$
(D) None of these

87. If $y=3x^2+4x+7$ then $\dfrac{dy}{dx}$ at $x=0$

(A) 0
(B) 4
(C) 3
(D) 7

88. Let R be a relation in N defined by $R=\left\{\left(1+x,1+x^2\right):x\le 5,x\in N\right\}$. Then which of the following is false

(A) $R=\left\{(2,2),(3,5),(4,10),(5,17),(6,25)\right\}$
(B) Domain of $R=\left\{2,3,4,5,6\right\}$
(C) Range of $R=\left\{2,5,10,17,26\right\}$
(D) None of these

89. The value of $\sum_{k=1}^{10}\left(\sin\dfrac{2k\pi}{11}+i\cos\dfrac{2k\pi}{11}\right)$ is

(A) 1
(B) –1
(C) –i
(D) i

90. The number of common tangents of the circle $x^2+y^2-2x-1=0$ and $x^2+y^2-2y-7=0$ is-

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

Space for Rough Work

FIITJEE SAMPLE PAPER – 2020

(FIITJEE Talent Reward Exam-2020)

***for* students presently in**

Class 11 (Paper 1)

ANSWERS

1.	**B**	2.	**C**	3.	**C**	4.	**A**
5.	**D**	6.	**C**	7.	**C**	8.	**A**
9.	**C**	10.	**B**	11.	**B**	12.	**B**
13.	**B**	14.	**D**	15.	**C**	16.	**A**
17.	**C**	18.	**A**	19.	**C**	20.	**B**
21.	**B**	22.	**A**	23.	**B**	24.	**B**
25.	**C**	26.	**A**	27.	**D**	28.	**A**
29.	**A**	30.	**C**	31.	**A**	32.	**A**
33.	**C**	34.	**A**	35.	**B**	36.	**B**
37.	**B**	38.	**B**	39.	**C**	40.	**D**
41.	**C**	42.	**C**	43.	**B**	44.	**A**
45.	**C**	46.	**C**	47.	**B**	48.	C
49.	**C**	50.	**B**	51.	**D**	52.	**C**
53.	**B**	54.	**C**	55.	**D**	56.	C
57.	**C**	58.	**B**	59.	**D**	60.	**B**
61.	**A**	62.	**A**	63.	**A**	64.	**B**
65.	**A**	66.	**C**	67.	**A**	68.	**B**
69.	**B**	70.	**C**	71.	**C**	72.	**D**
73.	**B**	74.	**B**	75.	**A**	76.	**D**
77.	**A**	78.	**C**	79.	**A**	80.	**B**
81.	**B**	82.	**D**	83.	**B**	84.	**B**
85.	**B**	86.	**B**	87.	**B**	88.	**A**
89.	**C**	90.	**A**				