

FIITJEE - JEE (Main)

PHYSICS, CHEMISTRY & MATHEMATICS

BATCHES: NWCMPA122N1 & M1_PT1

PHASE TEST – I

Q.P. CODE:

Time Allotted: 3 Hours

Maximum Marks: 300

- Do not open this Test Booklet until you are asked to do so.
- Please read the instructions carefully. You are allotted 5 minutes specifically for this purpose.

Important Instructions

Caution: Question Paper CODE as given above MUST be correctly marked in the answer OMR sheet before attempting the paper. Wrong CODE or no CODE will give wrong results.

A. General Instructions

1. Attempt ALL the questions. Answers have to be marked on the OMR sheets.
2. This question paper contains **Three Sections**.
3. **Section-I** is Physics, **Section-II** is Chemistry and **Section-III** is Mathematics.
4. Each **Section** is further divided into **Two Parts: Part-A & C** in the OMR. Part-B of OMR to be left unused
5. Rough spaces are provided for rough work inside the question paper. No additional sheets will be provided for rough work.
6. No candidate is allowed to carry any textual material, printed or written, bits of papers, clip boards, log tables, slide rule, calculator, cellular phones, pagers and electronic devices ext. except the Admit Card inside the examination hall / room.

B. Filling of OMR Sheet:

1. Ensure matching of OMR sheet with the Question paper before you start marking your answers on OMR sheet.
2. On the OMR sheet, darken the appropriate bubble with **Blue/Black Ball Point Pen** for each character of your Enrolment No. and write in ink your Name, Test Centre and other details at the designated places.
3. OMR sheet contains alphabets, numerals & special characters for marking answers.
4. **Do not fold or make any stray marks on the Answer Sheet.**

C. Marking Scheme for All Two Parts:

- (i) **Part-A (01-20)** – Contains Twenty (20) multiple choice objective questions which have four (4) options each and only one correct option. Each question carries **+4 marks** which will be awarded for every correct answer and **-1 mark** will be deducted for every incorrect answer.
- (ii) **Part-B (01-05)** contains five (05) Numerical based questions, the answer of which maybe positive or negative numbers or decimals (e.g. 6.25, 7.00, -0.33, -.30, 30.27, -127.30) and each question carries **+4 marks** for correct answer and **there will be no negative marking.**

Name of the Candidate : _____

Batch : _____ Date of Examination : _____

Enrolment Number : _____

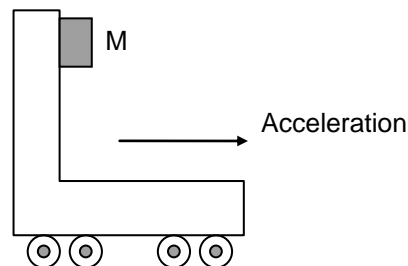
Physics

PART – A

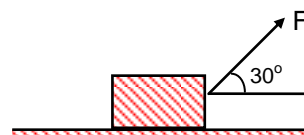
Straight Objective Type

This part contains **20 multiple choice questions**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

1. An accelerated system with a vertical wall has co-efficient of friction μ between block and walls as shown in the figure. A block M of mass 1 kg just remains in equilibrium with the vertical wall, when the system has an acceleration of 20 m/s^2 . The co-efficient of friction has a value
 (A) 0.10 (B) 0.25
 (C) 0.50 (D) 1



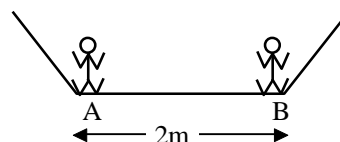
1. **C**
 2. A mass m rests on a horizontal surface. The coefficient of friction between the mass and the surface is μ . A force F is acting on the body as shown in the figure. The force of friction on mass m by surface is



- (A) μmg (B) $F \frac{\sqrt{3}}{2}$ (C) $\mu [mg - \frac{\sqrt{3}}{2} F]$ (D) $\mu [mg + \frac{\sqrt{3}}{2} F]$

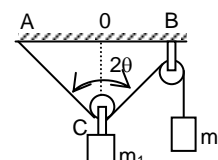
2. **B**
 3. A point on the rim of a flywheel has a peripheral speed of 10 m/s at an instant when it is decreasing at the rate of 60 m/s^2 . If the magnitude of the total acceleration of the point at this instant is 100 m/s^2 , the radius of the flywheel is
 (A) 1.25 m (B) 12.5 m (C) 25 m (D) 2.5 m

3. **A**
 4. Two persons A and B of weight 80 kg and 50 kg respectively are standing at opposite ends of a boat of mass 70 kg and length 2 m , at rest. When they interchange their positions then displacement of the centre of mass of the boat will be
 (A) 60 cm towards left (B) 30 cm towards right
 (C) 30 cm towards left (D) stationary



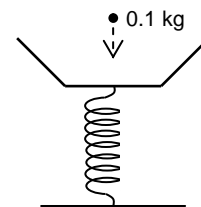
4. **C**
 5. In the arrangement shown in the figure, if v_1 and v_2 are the instantaneous velocities of masses m_1 and m_2 , respectively, and angle ACB is 2θ at the instant, then

- (A) $\theta = \cos^{-1} \left(\frac{v_1}{2v_2} \right)$ (B) $\theta = \cos^{-1} \left(\frac{v_2}{2v_1} \right)$
 (C) $\theta = \tan^{-1} \left(\frac{v_1}{2v_2} \right)$ (D) $\theta = 5 \sin^{-1} \left(\frac{v_1}{v_2} \right)$



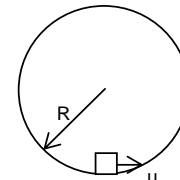
5. **B**

6. A massless platform is kept on a light elastic spring, as shown in the figure. When sand particles of 0.1 kg mass is dropped on the pan from a height of 0.24 m, the particle strikes the pan and the spring is compressed by 0.01 m. From what height should the particle be dropped to cause a compression of 0.04 m?
 (A) 0.96 m (B) 2.96 m
 (C) 3.96 m (D) 0.48 m



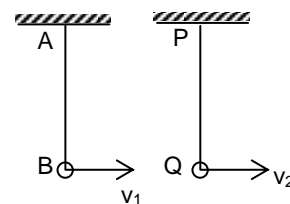
6. **C**

7. A particle is given an initial speed 'u' inside a smooth fixed spherical shell of radius $R = 1$ m such that it is just able to complete the circle. Acceleration of the particle when its velocity is vertical, is
 (A) $g\sqrt{10}$ (B) g
 (C) $g\sqrt{2}$ (D) $3g$



7. **A**

8. In the figure shown there are two pendulums free to move in a vertical circle about one pivoted end. The length of each is ℓ and mass of each bob is m . But AB is a light string while PQ is a light rigid rod. The ratio of minimum velocities v_1 and v_2 given to both (as shown) to complete the full vertical circle is



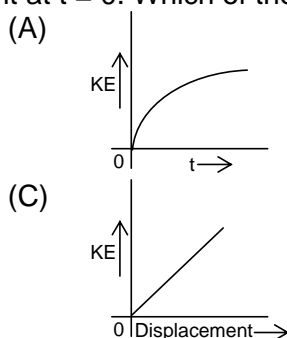
- (A) 1 (B) $\frac{\sqrt{5}}{2}$ (C) $\frac{\sqrt{5}}{\sqrt{3}}$ (D) $\frac{\sqrt{3}}{2}$

8. **B**

9. A boat which has a speed of 5 km/h in still water crosses a river of width 1 km along the shortest possible path in 15 min. The velocity of the river water in km/h is
 (A) 1 (B) 3
 (C) 4 (D) $\sqrt{41}$

9. **B**

10. A block is resting over a smooth horizontal plane. A constant horizontal force starts acting on it at $t = 0$. Which of the following graph is correct?

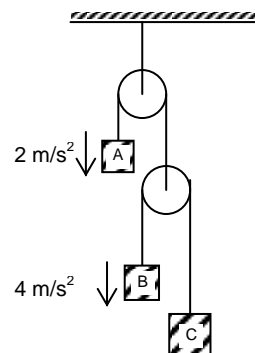


10. **C**

11. The position vector of a particle is $\vec{r} = a \cos \omega t \vec{i} + a \sin \omega t \vec{j}$. The velocity of the particle is:
 (A) Parallel to position vector (B) Perpendicular to position vector
 (C) Directed towards the origin (D) Directed away from the origin

11. **B**

12. In the figure shown acceleration of blocks A and B are as shown. The acceleration of block C is
 (A) 8 m/s^2 upward (B) 4 m/s^2 upward
 (C) 2 m/s^2 downward (D) zero



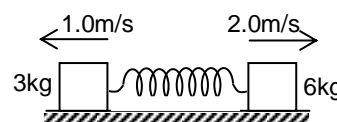
12. **A**

13. A ball falls from a height h_0 . There are n collisions with the earth. If the velocity of rebound after n collisions is v_n and the ball rises to a height h_n , then coefficient of restitution e is given by

(A) $e^n = \sqrt{\frac{h_n}{h_0}}$ (B) $e^n = \sqrt{\frac{h_0}{h_n}}$ (C) $ne = \sqrt{\frac{h_n}{h_0}}$ (D) $\sqrt{n}e = \sqrt{\frac{h_n}{h_0}}$

13. **A**

14. 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 $K = 200 \text{ N/m}$. Initially the spring is unstretched. The indicated velocities are imparted to the blocks. The maximum extension of the spring will be

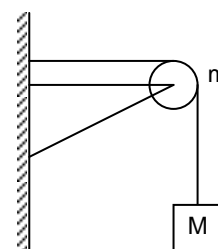


(A) 30 cm (B) 25 cm
 (C) 20 cm (D) 15 cm

14. **A**

15. A string of negligible mass going over a clamped pulley of mass m supports a block of mass M as shown in the figure. The force on the pulley by the clamp is given by

(A) $\sqrt{2} Mg$ (B) $\sqrt{2} mg$
 (C) $\sqrt{(M+m)^2 + m^2}g$ (D) $\sqrt{(M+m)^2 + M^2}g$



15. **D**

16. The velocity of a particle of mass 3 kg varies with time as $\vec{v} = (2t^2\hat{i} + 3\hat{j}) \text{ m/s}$, [t is in second]. Then find out change in the linear momentum of the ball in $0 \rightarrow 4 \text{ sec}$.

(A) $96\hat{i} \text{ Kg.m/sec}$ (B) $105[\hat{i} + \hat{j}] \text{ Kg.m/sec}$
 (C) $48\hat{i} \text{ Kg.m/sec}$ (D) $36\hat{i} \text{ Kg.m/sec}$

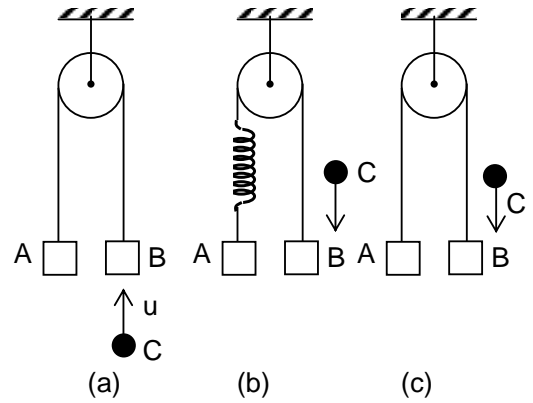
16. **A**

17. A projectile is projected at an angle $\alpha (>45^\circ)$ with an initial velocity u ($t=0$). The time t at which its horizontal velocity will equal to the vertical velocity

(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) $t = \frac{u}{g}(\sin^2 \alpha - \cos^2 \alpha)$

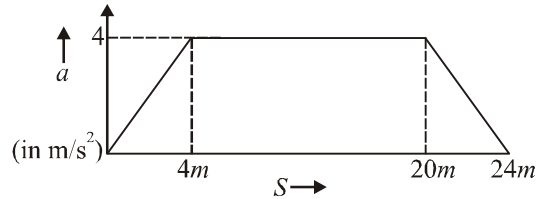
17. **C**

18. In the figure shown the objects A, B and C are of same mass, string, spring and pulley are mass less. C strikes B with velocity u in each case and sticks to it. The ratio of velocity of B in case (a) to (b) to (c) is
 (A) 1 : 1 : 1
 (B) 3 : 3 : 2
 (C) 3 : 2 : 2
 (D) 1 : 2 : 3



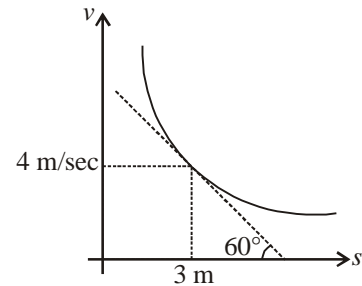
18. **B**

19. Acceleration vs. displacement graph of a particle of mass 1 kg moving in straight line is as shown in the figure. Net work done on particle as particle displaces by 24 m is :
 (A) 160 J
 (B) -160 J
 (C) +80 J
 (D) Zero



19. **B**

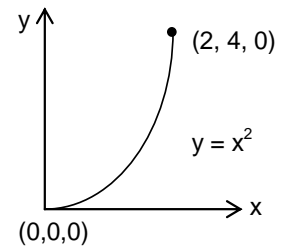
20. A particle is moving along a straight line its velocity-displacement graph is shown in figure. What is the magnitude of acceleration when its displacement is 3 m.
 (A) $4\sqrt{3} \text{ m/sec}^2$
 (B) $3\sqrt{3} \text{ m/sec}^2$
 (C) $\sqrt{3} \text{ m/sec}^2$
 (D) $2\sqrt{3} \text{ m/sec}^2$



20. **A**

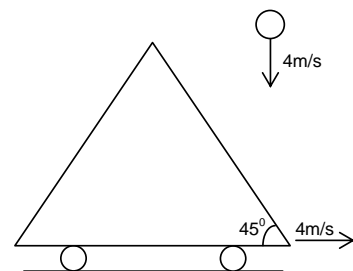
PART-B
Numerical Type

1. By applying a force $\vec{F} = (3xy - 5z)\hat{j} + 4z\hat{k}$ a particle is moved along the path $y = x^2$ from point $(0, 0, 0)$ to $(2, 4, 0)$. The work done by the force F on the particle is ____ J.



1. **38.40**

2. A small ball falling vertically downward with constant velocity 4 m/s strikes elastically a massive wedge moving with velocity 4 m/s horizontally as shown. The velocity of the rebound of the ball is ____ m/s.

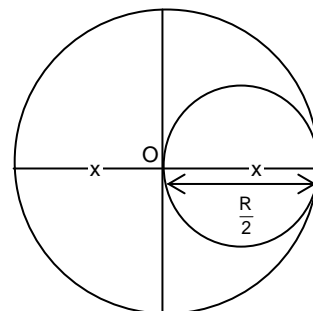


2. **8.94**

3. A ball falls from rest from a height h onto a floor, and rebounds to a height $h/4$. The coefficient of restitution between the ball and the floor is ____.
3. **0.50**

4. Two blocks of masses 5 kg and 2 kg are placed on a frictionless surface and connected by a spring. An external kick gives a velocity of 14 m/s to the heavier block in the direction of lighter one. Calculate the velocity gained by the centre of mass.
4. **10**

5. A spherical hollow is made in a lead sphere of radius R , such that its surface touches the outside surface of lead sphere and passes through the centre. The shift in the centre of mass of lead sphere due to the hollowing is $\frac{R}{n}$. Find the value of 'n'.



5. **14**

Chemistry

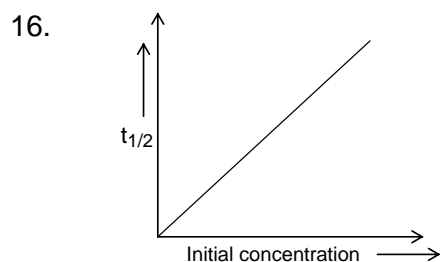
PART – A

Straight Objective Type

This part contains **20 multiple choice questions**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

- Which of the following molecule has pyramidal shape?
(A) BF_3 (B) NF_3
(C) IF_3 (D) ClF_3
- B**
- Which of the following two substances can be distinguished by heating?
(A) CaCO_3 and MgCO_3 (B) LiNO_3 and NaNO_3
(C) $\text{Ba}(\text{NO}_3)_2$ and $\text{Ca}(\text{NO}_3)_2$ (D) NaHCO_3 and MgCO_3
- B**
- Which of the following can react easily with hydrogen in presence of light?
(A) N_2 (B) Cl_2
(C) O_2 (D) S_8
- B**
- The energy of first orbit of hydrogen atom is -13.6 eV . How much energy is required to excite the electron of hydrogen from ground state to first excited state?
(A) 3.4 eV (B) 10.2 eV
(C) 13.6 eV (D) 12.1 eV
- B**
- Which of the following is not the formula of oxygen containing compound of alkali metals (M)?
(A) M_2O (B) MO_2
(C) M_2O_2 (D) MO
- D**
- In which of the following molecule the lone pair dipole moment is apposed by the bond pair dipole moment?
(A) H_2O (B) OF_2
(C) CF_4 (D) NH_3
- B**
- H_2 gas is prepared in the laboratory by the action of zinc granules with
(A) conc.HCl (B) dil. H_2SO_4
(C) conc. H_2SO_4 (D) dil. HNO_3
- B**
- Which of the following substance forms a gas when reacts with water?
(A) NaNO_3 (B) Mg_3N_2
(C) CaSO_4 (D) BaCl_2
- B**

9. Which of the following mixture turns starch paper blue?
 (A) $\text{PbS} + \text{H}_2\text{O}_2$ (B) $\text{NaNO}_2 + \text{H}_2\text{O}_2$
 (C) $\text{KI} + \text{H}_2\text{O}_2 + \text{H}_2\text{SO}_4$ (D) $\text{MgS} + \text{H}_2\text{O}_2$
9. **C**
10. Which is most acidic in nature?
 (A) H_2O (B) D_2O
 (C) H_2O_2 (D) HDO
10. **C**
11. $\text{X}(\text{g}) + 2\text{Y}(\text{g}) \longrightarrow \text{Products}$
 The rate equation of above reaction is given as follows:
 Rate = $k[\text{X}][\text{Y}]^{0.5}$
 What is the unit of rate constant of above reaction?
 (A) $\text{mol}^{1/2}\text{L}^{-1/2}\text{s}^{-1}$ (B) $\text{mol}^{-1/2}\text{L}^{1/2}\text{s}^{-1}$
 (C) $\text{mol}^{3/2}\text{L}^{-3/2}\text{s}^{-1}$ (D) $\text{mol}^{-3/2}\text{L}^{3/2}\text{s}^{-1}$
11. **B**
12. For which of the following reaction the unit of K_p is atm^{-1} ?
 (A) $\text{N}_2(\text{g}) + \text{O}_2(\text{g}) \rightleftharpoons 2\text{NO}(\text{g})$ (B) $2\text{NO}(\text{g}) + \text{O}_2(\text{g}) \rightleftharpoons 2\text{NO}_2(\text{g})$
 (C) $\text{N}_2\text{O}_3(\text{g}) \rightleftharpoons \text{NO}_2(\text{g}) + \text{NO}(\text{g})$ (D) $\text{SO}_2(\text{g}) + \text{CO}_2(\text{g}) \rightleftharpoons \text{SO}_3(\text{g}) + \text{CO}(\text{g})$
12. **B**
13. $\text{CN}^- + \text{H}_2\text{O} \rightleftharpoons \text{HCN} + \text{OH}^-$
 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}
13. **B**
14. $\text{X}(\text{g}) \rightleftharpoons \text{Y}(\text{g}) + \text{Z}(\text{g})$
 The equilibrium constant K_p of above reaction is 3 atm at a certain temperature. If equal moles of X, Y and Z are present at equilibrium, the equilibrium pressure would be:
 (A) 12 atm (B) 3 atm
 (C) 6 atm (D) 9 atm
14. **D**
15. Which of the following solution does NOT display common ion effect?
 (A) $\text{H}_2\text{S} + \text{NaHS}$ (B) $\text{HCN} + \text{KH}$
 (C) $\text{NaHS} + \text{HCl}$ (D) $\text{H}_2\text{CO}_3 + \text{KHCO}_3$
15. **B**



What is the order of the reaction for which the above graph is given?

- (A) Zero (B) First
(C) Second (D) Third

16. **A**

17. Which of the following solutions make buffer?

- (A) NaOH + CH₃COOH (1:1 molar ratio) (B) NaOH + CH₃COOH (2:1 molar ratio)
(C) NaOH + CH₃COOH (1:2 molar ratio) (D) NaOH + CH₃COOH (4:3 molar ratio)

17. **C**

18. The half-life of a zero order reaction is 6 sec. How much time (in sec) is needed for 75% completion of the reaction?

- (A) 15 (B) 12
(C) 9 (D) 6

18. **C**

19. Which element is not present in aspartame?

- (A) Nitrogen (B) Oxygen
(C) Carbon (D) Sulphur

19. **D**

20. Which characteristic of oxygen is greater than that of nitrogen?

- (A) First ionization energy (B) Atomic size
(C) Second ionization energy (D) Number of unpaired electrons

20. **C**

PART-B Numerical Type

1. What is the azimuthal quantum number of the highest energetic electron of aluminum?
[At. No. of Al = 13]

1. **1**

2. The rate of an elementary reaction $2X(g) + Y(g) \longrightarrow X_2Y(g)$ is $8 \times 10^{-3} \text{ mol L}^{-1}\text{s}^{-1}$ if the reaction starts with 0.1 M of X and 0.2 M of Y. What is the rate constant (k) of the reaction in $\text{mol}^{-2} \text{L}^2\text{s}^{-1}$ unit?

2. **4**

3. How many antibonding molecular orbitals of O₂ are occupied with electrons?

3. **4**

4. A buffer contains a weak acid HA and its salt NaA. What is the maximum pH of the buffer beyond which it cannot display buffer action?
[K_a of acid HA = 10^{-7}]
4. **8**
5. H_2A is a weak acid having K_{a1} and K_{a2} are 1×10^{-8} and 1×10^{-11} respectively. What is the pH of 0.1 M NaHA solution?
5. **9.5**

Space For Rough Work

Mathematics

PART – A

Straight Objective Type

This part contains **20 multiple choice questions**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

1. The equation $x^3 + 2x^2 + 5x + 2\cos x = 0$ in interval $[0, 2\pi]$ has
 (A) only one root (B) only two roots
 (C) only three roots (D) no root
 1. D
2. The value of $\int \frac{dx}{(e^x + 1)(2e^x + 3)}$ is equal to
 (A) $x + \ln(e^x + 1) - \frac{2}{3}\ln(2e^x + 3) + c$ (B) $\frac{1}{3}x - \ln(e^x + 1) + \frac{2}{3}\ln(2e^x + 3) + c$
 (C) $x - \frac{2}{3}\ln(e^x + 1) + \ln(2e^x + 3) + c$ (D) $\frac{1}{3}x + \ln(e^x + 1) - \frac{2}{3}\ln(2e^x + 3) + c$
 2. B
3. Domain of $f(x) = \frac{1}{\sqrt{[|x| - 1] - 5}}$, (where $[\cdot]$ denotes greatest integer function) is
 (A) $[0, 7)$ (B) $(-\infty, -7] \cup [7, \infty)$
 (C) $(0, 1)$ (D) $(-2, 5)$
 3. B
4. The number of surjection from A to B where $A = \{1, 2, 3, 4\}$, $B = \{a, b, c, d\}$ is
 (A) 10 (B) 24
 (C) 18 (D) 16
 4. B
5. Let $f(x) = \int_1^x \sqrt{2-t^2} dt$. Then the real roots of the equation $x^2 - f'(x) = 0$ are
 (A) $(0, 1)$ (B) $\pm \frac{1}{\sqrt{2}}$
 (C) $\pm \frac{1}{2}$ (D) ± 1
 5. D
6. $\int \frac{xe^x}{(x+1)^2} dx$ is equal to
 (A) $\frac{2e^x}{x+1} + c$ (B) $\frac{e^x}{(x+1)^2} + c$
 (C) $-\frac{e^x}{(x+1)^3} + c$ (D) $\frac{e^x}{x+1} + c$
 6. D

7. $\int \sin 2x \cdot \log \cos x \, dx$ is equal to
 (A) $\cos^2 x \left(\frac{1}{2} + \log \cos x \right) + k$ (B) $\cos^2 x \log \cos x + k$
 (C) $\cos^2 x \left(\frac{1}{2} - \log \cos x \right) + k$ (D) $\sin^2 x \log \cos x + k$
7. C
8. If $f(x) = f(a - x)$; then $\int_0^a x f(x) \, dx$ equals
 (A) $\frac{a}{2} \int_0^a f(x) \, dx$ (B) $a \int_0^a f(x) \, dx$
 (C) $\int_0^a f(x) \, dx$ (D) $2a \int_0^a f(x) \, dx$
8. A
9. Number of relations that can be defined on the set $A = \{a, b, c, d, e\}$ is
 (A) 24 (B) 16
 (C) 4^4 (D) 2^{25}
9. D
10. $\lim_{x \rightarrow l} \frac{e^{\{x\}} - \{x\} - 1}{\{x\}^2}$, where $\{.\}$ denotes fractional part of x , if it exists (l is an integer).
 (A) $\frac{1}{2}$ (B) 1
 (C) $e - 2$ (D) does not exist
10. D
11. The acute angle between curves $y = |x^2 - 1|$ and $y = |x^2 - 3|$ with abscissa x greater than 0 is (at intersection point)
 (A) $\tan^{-1} \left(\frac{\sqrt{2}}{7} \right)$ (B) $\tan^{-1} \left(\frac{-1}{7} \right)$
 (C) $\tan^{-1} \left(\frac{4\sqrt{2}}{7} \right)$ (D) not finite
11. C
12. If m is the slope of common tangent to $y = x^2 - x + 1$, and $y = x^2 - 3x + 1$ then m is
 (A) 2 (B) $-\frac{1}{2}$
 (C) -2 (D) $\frac{1}{2}$
12. C
13. The least natural number a for which $x + ax^{-2} > 2$ for all $x \in \mathbb{R}^+$
 (A) 1 (B) 2
 (C) 5 (D) 9

13. B
14. If maximum value of $a \sin x + 2 \cos \left(x + \frac{\pi}{3} \right)$ be 1, then the value of a is
 (A) $\sqrt{2}$ (B) $\sqrt{3}$
 (C) 1 (D) 2
14. B
15. If m and n are positive integers and $f(x) = \int_1^x (t-a)^{2n} (t-b)^{2m+1} dt$, $a \neq b$, then
 (A) $x = b$ is a point of local minimum (B) $x = b$ is a point of local maximum
 (C) $x = a$ is a point of local minimum (D) $x = a$ is a point of local maximum
15. A
16. If $y = \sqrt{e^{\ln x}} + \frac{1}{\sqrt{e^{\ln x}}}$, then $2x \frac{dy}{dx} + y$ is equal to
 (A) $2x$ (B) $2\sqrt{x}$
 (C) $-2\sqrt{x}$ (D) $-2x$
16. B
17. If $f(x) = (x^{12} - x^9 + x^4 - x + 1)^{-1/2}$, the domain of the function
 (A) $(1, \infty)$ (B) $(-\infty, -1)$
 (C) $(-1, 1)$ (D) $(-\infty, \infty)$
17. D
18. $\int_{1/4}^4 \frac{1}{x} \sin \left(x - \frac{1}{x} \right) dx =$
 (A) $-\sin \left(\frac{15}{4} \right)$ (B) $\sin \left(\frac{15}{4} \right)$
 (C) $\frac{15}{4}$ (D) 0
18. D
19. Let F be a real valued invertible function such that $f \left(\frac{3x-5}{x+2} \right) = 100x + 13$, $x \neq 2$. Then find the value of $f^{-1}(2013)$.
 (A) 2013 (B) $\frac{6034}{2015}$
 (C) $\frac{5}{2}$ (D) None of these
19. C
20. The number of points of discontinuity of the function $f(x) = [\sqrt{4x-3} + \sqrt{53-4x}]$ ([.] denotes the GIF) is
 (A) 7 (B) 5
 (C) 6 (D) None of these

20. B

PART-B
Numerical Type

1. Let $f(x)$ be differentiable function at $x = 1$ and $\lim_{h \rightarrow 0} \frac{1}{h} f(1+h) = 5$ then the value of $f'(1)$ is equal to

1. 5

2. Let $F(x) = f(x) + f(1/x)$, where $f(x) = \int_1^x \frac{\ln t}{(1+t)} dt$, then $F(e)$ is equal to

2. 0.5

3. If $f(x) = \begin{cases} \left(\frac{1}{x} - \frac{2}{e^{2x} - 1} \right), & x \neq 0 \\ k, & x = 0 \end{cases}$ be a continuous functions at $x = 0$, then k is equal

3. 1

4. Let $f\left(\frac{x+y}{2}\right) = \frac{f(x)+f(y)}{2}$, for all real x and y . Also $f'(0) = -1$ & $f(0) = 1$ then $f(2)$ is equal to

4. -1

5. Let $f: \mathbf{R} \rightarrow \mathbf{R}$ be a positive increasing function with $\lim_{x \rightarrow \infty} \frac{f(3x)}{f(x)} = 1$. Then $\lim_{x \rightarrow \infty} \frac{f(2x)}{f(x)} =$

5. 1

Space For Rough Work

FIITJEE INTERNAL TEST

BATCHES:

PHYSICS, CHEMISTRY & MATHEMATICS

JEE MAIN-PHASE-I

Paper Code

ANSWER KEY

SECTION – I

(PHYSICS)

PART – A

PART – B

JEEM

(CHEMISTRY)

PART – A

PART – B

SECTION – III
(MATHEMATICS)

PART – A

PART – B