

FIITJEE Big Bang Edge Test - 2022

for students presently in **Class 11 (going to 12) (Paper 2)**

Time: 3 Hours (2:00 pm – 5:00 pm)

CODE: 1112-2

Maximum Marks: 243

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 45 Minutes on Section-I and 135 Minutes on Section-II.
2. This Question paper consists of 2 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 7	+3	-1
	CHEMISTRY (PART-B)	8 to 14	+3	-1
	MATHEMATICS (PART-C)	15 to 21	+3	-1
SECTION – II	PHYSICS (PART-A)	22 to 35	+3	-1
	CHEMISTRY (PART-B)	36 to 49	+3	-1
	MATHEMATICS (PART-C)	50 to 63	+3	-1
	PHYSICS (PART-D)	64 to 69	+3	0
	CHEMISTRY (PART-E)	70 to 75	+3	0
	MATHEMATICS (PART-F)	76 to 81	+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 below.
6. See method of marking of bubbles at the back of cover page for question no. 64 to 81.

Note: Please check this Question Paper contains all **81** 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 **64 to 81**

Numerical based questions single digit answer 0 to 9

Example 1:

If answer is 6.

Correct method:

① ② ③ ④ ⑤ ● ⑦ ⑧ ⑨

Example 2:

If answer is 2.

Correct method:

① ● ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

SAMPLE PAPER

Recommended Time: 45 Minutes for Section – I

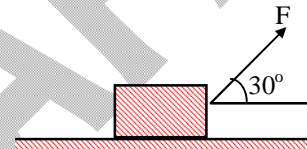
Section – I

PHYSICS – (PART – A)

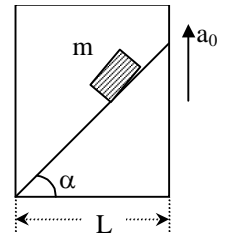
This part contains 7 Multiple Choice Questions number 1 to 7. Each question has 4 choices (A), (B), (C) and (D), out of which ONLY ONE is correct.

1. A swimmer wishes to reach directly opposite point on the other bank of a river, flowing with velocity 8 m/s. The swimmer can swim 10 m/s in still water. The width of the river is 480 m. Time taken by him to do so
- (A) 60 sec (B) 48 sec
(C) 80 sec (D) 100 sec

2. A mass m rests on a horizontal surface in equilibrium. The coefficient of friction between the mass and the surface is μ . A force F is acting on the body as shown in the figure. The force of friction on mass m is



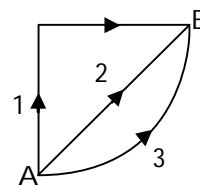
- (A) μmg (B) $F \frac{\sqrt{3}}{2}$
(C) $\mu [mg - \frac{\sqrt{3}}{2} F]$ (D) $\mu [mg + \frac{\sqrt{3}}{2} F]$
3. A particle slides down a smooth inclined plane of elevation α fixed in the elevator going up with an acceleration a_0 as shown in figure. The base of the incline has a length L . The time taken by the particle to reach the bottom is



- (A) $\left[\frac{2L}{(g + a_0) \sin \alpha \cos \alpha} \right]^{1/2}$ (B) $\left[\frac{2L}{g \sin \alpha \cos \alpha} \right]^{1/2}$
(C) $\left[\frac{g \sin \alpha \cos \alpha}{2L} \right]^{1/2}$ (D) $\left[\frac{2L}{a_0 \sin \alpha \cos \alpha} \right]^{1/2}$

Space for Rough Work

4. If W_1, W_2 and W_3 represent the work done in moving a particle from A to B along three different paths 1, 2 and 3 respectively (as shown) in the gravitational field of a point mass m . Find the correct relation between W_1, W_2 and W_3 :



- (A) $W_1 > W_2 > W_3$ (B) $W_1 = W_2 = W_3$
 (C) $W_1 < W_2 < W_3$ (D) $W_2 > W_1 > W_3$
5. A block is at rest on a rough inclined surface inclined at an angle θ with the horizontal. The coefficient of static friction between the block and the inclined surface is μ . Then we can conclude that
 (A) frictional force = $mg\sin\theta$ (B) $\mu = \tan\theta$
 (C) $\mu \leq \tan\theta$ (D) None of these
6. If vectors \vec{A} and \vec{B} are perpendicular to each other, then which of the following statements is valid?
 (A) $\vec{A} \times \vec{B} = \vec{A} \cdot \vec{B}$ (B) $\vec{A} \times \vec{B} = 0$
 (C) $\vec{A} \cdot \vec{B} = 0$ (D) $\vec{A} \cdot \vec{B} = |\vec{A}| |\vec{B}|$
7. A ball is projected at such an angle that the horizontal range is three times the maximum height the angle of projection of the ball is,
 (A) $\sin^{-1}(3/4)$ (B) $\sin^{-1}(4/3)$
 (C) $\cos^{-1}(4/3)$ (D) $\tan^{-1}(4/3)$

Space for Rough Work

CHEMISTRY – (PART – B)

This part contains 7 Multiple Choice Questions number 8 to 14. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

8. From 490 mg of H_2SO_4 , 10^{20} molecules are removed. The number of molecules left over are:
 (A) 6.02×10^{21} (B) 4.9×10^{21}
 (C) 3.01×10^{21} (D) 2.91×10^{21}
9. A 0.60 g sample consisting of only CaC_2O_4 and MgC_2O_4 is heated at 500°C , converting the two salts to CaCO_3 and MgCO_3 . The sample then weighed 0.465g. If the sample had been heated to 900°C , where the products are CaO and MgO , what would the mixtures of oxides have weighted?
 (A) 0.12g (B) 0.21g
 (C) 0.252g (D) 0.3g
10. If an electron, a proton and an α -particle have same de Broglie wavelenths, their kinetic energies are related to one another as:
 (A) electron > proton > α -particle (B) proton > electron > α -particle
 (C) α -particle > proton > electron (D) electron = proton = α -particle
11. Lattice energy of CaCl_2 is U and that of NaCl is U' . For same crystal structure and same ionic radii of Ca^{2+} and Na^+ :
 (A) $U = U'$ (B) $U > U'$
 (C) $U < U'$ (D) cannot be decided
12. Which is the correct order w.r.t. ionisation energies of Be, B, C, N and O?
 (A) $\text{Be} < \text{C} < \text{N} < \text{O} < \text{B}$ (B) $\text{B} < \text{N} < \text{C} < \text{O} < \text{Be}$
 (C) $\text{B} < \text{Be} < \text{C} < \text{O} < \text{N}$ (D) $\text{O} < \text{N} < \text{C} < \text{B} < \text{Be}$
13. Which of the following has two nodal planes?
 (A) σ_{ns}^* (B) $\sigma_{np_z}^*$
 (C) $\pi_{2p_x}^*$ (D) π_{2p_x}
14. Which are the pair of functional isomers?
 (A) Methanol and methoxy methane (B) Ethyl alcohol and diethyl ether
 (C) Acetone and acetaldehyde (D) Propionic acid and methyl acetate

Space for Rough Work

MATHEMATICS – (PART – C)

This part contains 7 Multiple Choice Questions number 15 to 21. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

15. If $(\log_e 2)(\log_b 625) = (\log_{10} 16)(\log_e 10)$ then the value of b is
 (A) 2 (B) 4
 (C) 5 (D) none of these
16. If $R = \{(x, y) \mid x, y \in \mathbb{Z}, x^2 + y^2 \leq 4\}$ is a relation in \mathbb{Z} , then domain of R is (\mathbb{Z} is set of all integer)
 (A) $\{0, 1, 2\}$ (B) $\{0, -1, -2\}$ (C) $\{-2, -1, 0, 1, 2\}$ (D) None of these
17. $\lim_{x \rightarrow 4} \frac{3 - \sqrt{5+x}}{x-4}$ is equal to
 (A) $1/6$ (B) $-1/6$ (C) 0 (D) 1
18. Two finite sets have m and n elements. The number of subsets of the set having m element is 112 more than that of subsets of set having n elements. The values of m and n are, respectively.
 (A) 4, 7 (B) 7, 4 (C) 4, 4 (D) 7, 7
19. If $x^3 + ax + 1 = 0$ and $x^4 + ax^2 + 1 = 0$ have a common root, then complete set of values of a is
 (A) $(-\infty, -2)$ (B) $\{-2\}$ (C) $(-2, \infty)$ (D) none of these
20. The number of values of m for which the point of intersection of the lines $3x + 4y = 11$ and $y = mx + 1$ will have integral coordinates is
 (A) 0 (B) 1 (C) 2 (D) 3
21. If $A = \{1, 3, 5, 7, 9, 11, 13, 15, 17\}$, $B = \{2, 4, \dots, 18\}$ and N the set of natural numbers is the universal set, then $(A' \cup (A \cup B) \cap B')$
 (A) ϕ (B) N (C) A (D) B

Space for Rough Work

Recommended Time: 135 Minutes for Section – II

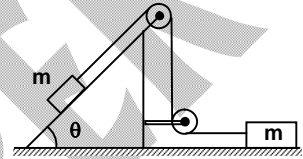
Section – II

PHYSICS – (PART – A)

This part contains **14 Multiple Choice Questions** number **22 to 35**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

22. For the system shown in the figure, the pulleys are light and frictionless. Assume wedge to be fixed and smooth. The tension in the string will be

(A) $\frac{2}{3} m g \sin \theta$ (B) $\frac{3}{4} m g \sin \theta$
 (C) $\frac{1}{2} m g \sin \theta$ (D) $m g \sin \theta$

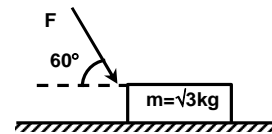


23. A particle has an initial velocity of $3\hat{i} + 4\hat{j}$ and an acceleration of $0.4\hat{i} + 0.3\hat{j}$. Its speed after 10 s is

(A) 10 units (B) 7 units
 (C) $7\sqrt{2}$ units (D) 8.5 units

24. A block of mass $\sqrt{3}$ kg is resting on a horizontal plane (coefficient of static friction $\mu = 1/2\sqrt{3}$). A force \vec{F} is applied to the block as shown in the figure. The minimum magnitude of \vec{F} for which the block begins to slide is ($g = 10 \text{ m/s}^2$)

(A) 20 N (B) 5 N
 (C) $(20/3)$ N (D) 10 N



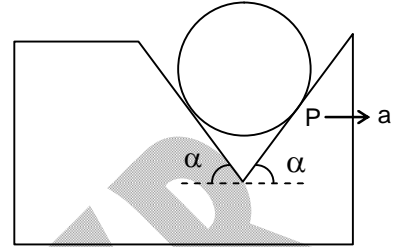
25. An airplane is flying horizontally at a height of 490 m with a velocity of 150 m/s. A bag containing food is to be dropped to the Jawans on the ground. How far from them should the bag be dropped so that it directly reaches them?

(A) 1000 m (B) 1500 m
 (C) 750 m (D) 2000 m

Space for Rough Work

26. A car accelerates from rest to a speed of 10 m/s. Let the energy spent be E. If we accelerate the car from 10 m/s to 20 m/s, then the energy spent will be
 (A) E (B) 2E
 (C) 3E (D) 4E

27. Assuming all surfaces to be smooth. Minimum value of 'a' so that sphere loses contact at P is
 (A) $g \sin \alpha$
 (B) $g \tan \alpha$
 (C) $g \cot \alpha$
 (D) $g \operatorname{cosec} \alpha$

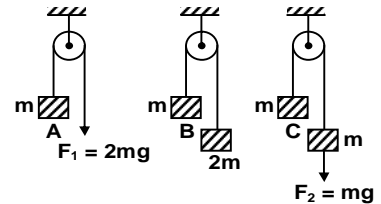


28. The work done on a particle of mass m by a force $K \left[\frac{x}{(x^2 + y^2)^{3/2}} \hat{i} + \frac{y}{(x^2 + y^2)^{3/2}} \hat{j} \right]$ (K being a constant of appropriate dimensions, when the particle is taken from the point (a, 0) to the point (0, a) along a circular path of radius a about the origin in the x-y plane is
 (A) $\frac{2K\pi}{a}$ (B) $\frac{K\pi}{a}$ (C) $\frac{K\pi}{2a}$ (D) 0

29. A projectile is given an initial velocity of $(\hat{i} + 2\hat{j})$ m/s, where \hat{i} is along the ground and \hat{j} is along the vertical. If $g = 10 \text{ m/s}^2$, the equation of its trajectory is:
 (A) $y = 2x - 5x^2$ (B) $4y = 2x - 5x^2$
 (C) $4y = 2x - 25x^2$ (D) $y = x - 5x^2$

30. A body is moved along a straight line by a machine delivering constant power. The distance moved by the body in time t is proportional to
 (A) $t^{1/2}$ (B) $t^{3/4}$
 (C) $t^{3/2}$ (D) t^2

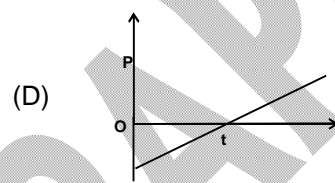
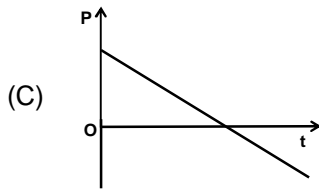
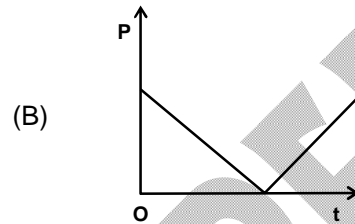
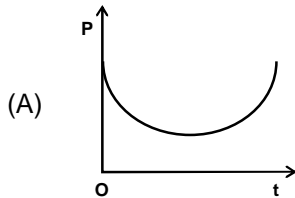
31. In the figure, the blocks A, B and C of mass m each have accelerations a_1 , a_2 and a_3 respectively. F_1 and F_2 are external forces of magnitudes $2mg$ and mg respectively.
 (A) $a_1 = a_2 = a_3$ (B) $a_1 > a_2 > a_3$
 (C) $a_1 > a_3 > a_2$ (D) $a_1 > a_2, a_2 = a_3$



Space for Rough Work

32. A car accelerates from rest at a constant rate of 2 m/s^2 for some time. Then, it retards at a constant rate of 4 m/s^2 and comes to rest. What is the maximum speed attained by the car if it remains in motion for 3 seconds?
 (A) 2 m/s (B) 3 m/s
 (C) 4 m/s (D) 6 m/s

33. A stone is projected at time $t = 0$ with a speed v_0 at an angle θ with the horizontal in a uniform gravitational field. The rate of work done (P) by the gravitational force plotted against time (t) will be as

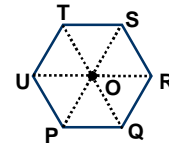


34. A projectile is projected at an angle α ($>45^\circ$) with an initial velocity u . The time t , at which its horizontal velocity will equal the vertical velocity, is

- (A) $t = \frac{u}{g} (\cos \alpha - \sin \alpha)$ (B) $t = \frac{u}{g} (\cos \alpha + \sin \alpha)$
 (C) $t = \frac{u}{g} (\sin \alpha - \cos \alpha)$ (D) $t = \frac{u}{g} (\sin^2 \alpha - \cos^2 \alpha)$

35. Figure shows regular hexagon PQRSTU. Find the value of $\vec{PQ} + \vec{PR} + \vec{PS} + \vec{PT} + \vec{PU}$.

- (A) \vec{PO} (B) $2\vec{PO}$
 (C) $4\vec{PO}$ (D) $6\vec{PO}$



Space for Rough Work

CHEMISTRY – (PART – B)

This part contains 14 Multiple Choice Questions number 36 to 49. Each question has 4 choices (A), (B), (C) and (D), out of which ONLY ONE is correct.

36. Mixture of one mole each of ethyne and propyne on reaction with Na will form H_2 gas at S.T.P. vol. of H_2 gas produced will be?
 (A) 22.4 L (B) 11.2 L
 (C) 33.6 L (D) 44.8 L
37. 1.0g of a sample of brass, on reacting with excess of HCl produces 120 mL of H_2 gas at STP. The percentage of Zn in the sample of brass is:
 (A) 32% (B) 35%
 (C) 38% (D) 40%
38. 125 ml of 63% (w/v) $H_2C_2O_4 \cdot 2H_2O$ is made to react with 125 mL of a 40% (w/v) NaOH solution. The resulting solution is
 (A) neutral (B) acidic
 (C) strongly acidic (D) alkaline
39. An object absorbs energy corresponding to wavelength 2400 \AA and emits two different radiations. The wavelength of one radiation is 6000 \AA . What is the wavelength of the other radiation?
 (A) 2000 \AA (B) 3600 \AA
 (C) 4000 \AA (D) 5000 \AA
40. If H-atom is supplied with 12.1 eV energy and electron returns to the ground state after excitation then number of spectral line in Balmer series would be: (use energy of ground state of H-atom = 13.6 eV)
 (A) 1 (B) 2
 (C) 3 (D) 4
41. The ions O^{2-} , F^- , Na^+ , Mg^{2+} , Al^{3+} are isoelectronic. Their ionic radii show:
 (A) A significant decrease from O^{2-} to Al^{3+}
 (B) an increase from O^{2-} to F^- and then decrease from Na^+ to Al^{3+}
 (C) a decrease from O^{2-} to F^- and then increase from Na^+ to Al^{3+}
 (D) a significant increase from O^{2-} to Al^{3+}

Space for Rough Work

42. The energy required to ionise 0.7mg of Li will be (IE of Li = 520 kJ mol⁻¹ and At. Wt. = 7):
 (A) 52.0 J (B) 520 J
 (C) 52 kJ (D) 5.2 J
43. Which of the following is expected to have highest hydration energy?
 (A) Li⁺ (B) Be²⁺
 (C) H⁺ (D) All have same value
44. Which of the following order is correct w.r.t. the radius?
 (A) O²⁻ > F⁻ > Na⁺ > Mg²⁺ (B) Mg²⁺ > Na⁺ > F⁻ > O²⁻
 (C) F⁻ > O²⁻ > Mg²⁺ > Na⁺ (D) Na⁺ > Mg²⁺ > O²⁻ > F⁻
45. On the basis of MOT which is correct?
 (A) The bond order for C₂ molecule is two and both bonds are π -bonds
 (B) The bond order for C₂ molecule is two with one σ bond and one π -bond
 (C) The HOMO in this molecule are π type of antibonding m.o. containing total 3 electrons
 (D) None of the above is correct
46. In which one of the following molecules the central atom said to adopt sp² hybridization?
 (A) BeF₂ (B) BF₃
 (C) C₂H₂ (D) NH₃
47. Which of the following compounds is optically active?
 (A) CH₃CH₂COOH (B) CH₃CHOHCOOH
 (C) HOOC.CH₂.COOH (D) CH₃.CO.COOH
48. Arrange the carbanions,
 (CH₃)₃C⁻, CCl₃⁻, (CH₃)₂CH⁻, C₆H₅CH₂⁻
 in order of their decreasing stability:
 (A) (CH₃)₂CH⁻ > CCl₃⁻ > C₆H₅CH₂⁻ > (CH₃)₃C⁻ (B) CCl₃⁻ > C₆H₅CH₂⁻ > (CH₃)₂CH⁻ > (CH₃)₃C⁻
 (C) (CH₃)₃C⁻ > (CH₃)₂CH⁻ > C₆H₅CH₂⁻ > CCl₃⁻ (D) C₆H₅CH₂⁻ > CCl₃⁻ > (CH₃)₃C⁻ > (CH₃)₂CH⁻
49. Which of the following groups represents the saline hydrides?
 (A) NaH, KH, CaH₂ (B) NaH, SiH₄, CaH₂
 (C) NH₃, BH₃, AlH₃ (D) None of these

Space for Rough Work

MATHEMATICS – (PART – C)

This part contains 14 Multiple Choice Questions number 50 to 63. Each question has 4 choices (A), (B), (C) and (D), out of which ONLY ONE is correct.

50. Value of the expression $2\sin x - \cos 2x$ is always
 (A) greater than or equal to $-3/2$ (B) less than or equal to $3/2$
 (C) greater than or equal to $-1/2$ (D) none of these
51. The solution of the equation $\cos^2\theta + \sin\theta + 1 = 0$ lies in the interval
 (A) $\left(-\frac{\pi}{4}, \frac{\pi}{4}\right)$ (B) $\left(\frac{\pi}{4}, \frac{3\pi}{4}\right)$
 (C) $\left(\frac{3\pi}{4}, \frac{5\pi}{4}\right)$ (D) $\left(\frac{5\pi}{4}, \frac{7\pi}{4}\right)$
52. If $\cos 25^\circ + \sin 25^\circ = k$, then $\cos 20^\circ$ is equal to
 (A) $\frac{k}{\sqrt{2}}$ (B) $-\frac{k}{\sqrt{2}}$
 (C) $\pm \frac{k}{\sqrt{2}}$ (D) None of these
53. If $3 \sin^2 A + 2 \sin^2 B = 1$ and $3 \sin 2A - 2 \sin 2B = 0$, where A and B are acute angles, then $A + 2B$ is equal to
 (A) $\pi/3$ (B) $\pi/4$
 (C) $\pi/2$ (D) none of these
54. If $\tan\theta = n \tan\phi$, then maximum value of $\tan^2(\theta - \phi)$ is equal to
 (A) $\frac{(n-1)^2}{4n}$ (B) $\frac{(n+1)^2}{4n}$
 (C) $\frac{(n+1)}{2n}$ (D) $\frac{(n-1)}{2n}$
55. If the mid-points P, Q and R of the sides of the $\triangle ABC$ are (3, 3), (3, 4) and (2, 4) respectively, then $\triangle ABC$ is
 (A) right angled (B) acute angled
 (C) obtuse angled (D) none of these

Space for Rough Work

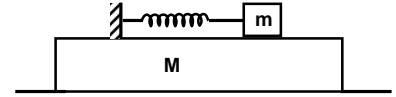
56. If x_1, x_2, x_3 are in A.P. and y_1, y_2, y_3 are also in A.P., then the points $(x_1, y_1), (x_2, y_2), (x_3, y_3)$ are
 (A) collinear (B) form a Δ with Area 1 sq. units
 (C) form a Δ with Area 2 sq. units (D) None of these
57. If A and B are two sets defined as
 $A = \left\{ (x, y) \mid y = \frac{1}{x}; x \in \mathbb{R} - \{0\} \right\}$
 $B = \left\{ (x, y) \mid x + y = 0, x \in \mathbb{R} \right\}$, then
 (A) $A \cap B = \phi$ (B) $A \cap B = A$ (C) $A \cap B = B$ (D) $A \cup B = A$
58. Number of values of θ in $[0, 2\pi]$ that satisfy $\sin\theta + \cos\theta = 1$
 (A) 0 (B) 1 (C) 2 (D) More than 2
59. If α and β are roots of $x^2 - 7x + 1 = 0$ and $T_n = \alpha^n + \beta^n$. Find $\frac{T_{2021} + T_{2019}}{T_{2020}}$?
 (A) $\frac{1}{7}$ (B) 1 (C) 2021 (D) 7
60. Find distance between lines $3x + 4y + 7 = 0$ and $6x + 8y + 11 = 0$?
 (A) $\frac{3}{10}$ (B) $\frac{13}{10}$ (C) $\frac{7}{10}$ (D) $\frac{11}{10}$
61. If $\lim_{x \rightarrow \infty} \left(\frac{x^2 + 1}{x + 1} - ax - b \right) = 4$, Find $a^2 + b^2$?
 (A) 25 (B) 27 (C) 26 (D) 17
62. The number of elements in set $\{(a, b) : 2a^2 + 3b^2 = 35, a, b \in \mathbb{Z}\}$, where \mathbb{Z} is set of all integers is
 (A) 6 (B) 8 (C) 10 (D) 12
63. Find value of $\lim_{n \rightarrow \infty} \frac{1^3 + 2^3 + 3^3 + \dots + n^3}{n^4 + 2}$
 (A) 4 (B) 2 (C) $\frac{1}{2}$ (D) $\frac{1}{4}$

Space for Rough Work

PHYSICS – (PART – D)

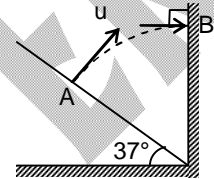
This part contains 6 Numerical Based Questions number 64 to 69. Each question has Single Digit Answer 0 to 9.

64. A block of mass m is placed on a smooth block of mass M with the help of a spring as shown in the figure. A velocity v_0 is given to upper block. The maximum compression in the spring is

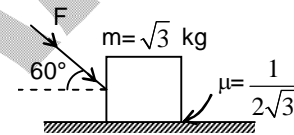


$$x = \sqrt{\frac{Mm}{k(M+m)}} v_0 n . \text{ Then find the value of } n .$$

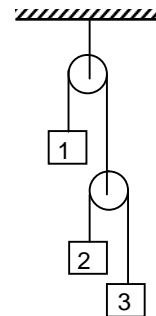
65. A particle is projected from point A perpendicular to inclined plane with a velocity 50 m/s as shown in the figure. Particle strikes a vertical plane perpendicularly at point B. Find the time (in sec) taken by particle is going from point A to point B.



66. $10 K$ is the maximum value of force ' F ' such that the block shown in the arrangement, does not move. Find the value of K .

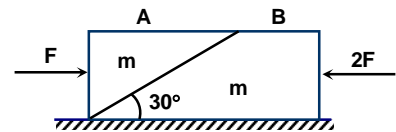


67. In the figure shown, $a_3 = 6 \text{ m/s}^2$ (downwards) and $a_2 = 4 \text{ m/s}^2$ (upwards). Find acceleration of box 1 (in m/s^2)



68. A ball of mass 0.5 kg is dropped from a tower the power of gravitational force at $t = 2 \text{ s}$, is $100\alpha \text{ Watt}$. (take $g = 10 \text{ m/s}^2$). Find the value of α .

69. Two blocks A and B each of mass m are placed on a smooth horizontal surface. Two horizontal force F and $2F$ are applied on both the blocks A and B, respectively, as shown in the figure. If the block A does not slide on block B, then the normal reaction acting between the two blocks is found to be $n \times F$. Then n is



Space for Rough Work

CHEMISTRY – (PART – E)

This part contains 6 Numerical Based Questions number 70 to 75. Each question has Single Digit Answer 0 to 9.

70. Total number of H-bonding sites available in H_2O are.....
71. How many of the following radius orders are incorrect?
(i) $\text{N}^{3-} > \text{P}^{3-}$
(ii) $\text{O}^{2-} > \text{F}^-$
(iii) $\text{Ca}^{2+} > \text{Sr}^{2+}$
(iv) $\text{S}^- > \text{S}^{2-}$
(v) $\text{S}^{2-} > \text{O}^-$
72. Number of electrons with $m = 0$ value in phosphorous atom are
73. The atomic masses of He and Ne are 4 and 20 amu respectively. The value of the de Broglie wavelength of He gas at -73°C is 'M' times that of the de Broglie wavelength of Ne at 727°C . M is:
74. How many moles of KMnO_4 are required in acidic medium to oxidise 10 mole of Sn^{2+} to Sn^{4+} ?
75. The velocity of an electron in a certain Bohr orbit of H-atom bears the ratio 1 : 275 to the velocity of light. The shell number is :

Space for Rough Work

MATHEMATICS – (PART – F)

This part contains 6 Numerical Based Questions number 76 to 81. Each question has Single Digit Answer 0 to 9.

76. Find the value of $\frac{\tan 70^\circ - \tan 20^\circ}{\tan 50^\circ}$
77. Find the exact value of the expression $\frac{\sin^2 34^\circ - \sin^2 11^\circ}{\sin 34^\circ \cos 34^\circ - \sin 11^\circ \cos 11^\circ}$.
78. If $\sum_{r=1}^{88} \tan^r \tan(r+1)^r = \cot^2 1^\circ - k$, where k is a prime number, then find the absolute difference of the digits in k .
79. If value of limit $\lim_{x \rightarrow \infty} (\sqrt{x^2 + x + 1} - \sqrt{x^2 + 1})$ is k , find $4k$
80. If α, β, γ are roots of $x^3 - 2x^2 - x + 3 = 0$, then value of $\frac{(\alpha^3 + \alpha^2 + 3)(\beta^3 + \beta^2 + 3)(\gamma^3 + \gamma^2 + 3)}{\alpha\beta\gamma}$ is
81. Find the value of $\frac{\log_5 9 \cdot \log_7 5 \cdot \log_3 7}{\log_2 \sqrt{6}} + \frac{1}{\log_9 \sqrt{6}}$

Space for Rough Work

FIITJEE Big Bang Edge Test - 2022

for students presently in **Class 11 (going to 12) (Paper 2)**

SAMPLE PAPER ANSWER KEY

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