

FIITJEE - JEE (Main)

PHYSICS, CHEMISTRY & MATHEMATICS
BATCHES: Two Year CRP(2224) C-lot
PHASE TEST – I
Q.P. CODE: 100078 (SET-A)

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 & B** in the OMR.
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 to **Two decimal Places** (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

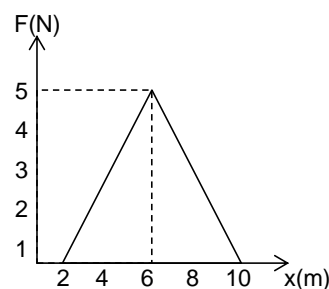
PART – A

Straight Objective Type

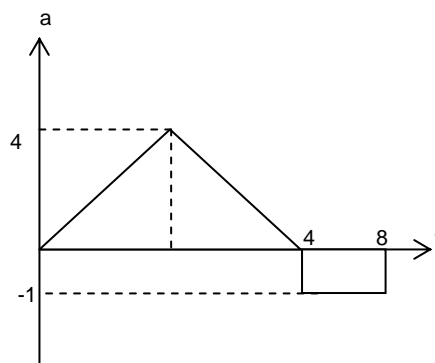
This part contains **20 multiple choice questions**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

- 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 sec is
 (A) 10 m/s (B) 7 m/s (C) $7\sqrt{2}$ m/s (D) 8.5 m/s
- A spring of force constant k is cut into two pieces such that one piece is double the length of the other. Then the long piece will have a force constant of
 (A) $\frac{2}{3}k$ (B) $\frac{3}{2}k$ (C) $3k$ (D) $6k$

- A force shown in the $F - x$ graph is applied to a 2kg block horizontally as shown in the figure. The change in kinetic energy is
 (A) 15J (B) 20J
 (C) 25J (D) 30J

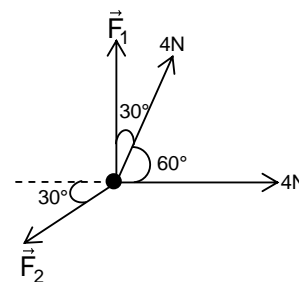


- The acceleration time graph of a particle is shown in the figure. What is the velocity of particle at $t = 8$ sec, if initial velocity of particle is 3m/s
 (A) 4 m/s (B) 5 m/s
 (C) 6 m/s (D) 7 m/s

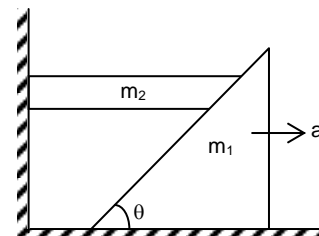


Space For Rough Work

5. An object is in equilibrium under four concurrent forces in the direction shown in figure. the magnitude of \vec{F}_1 and \vec{F}_2 are
- (A) $0N, 4\sqrt{3}N$ (B) $4\sqrt{3}N, 0N$
 (C) $4\sqrt{3}N, 4\sqrt{3}N$ (D) $0, N, 0N$

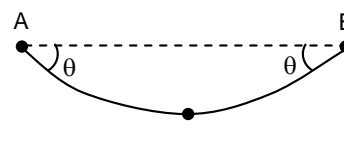


6. For system shown in figure find out acceleration of wedge its given that all the surfaces are smooth & rod (m_2) does not loose contact anywhere ($m_1 = m_2$)
- (A) $g \sin \theta$ (B) $g \sin \theta \times \cos \theta$
 (C) $g \cos \theta$ (D) none of these



7. A particle moves on a rough horizontal ground with some initial velocity v_0 . If $\frac{3}{4}$ th of its K.E. is lost in friction in time t_0 , the coefficient of friction between the particle and the ground is
- (A) $\frac{v_0}{2gt_0}$ (B) $\frac{v_0}{4gt_0}$ (C) $\frac{3v_0}{4gt_0}$ (D) $\frac{v_0}{gt_0}$
8. A body of mass 1kg is thrown upwards with a velocity 20m/s. It momentarily comes to rest after attaining a height of 18m. How much energy is lost due to air friction. ($g = 10 \text{ m/s}^2$)
- (A) 10 J (B) 20 J
 (C) 30 J (D) 40 J

9. A rope of mass m hangs between two fixed points A and B at the same level, as shown in figure. The tension at the mid point of the rope
- (A) mg (B) $mg \cot \theta$
 (C) $2mg \cot \theta$ (D) $\frac{mg \cot \theta}{2}$



10. A boat which has a speed of 6 km/h in still water crosses a river of width 1 km along the shortest possible path in 20 min. The velocity of the river water in km/h is
- (A) 1 (B) 3
 (C) 4 (D) $3\sqrt{3}$

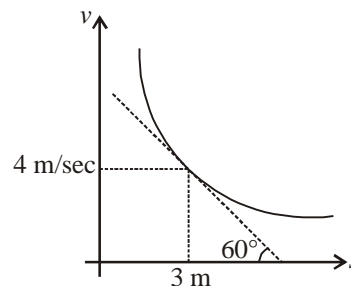
Space For Rough Work

11. A projectile is projected from horizontal plane with velocity u at an angle θ with horizontal. Find out radius of curvature of particle motion when its velocity makes angle $\frac{\theta}{2}$ with horizontal, ($u = 15 \text{ m/s}$, $\theta = 60^\circ$)

- (A) $5\sqrt{3} \text{ m}$ (B) $\frac{5}{\sqrt{3}} \text{ m}$
 (C) $\frac{45}{8} \text{ m}$ (D) none of these

12. 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) $2\sqrt{3} \text{ m/sec}^2$



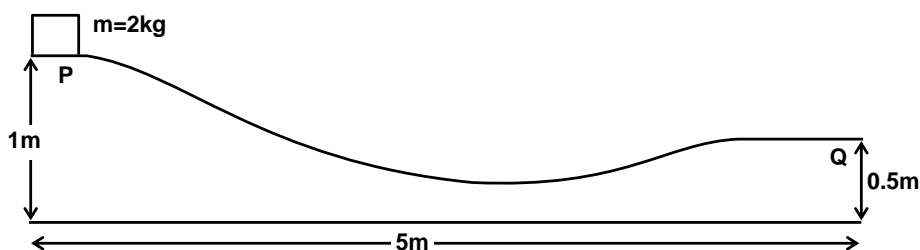
13. Two forces, each of magnitude F have a resultant of the same magnitude F . The angle between the two forces is

- (A) 45° (B) 120°
 (C) 150° (D) 60°

14. When a spring is stretched by a distance x , it exerts a force, given by $F = - 5x + 16x^3 \text{ N}$. The work done, when the spring is stretched from 0.1m to 0.2m is

- (A) $8.1 \times 10^{-2} \text{ J}$ (B) $12.2 \times 10^{-2} \text{ J}$
 (C) $8.1 \times 10^{-1} \text{ J}$ (D) $12.2 \times 10^{-1} \text{ J}$

15. Find the horizontal velocity of the particle when it reach the point Q. Assume there is no friction. Take $g = 9.8 \text{ m/s}^2$.

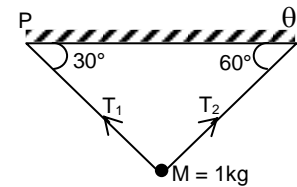


- (A) 4 m/s (B) 5 m/s
 (C) 3.13 m/s (D) 3.6 m/s

Space For Rough Work

16. If $\vec{A} + \vec{B}$ is a unit vector along x-axis and $\vec{A} = \hat{i} - \hat{j} + \hat{k}$, then what is \vec{B}
 (A) $\hat{i} - \hat{k}$ (B) $\hat{j} - \hat{k}$ (C) $\hat{i} + \hat{j} + \hat{k}$ (D) $\hat{i} + \hat{j} - \hat{k}$

17. A 1 kg ball hangs in equilibrium from two strings as shown in the figure. Calculate the tension T_1 and T_2 in the strings (take $g = 10 \text{ m/s}^2$)



- (A) 5N, 5N (B) $5\sqrt{3}\text{N}, 5\sqrt{3}\text{N}$
 (C) 5N, $5\sqrt{3}\text{N}$ (D) $5\sqrt{3}\text{N}, 5\text{N}$

18. If a unit vector is represented by $0.5\hat{i} + 0.8\hat{j} + c\hat{k}$, then the value of 'c' is

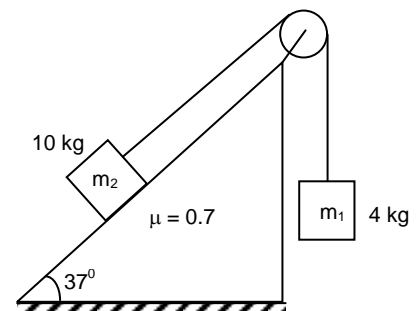
- (A) 1 (B) $\sqrt{0.11}$ (C) $\sqrt{0.01}$ (D) $\sqrt{0.39}$

19. If $\vec{R}_1 = \vec{A} + \vec{B}$ and $\vec{R}_2 = \vec{A} - \vec{B}$, then $\frac{\vec{R}_1 + \vec{R}_2}{|\vec{R}_1 + \vec{R}_2|}$ will be along

- (A) \vec{A} (B) \vec{B}
 (C) $\vec{A} + \vec{B}$ (D) $\vec{A} - \vec{B}$

20. For the arrangement shown in figure, net contact force applied by incline plane on block of mass m_2 will be

- (A) 80N (B) $20\sqrt{17} \text{ N}$
 (C) 20N (D) 100N

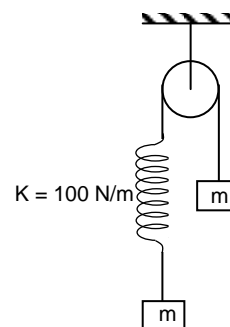


PART-B Numerical Type

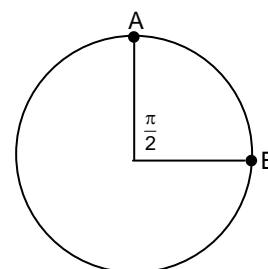
- A person walking at the rate of 3km/hour, the rain appears to fall vertically. When he increase his to speed 6 km/hr it appears to meet him at angle of 45° with vertical. The speed of rain is (km/hr) ($\sqrt{2} = 1.41$)
- Velocity time equation of a particle moving in a straight line is $V = t^2 - 5t + 6$. The distance travelled by the particle in the time interval from $t = 0$ to $t = 4$ sec

Space For Rough Work

3. A system of two block is in equilibrium as shown in figure if spring constant $k = 100 \text{ N/m}$ & mass of block is $m = 20 \text{ kg}$. Find out elongation in spring. (Take $g = 10 \text{ m/s}^2$)



4. A particle is moving in a circular path of radius 1 metre. Under the action of centripetal force. The speed $\frac{\pi}{\sqrt{2}}$ m/s of the particle is constant. Find the average velocity(in m/s) between A and B.



5. Two particles having position vectors $\vec{r}_1 = (3\hat{i} + 5\hat{j})$ metres and $\vec{r}_2 = (-5\hat{i} - 3\hat{j})$ metres are moving with velocities $\vec{v}_1 = (4\hat{i} + 3\hat{j})$ and $\vec{v}_2 = (a\hat{i} + 7\hat{j})$ m/s. If they collide after 2 seconds, the value of a is

Space For Rough Work

Chemistry

PART – A

Straight Objective Type

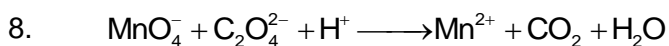
This part contains **20 multiple choice questions**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

- An atom is represented by ${}_{12}^{24}\text{X}$. How many electrons are present in 2.4 g of X^{2+} ion?
 (A) 6.022×10^{-24} (B) 6.022×10^{23}
 (C) 6.022×10^{-23} (D) 6.022×10^{24}
- The pressure of an ideal gas containing diatomic molecules is P atm at TK. If the gas is heated to 2 TK, all the molecules dissociate into atoms. How much will be the final pressure in atm unit?
 [Assume that the volume of the container is constant]
 (A) 2P (B) 4P
 (C) P (D) 8P
- The energy of the first orbit of hydrogen atom is -13.6 eV. How much energy is needed to excite the electron to the second orbit?
 (A) 10.2 eV (B) 3.4 eV
 (C) 17 eV (D) 8.9 eV
- | |
|-----------|
| Group – 1 |
| X |
| Y |
| Z |

X, Y and Z are three successive elements of group-1 of periodic table. Choose the wrong statement.
 (A) YCl has more ionic character than XCl.
 (B) The ionization energy of X is higher than that of Y
 (C) The radius of Y^+ ion is smaller than that of Z^+ ion
 (D) The melting point of Z is higher than that of X
- Which is not a linear molecule?
 (A) CO_2 (B) BeF_2
 (C) OF_2 (D) XeF_2
- $\text{NaOH} + \text{CO}_2 \longrightarrow (\text{X})$
 $(\text{X}) + \text{NaOH} \longrightarrow (\text{Y}) + \text{H}_2\text{O}$
 $(\text{X}) \xrightarrow{\text{Heat}} (\text{Y}) + \text{CO}_2 + \text{H}_2\text{O}$
 In above reaction, (X) is
 (A) NaHCO_3 (B) Na_2CO_3
 (C) a mixture of NaH and CO (D) a mixture of Na_2C_2 and O_2

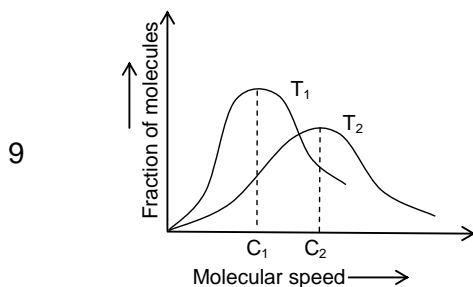
Space For Rough Work

7. How many electron(s) is/are present in ortho hydrogen?
 (A) 1 (B) 2
 (C) 3 (D) 4



What is the ratio of the stoichiometric coefficients of MnO_4^- and $\text{C}_2\text{O}_4^{2-}$ in the balanced form of above equation?

- (A) 2 : 3 (B) 5 : 2
 (C) 3 : 2 (D) 2 : 5



Choose the correct option?

- (A) $T_1 > T_2$ (B) $C_2 = \sqrt{\frac{2RT_2}{M}}$
 (C) $C_1 = \sqrt{\frac{3RT_1}{M}}$ (D) $C_1 > C_2$

10. Which electronic transition in hydrogen spectrum corresponds to second line of Lyman series?

- (A) $n = 4 \rightarrow n = 3$ (B) $n = 3 \rightarrow n = 1$
 (C) $n = 4 \rightarrow n = 1$ (D) $n = 2 \rightarrow n = 1$

11. Na^+ , Mg^{2+} , Al^{3+} , F^- , O^{2-} , N^{3-}

Choose the wrong statement about above ions

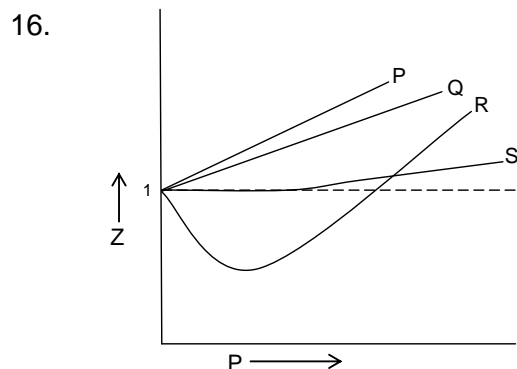
- (A) Al^{3+} is the smallest ion
 (B) Na^+ and F^- will form the most ionic compound
 (C) F^- contains less number of electron than O^{2-} ion
 (D) Mg^{2+} ion has spherical shape

12. What is the hybridization of phosphorus in $[\text{PCl}_4]^+$?

- (A) sp^3d (B) sp^3
 (C) sp^3d^2 (D) sp^2

Space For Rough Work

13. Which is most soluble in water?
 (A) $\text{Be}(\text{OH})_2$ (B) $\text{Mg}(\text{OH})_2$
 (C) $\text{Ca}(\text{OH})_2$ (D) $\text{Ba}(\text{OH})_2$
14. $\text{BaO}_2 \cdot 8\text{H}_2\text{O} + \text{H}_2\text{SO}_4 \longrightarrow \text{BaSO}_4 \downarrow + 8\text{H}_2\text{O} + \text{X}$
 In above reaction, (X) is
 (A) O_2 (B) Ortho H_2
 (C) H_2O_2 (D) Para H_2
15. 200 mL of 0.5 M NaOH solution exactly neutralize
 (A) 36.5 g HCl (B) 200 mL of 0.5 M H_2SO_4
 (C) 0.1 mole HNO_3 (D) 6.022×10^{23} molecule of HI



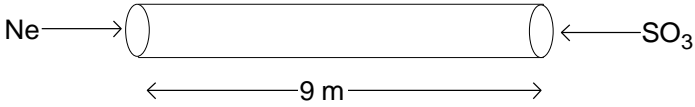
Which gas shows ideal behaviour at all conditions of temperature and pressure?

- (A) P (B) Q
 (C) S (D) None
17. Which ground state electronic configuration does not obey Hund's rule and Aufbau principle?
- (A) $\begin{array}{|c|c|c|} \hline \uparrow\downarrow & \uparrow & \downarrow & \uparrow \\ \hline 2s & 2p & & \\ \hline \end{array}$ (B) $\begin{array}{|c|c|c|c|} \hline \uparrow\downarrow & \uparrow & \uparrow & \uparrow \\ \hline 2s & 2p & & \\ \hline \end{array}$
- (C) $\begin{array}{|c|c|c|c|} \hline \uparrow\downarrow & \uparrow\downarrow & \uparrow & \\ \hline 2s & 2p & & \\ \hline \end{array}$ (D) $\begin{array}{|c|c|c|c|} \hline \uparrow & \uparrow & \downarrow & \uparrow \\ \hline 2s & 2p & & \\ \hline \end{array}$
18. The correct order of electron affinity is given in
 (A) $\text{B} > \text{N} > \text{C}$ (B) $\text{N} > \text{C} > \text{B}$
 (C) $\text{C} > \text{B} > \text{N}$ (D) $\text{B} > \text{C} > \text{N}$

Space For Rough Work

19. Which option is correct regarding the dipole moment of the given molecules?
(A) $\text{CH}_4 > \text{NH}_3$ (B) $\text{NH}_3 > \text{NF}_3$
(C) $\text{CO}_2 > \text{SO}_2$ (D) $\text{CH}_4 > \text{CH}_3\text{F}$
20. Which is not a characteristic of the solution of sodium in liquid NH_3 ?
(A) The solution behaves as a reducing agent.
(B) The solution becomes blue in colour.
(C) The electrons are surrounded by hydride(H^-) ions.
(D) The solution conducts electricity.

PART-B
Numerical Type

1. 400 mL of 0.25 M solution of H_2SO_4 was added to a certain quantity of CaCO_3 . After complete reaction, the solution required 100 mL of 0.5 M NaOH for neutralization of the excess acid. What is the mass of CaCO_3 in g unit?
2. The minimum sum of n , ℓ and m for the 4p atomic orbital is (X) and the maximum sum of n , ℓ and m for the 5p orbital is (Y). What is the value of (X + Y)?
3. 
Both SO_3 and Ne are introduced from the two ends of a 9 m long pipe. At what distance in meter unit from Ne end, the two gases can mix with each other?
4. A certain electronic transition from a higher orbit to ground state in hydrogen spectrum, emits six different photons. How many photons produce Balmer lines?
5. What is the principal quantum number of the valence electron of sodium atom?

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.

- The complete set of solutions of $\frac{(x-1)^7(x-2)^4}{(x+1)^5} \geq 0$ is
 (A) $(-\infty, -1] \cup [1, \infty)$ (B) $(-\infty, -1) \cup (1, \infty)$
 (C) $(-\infty, -1) \cup [1, \infty)$ (D) None of these
- The value of expression $\frac{7^{\log_4 5} - \sqrt{5}}{2^{\log_4 2} + \sqrt{2}}$ will be
 (A) 0 (B) 1
 (C) $\sqrt{2}$ (D) $\sqrt{5}$
- Maximum value of the expression $2\sin x + 4\cos x + 3$ is
 (A) $2\sqrt{5} + 3$ (B) $2\sqrt{5} - 3$
 (C) $\sqrt{5} + 3$ (D) none of these
- If $3\sin\alpha = 5\sin\beta$, then $\frac{\tan\frac{\alpha+\beta}{2}}{\tan\frac{\alpha-\beta}{2}}$ is equal to
 (A) 1 (B) 2
 (C) 3 (D) 4
- The exhaustive set of real values of x satisfying the inequality $|x-1| > 2$ is
 (A) $(-\infty, -1)$ (B) $(3, \infty)$
 (C) R (D) $(-\infty, -1) \cup (3, \infty)$
- A rod of length 4 cm slides over two perpendicular lines then locus of middle point of rod.
 (A) $x^2 + y^2 = 1$ (B) $x^2 + y^2 = 4$
 (C) $x^2 + y^2 = 2$ (D) $x^2 + y^2 = 3$

Space For Rough Work

7. The diagonal AC and BD of rhombus intersect at (5, 6). If $A = (3, 2)$, then equation of diagonal BD is:
(A) $y - x = 1$ (B) $2y - x = 17$
(C) $y - 2x + 4 = 0$ (D) $2y + x = 17$
8. The reflection of the point (4, -13) in the line $5x + y + 6 = 0$ is
(A) (-1, -14) (B) (3, 4)
(C) (1, 2) (D) (-4, 13)
9. The length of the median through the vertex A of a triangle having vertices $A(-1, 3)$, $B(1, -1)$ and $C(5, 1)$, is
(A) 5 (B) 4
(C) 1 (D) none of these
10. The locus of the point such that the tangents drawn from it to the circle $x^2 + y^2 - 6x - 8y = 0$ are perpendicular to each other, is
(A) $x^2 + y^2 - 6x - 8y - 25 = 0$ (B) $x^2 + y^2 + 6x - 8y - 5 = 0$
(C) $x^2 + y^2 - 6x + 8y - 5 = 0$ (D) $x^2 + y^2 - 6x - 8y + 25 = 0$
11. If $y = \tan^2(\ln x)$ then $\frac{dy}{dx}$ is
(A) $\sec^2(\ln x)$ (B) $\frac{2(\tan \ln x) \cdot \sec^2(\ln x)}{x}$
(C) $\frac{\sec^2 \ln x}{x}$ (D) none of these
12. The line $4y - 3x + \lambda = 0$ touches the circle $x^2 + y^2 - 4x - 8y - 5 = 0$, the value of λ is
(A) 29 (B) 10
(C) -35 (D) none the these
13. Let $f(x) = x^2 + bx + 7$. If $f'(5) = 2f'\left(\frac{7}{2}\right)$, then the value of b is
(A) 4 (B) 3
(C) -4 (D) -3

Space For Rough Work

14. If $x = a\cos^3 \theta$ and $y = a\sin^3 \theta$, then $1 + \left(\frac{dy}{dx}\right)^2$ is
(A) $\tan \theta$ (B) $\tan^2 \theta$
(C) 1 (D) $\sec^2 \theta$
15. $\lim_{x \rightarrow 0} \frac{\sin(-x)}{x}$
(A) 0 (B) 1
(C) -1 (D) does not exist
16. Orthocenter of the triangle formed by lines $xy = 0$ and $x + y = 4$ be
(A) (0, 0) (B) (4, 0)
(C) (0, 4) (D) (2, 2)
17. The equation of the circle which passes through the point of intersection of the lines $3x - 2y - 1 = 0$ and $4x + y - 27 = 0$, and whose center is the point (2, -3), is
(A) $(x - 2)^2 + (y + 3)^2 = 109$ (B) $(x - 2)^2 + (y + 3)^2 = 111$
(C) $(x - 2)^2 + (y + 3)^2 = 97$ (D) none of these
18. If $\log_2(\sin x) - \log_2(\cos x) - \log_2(1 - \tan x) - \log_2(1 + \tan x) = -1$, then $\tan 2x =$
(A) -1 (B) 1
(C) $\frac{1}{2}$ (D) 4
19. The indefinite integral $\int \frac{\log x}{x} dx$ will be equal to
(A) $(\log x)^2$ (B) $\frac{(\log x)^2}{2}$
(C) $\log x$ (D) $\frac{1}{x}$
20. The radius of the circle inscribed in the triangle formed by $x = 0$, $y = 0$, $4x + 3y - 24 = 0$ is
(A) 12 (B) 2
(C) $2\sqrt{2}$ (D) 6

Space For Rough Work

PART-B
Numerical Type

1. The number of solution of $\log_4(x-1) = \log_2(x-3)$ is
2. $\lim_{x \rightarrow 0} \frac{\tan 2x - x}{3x - \sin x}$ is equal to
3. The value of 'k' for which circles $x^2 + y^2 - 81 = 0$ and $x^2 + y^2 - 4x - 6y + k = 0$ are orthogonal is
4. Distance between lines $3x - 4y = 5$ and $6x - 8y = 2$ be
5. Let $\int_0^1 \frac{e^{\sqrt{x}}}{\sqrt{x}} dx = \lambda(e-1)$. The value of λ is

Space For Rough Work

FIITJEE INTERNAL TEST

BATCHES: Two Year CRP(2224) C-lot_JEEM
PHASE TEST – I

PHYSICS, CHEMISTRY & MATHEMATICS

ANSWER KEY

Paper Code
100078

SECTION – I

(PHYSICS)

PART – A

- | | | | |
|-------|-------|-------|-------|
| 1. C | 2. B | 3. B | 4. D |
| 5. A | 6. B | 7. A | 8. B |
| 9. D | 10. D | 11. A | 12. A |
| 13. B | 14. A | 15. C | 16. B |
| 17. C | 18. B | 19. A | 20. B |

PART – B

- | | |
|------------------------------|------------------------------|
| 1. 4.23 (range: 4.20 - 4.25) | 2. 5.67 (range: 5.65 - 5.70) |
| 3. 2 | 5. 8 |

SECTION – II

(CHEMISTRY)

PART – A

- | | | | |
|-------|-------|-------|-------|
| 1. B | 2. B | 3. A | 4. D |
| 5. C | 6. A | 7. B | 8. D |
| 9. B | 10. B | 11. C | 12. B |
| 13. D | 14. C | 15. C | 16. D |
| 17. D | 18. C | 19. B | 20. C |

PART – B

- | | | | |
|--------|-------|------|------|
| 1. 7.5 | 2. 11 | 3. 6 | 4. 2 |
| 5. 3 | | | |

SECTION – III (MATHEMATICS)

PART – A

- | | | | |
|-------|-------|-------|-------|
| 1. C | 2. A | 3. A | 4. D |
| 5. D | 6. B | 7. D | 8. A |
| 9. A | 10. A | 11. B | 12. C |
| 13. C | 14. D | 15. C | 16. A |
| 17. A | 18. B | 19. B | 20. B |

PART – B

- | | | | |
|------|---------|-------|---------|
| 1. 1 | 2. 0.50 | 3. 81 | 4. 0.80 |
| 5. 2 | | | |