# FIITJEE - JEE (Main)

## PHYSICS, CHEMISTRY & MATHEMATICS
## BATCH: NWCMPA425A1
### PHASE TEST – I
### Q.P. CODE: 100720

**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 **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 :**_____

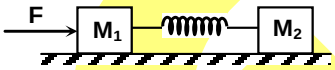
# Physics

## PART – A

### Straight Objective Type

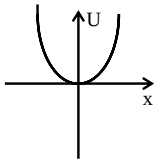
This part contains **20 multiple choice questions.** Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

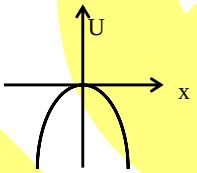
1. Two blocks of masses $M_1$ and $M_2$ are connected to each other through a light spring as shown in the figure. If we push mass $M_1$ with a force F and cause acceleration $a_1$ in mass $M_1$, what will be the acceleration in $M_2$?

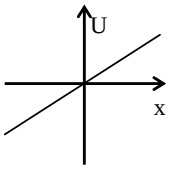


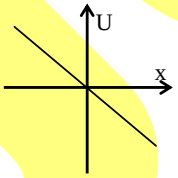

(A) $F/M_2$ (B) $F/(M_1 + M_2)$
(C) $a_1$ (D) $(F - M_1a_1)/M_2$

2. A particle is acted by a force F = kx, where k is a positive constant. Its potential energy at x = 0 is zero. Which curve correctly represents the variation of potential energy of the block with respect to x

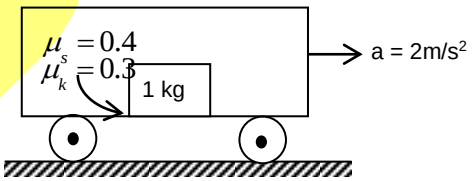
(A) 


(B) 


(C) 


(D) 

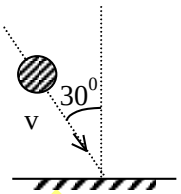

3. A block of mass 1 kg is placed on the rough horizontal surface of a car moving with a constant acceleration a = $2m/s^2$ starting from rest as shown. The net work done by frictional force on the block relative to ground in first 4 sec is




(A) 8 Joule
(B) 16 Joule
(C) 32 Joule
(D) 64 Joule

***Space For Rough Work***

4. A smooth ball of mass m strike a horizontal surface with a velocity v in a direction making an angle $\theta$ with the normal to the surface as shown in the figure. If the coefficient of restitution for the collision between the ball and the surface is e and the ball was in contact with the surface for a small time '$\Delta t$' the average force acting on the ball during collision is




(A) mg

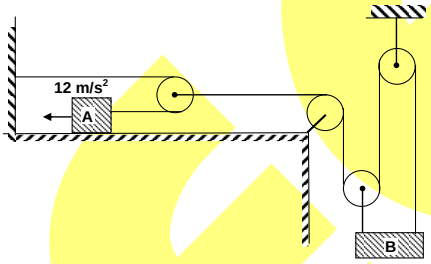
(B) $\frac{mv(1+e)}{2\Delta t}$

(C) $\frac{\sqrt{3}\ mv(1-e)}{2\Delta t}$

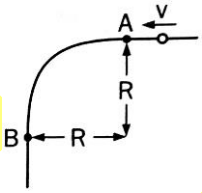
(D) $\frac{\sqrt{3}\ mv(1+e)}{2\Delta t}$ + mg

5. Assuming that the block B always remains horizontal, then acceleration of B is

(A) 6 m/s$^2$
(B) 2 m/s$^2$
(C) 4 m/s$^2$
(D) None of these




6. A bead of mass m is projected with a speed v along a smooth, rigid wire placed in horizontal plane. The average force and acceleration of the bead over a time of its motion from A to B in a quarter circle of radius R are $F_{av}$ and $a_{av}$ respectively. If N is the normal reaction offered by the wire on the ring, then



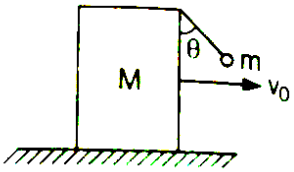

(A) $a_{av} = 0$ (B) $N = \frac{mv^2}{R}$ (C) $a_{av} = \frac{mv^2}{R}$ (D) $F_{av} = \frac{2\sqrt{2}mv^2}{\pi R}$

7. A particle is projected with speed u at angle $\alpha$ with horizontal to pass over a tower of height h. The product of the two possible times taken to pass over the tower is

(A) $\frac{2u}{g}$ (B) $\frac{2h}{g}$ (C) $\frac{u}{g}$ (D) $\frac{4h}{g}$

***Space For Rough Work***

8. A wedge of mass M is pushed with a speed $v_0$ on a rough horizontal plane. The angle of friction between the wedge and horizontal plane is $\phi$. The angle of inclination θ of the pendulum is:

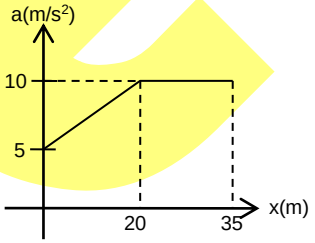



(A) $\phi$ (B) $90^\circ - \phi$ (C) $\frac{m}{M}\phi$ (D) $\tan^{-1}\left(\frac{m}{M}\tan\phi\right)$

9. A bomb of mass 7 m initially at rest explodes into two fragments of masses 4 m and 3m. If the momentum of the lighter fragment is 'p' then the kinetic energy released in the explosion is

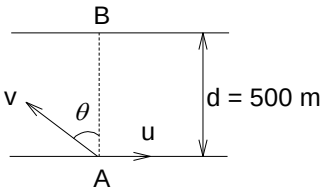
(A) $\frac{7P^2}{24m}$ (B) $\frac{9P^2}{16m}$ (C) $\frac{11P^2}{24m}$ (D) $\frac{5P^2}{14m}$

10. The a –x graph for a particle moving along x-axis is shown in the fig. If initial velocity of particle is 5 m/s at x = 0, then the velocity of particle at x = 35 m is



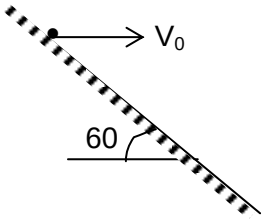

(A) 15 m/s (B) 25 m/s
(C) 35 m/s (D) 45 m/s

11. A swimmer wishes to cross a river 500 m wide flowing at a rate 'u'. His speed with respect to still water is 'v'. For this, he makes an angle $\theta$ with the perpendicular as shown in the figure. For u = 5km/hr and v = 3 km/hr, the swimmer:




(A) can reach to B in 7.5 min
(B) can reach to B in 6 min
(C) can reach to B in less than 6 min
(D) can never reach to B

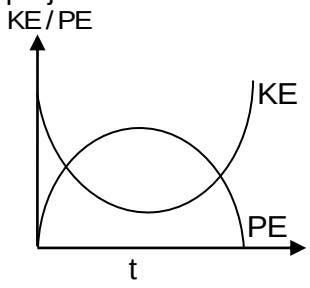
12. A ball is projected horizontally from an inclined plane with a velocity $v_0$ as shown in the figure. It will strike the plane after a time

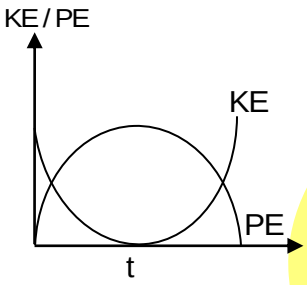


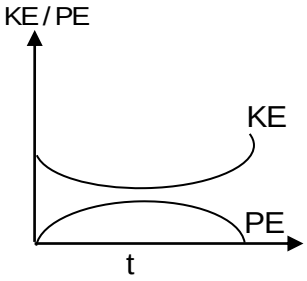

(A) $\frac{v_0}{\sqrt{3}g}$ (B) $\frac{2v_0}{\sqrt{3}g}$
(C) $\frac{v_0}{g}$ (D) $2\sqrt{3}\frac{v_0}{g}$

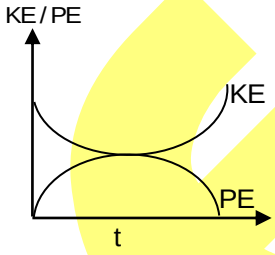
*Space For Rough Work*

13. A particle is projected at an angle θ = 30° with the horizontal. Which of the following curves best represents the variation of KE and potential energy as a function of time? [Take the point of projection as the reference level for the gravitational potential energy.]

(A)



(B)


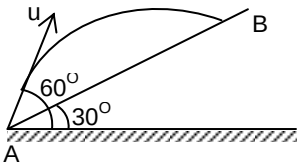

(C)



(D)



14. Starting from rest a particle moves in a straight line with acceleration $a = 2 + |t - 2|$ m/s$^2$. Velocity of particle at the end of 4 sec will be

(A) 16 m/s (B) 20 m/s (C) 8 m/s (D) 12 m/s

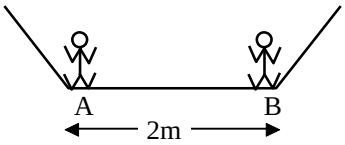
15. The time taken by the projectile to reach from A to B is t. Then the distance AB is equal to




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

(C) $\sqrt{3}$ ut (D) 2 ut

16. 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 2m, at rest. When they interchange their positions then displacement of the centre of mass of the boat will be

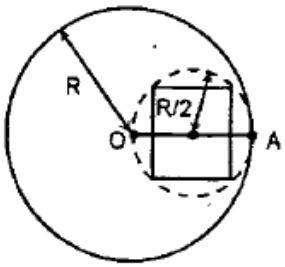



(A) 60 cm towards left (B) 30 cm towards right

(C) 30 cm towards left (D) stationary

***Space For Rough Work***

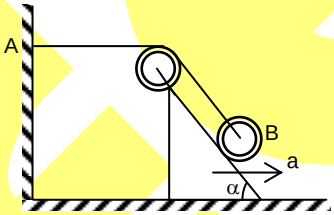
17. There is a thin uniform disc of radius R and mass per unit area $\sigma$, in which a hole of radius Rl2 has been cut out as shown in the figure. Inside the hole a square plate of same mass per unit area $\sigma$ is inserted so that its comers touch the periphery of the hole. Find centre of mass of the system.




(A) $\frac{R[2-\pi]}{2[3\pi+2]}$ (B) $\frac{R[1-\pi]}{2[2\pi+1]}$

(C) $\frac{2R\pi}{2[3\pi+2]}$ (D) $\frac{3R\pi}{2[2\pi+1]}$

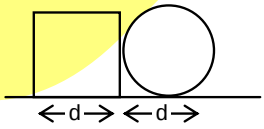
18. A weightless inextensible rope rests on a stationary wedge forming an angle $\alpha$ with the horizontal. One end of the rope is fixed to the wall at point A. A small load is attached to the rope at point B. The wedge starts moving to the right with a constant acceleration a. The magnitude of acceleration of the load is given by:




(A) a (B) 2a sin$\frac{\alpha}{2}$

(C) a sin $\alpha$ (D) g sin $\alpha$

19. A circular plate of diameter 'd' is kept in contact with a square plate of edge 'd' as shown in figure. The density of material and thickness are same everywhere. The center of mass of the composite system will be




(A) inside the circular plate (B) inside the square plate

(C) at the point of contact (D) outside the system

20. The unit vector perpendicular to $\vec{i}-2\hat{j}+\hat{k}$ and $3\vec{i}+\hat{j}-2\hat{k}$ is

(A) $\frac{5\vec{i}+3\hat{j}+7\hat{k}}{\sqrt{83}}$ (B) $\frac{3\vec{i}+5\hat{j}+7\hat{k}}{\sqrt{83}}$ (C) $\frac{5\vec{i}+3\hat{j}-7\hat{k}}{\sqrt{83}}$ (D) $\frac{3\vec{i}-5\hat{j}+7\hat{k}}{\sqrt{83}}$

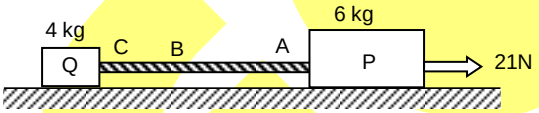
***Space For Rough Work***

## PART-B
## Numerical Type

1. A particle of mass 4 m which is at rest explodes into 3 fragments. Two of the fragments each of mass m are found to move with a speed of v each in perpendicular directions. The total energy released in the process is $\frac{I}{2}mv^2$ find the value of 'I'.

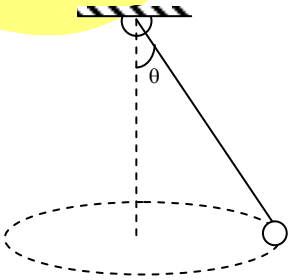
2. An object of mass 1kg is projected with a momentum 2kg m/s at such an angle that its maximum height (H) is $\frac{1}{4}$th of its horizontal range (R). Find the minimum kinetic energy of the object during its motion.

3. Two blocks of masses 6 kg and 4 kg connected by a rope of mass 4 kg are resting on frictionless floor as shown. If a constant force of 21 Newton is applied to 6 kg block, tension (In N) in the rope at point B is (CB : BA = 1 : 3)




4. Potential energy of a particle moving along x-axis is given by U = $\frac{x^3}{3}-\frac{9x^2}{2}+20x$. Find out position of unstable equilibrium state.

5. In the conical pendulum, half of centripetal force (in N) will be ($\theta = 45^0$, m = 0.1 kg, g = 10 m/s$^2$)




***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.

1. The amount of energy required to remove the electron from a $Li^{2+}$ ion from its ground state is how many times greater than the amount of energy needed to remove the electron from an H-atom in its ground state ?
(A) 2 (B) 9 (C) 4 (D) 6

2. Which of the following molecule has the largest bond angle?
(A) $BeF_2$ (B) $SF_2$ (C) $BF_3$ (D) $CF_4$

3. $2NO(g) + O_2(g) \longrightarrow 2NO_2(g)$
If the rate of formation of $NO_2(g)$ in the above reaction is 0.4 mol $L^{-1}s^{-1}$, what will be the rate of reaction in mol $L^{-1}s^{-1}$ unit?
(A) 0.8 (B) 0.4 (C) 0.2 (D) 1.6

4. For which of the following reaction $K_P > K_C$?
(A) $PCl_3(g) + Cl_2(g) \rightleftharpoons PCl_5(g)$ (B) $CaCO_3(s) \rightleftharpoons CaO(s) + CO_2(g)$
(C) $H_2(g) + Cl_2(g) \rightleftharpoons 2HCl(g)$ (D) $2Mg(s) + O_2(g) \rightleftharpoons 2MgO(s)$

5. Which of the following compound produces a gas on normal heating?
(A) NaOH (B) $Na_2CO_3$ (C) $NaNO_3$ (D) NaCl

6. Number of nodal plane in anti-bonding sigma $(\sigma^*_{1s})$ molecular orbital is
(A) 1 (B) 0 (C) 2 (D) 3

7. Which of the following quantum number may be zero for the unpaired electrons of phosphorus?
(A) Principal quantum number (B) Azimuthal quantum number
(C) Magnetic quantum number (D) Spin quantum number

8. $X(g) + 2Y(g) \longrightarrow Products$
The rate equation of above reaction is given as:
Rate = $k[X]^2[Y]^{0.5}$
What is the overall order of the reaction?
(A) 2.5 (B) 1.5 (C) 3 (D) 3.5

***Space For Rough Work***

9. Which of the following reaction will proceed towards forward direction by increasing pressure?

(A) $N_2(g)+O_2(g)\rightleftharpoons 2NO(g)$ (B) $2NO(g)+O_2(g)\rightleftharpoons 2NO_2(g)$

(C) $N_2O_4(s)\rightleftharpoons 2NO_2(g)$ (D) $N_2O_3(\ell)\rightleftharpoons NO(g)+NO_2(g)$

10. Which of following ions are iso-structural and have same hybridization ?

$I_3^-, NO_2^+, CS_2, XeF_2, N_2O$

(A) $I_3^-, NO_2^+$ (B) $NO_2^+, SO_2$ (C) $I_3^-$, $XeF_2$ (D) $I_3^-$, $N_2O$

11. How many maximum number of electrons of an atom will have the following set of quantum numbers?

n = 4, $\ell$ = 0, 1, 2, 3, m = 0, +1, -1, s = $\pm$ ½

(A) 22 (B) 18 (C) 20 (D) 24

12. What is the hybridization of phosphorus in $[PCl_4]^+$?

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

13. Which of the following mixture forms a buffer if taken in 1 : 1 molar ratio?

(A) $CH_3COOH$ and NaOH (B) $NH_4OH$ and HCl

(C) $CH_3COOH$ and $NH_4OH$ (D) $NH_4Cl$ and HCl

14. Which ion does not undergo hydrolysis?

(A) $Fe^{2+}$ (B) $Fe^{3+}$ (C) $Rb^+$ (D) $Zn^{2+}$

15. What will be the pH of aqueous NaCl solution at 80°C?

(A) Greater than seven (B) Less than seven

(C) Equal to seven (D) Depends on the concentration of solution

16. $Al(g)\xrightarrow{I.E_1}Al^+(g)+e_1^-$

$Al(g)\xrightarrow{I.E_2}Al^{2+}(g)+e_1^-+e_2^-$

The azimuthal quantum numbers of the electrons $e_1^-$ and $e_2^-$ respectively are:

(A) 1 and – 1 (B) 1 and 1

(C) 1 and zero (D) zero and 1

17. Which of the following species has the highest bond energy?

(A) $O_2^{2-}$ (B) $O_2^+$ (C) $O_2^{2+}$ (D) $O_2^-$

***Space For Rough Work***

18. In which of the following molecule the lone pair dipole moment is opposed by the bond pair dipole moment?
(A) $NH_3$ (B) $NF_3$ (C) $NBr_3$ (D) $(CH_3)_3N$

19. $CaCO_3(s) \rightleftharpoons CaO(s) + CO_2(g)$
Decomposition of $CaCO_3$ according to above reaction is favoured by
(A) increasing pressure
(B) increasing the volume of reaction vessel
(C) adding more CaO
(D) adding inert gas at constant volume

20. Which electronic transition in hydrogen atom is accompanied with emission of radiation having the longest wavelength?
(A) $n = 2 \rightarrow n = 1$
(B) $n = 3 \rightarrow n = 2$
(C) $n = 4 \rightarrow n = 3$
(D) $n = 5 \rightarrow n = 4$

## PART-B
## Numerical Type

1. How many atomic orbitals of chloride ions($Cl^-$) are completely occupied with electrons?

2. If the pH of 0.001 M $CH_3COONa$ solution is x what is the value of $\frac{x}{10}$?
[$K_a$ of $CH_3COOH = 10^{-5}$]

3. The half-life period of the reactant in a zero-order reaction is 4.2 min. How much minute is needed for 75% completion of the reaction?

4. What is the pH of 0.01 M aqueous solution of sugar?

5. What is the pH of 0.01 M NaHS solution? ($K_{a_1}$ and $K_{a_2}$ of $H_2S$ = $10^{-8.4}$ and $10^{-10.1}$ respectively)

***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. If $f(x)+2f(1-x)=x^2+2,\ \forall x\in R$ then $f(x)=$

(A) $\frac{(x-1)^2}{3}$ (B) $\frac{(x-2)^2}{3}$ (C) $x^2-1$ (D) $x^2-2$

2. Which of the following is a real function (where [.] denotes G.I.F {.} denotes fractional part function)?

(A) $\frac{\sqrt{x}}{\sqrt{-x}}$ (B) $\frac{x!}{\{x\}}$ (C) $\frac{1}{\left[e^{-x}\right]}, x>0$ (D) None of these

3. Let $f:R\to R$ be a function defined by $f(x)=\frac{e^{|x|}-e^{-x}}{e^{x}+e^{-x}}$, then

(A) f is one – one and onto both (B) f is one – one but not onto
(C) f is not one – one but onto (D) f is neither one to one nor onto

4. Range of $f(x)=x^2+\frac{1}{x^2+4}$ is

(A) $[-2,\infty)$ (B) $\left[\frac{1}{4},\infty\right)$ (C) $[4,\infty)$ (D) None of these

5. If $f(x)=x^3+x^2+x+a\sin x+b\cos x$ is invertible then maximum value of $a^2+b^2$ is

(A) $\frac{1}{3}$ (B) $\frac{2}{3}$ (C) 1 (D) $\frac{4}{9}$

6. Let $x_1=1$ and $x_{n+1}=\frac{4+3x_n}{3+2x_n}$ for $n\geq 1$. If $\lim_{n\to\infty} x_n$ exists finitely, then the limit is equal to

(A) $\sqrt{2}$ (B) 1 (C) 2 (D) $\sqrt{2}+1$

7. $\lim_{x\to 0}\frac{\sin^{-1}x-\tan^{-1}x}{x^3}$ is equal to

(A) 0 (B) $\frac{1}{2}$ (C) 1 (D) none of these

*Space For Rough Work*

8. $\lim_{x\to\infty} \sec^{-1}\left(\frac{x}{x+1}\right)$ is equal to

(A) 0 (B) $\pi$ (C) $\frac{\pi}{2}$ (D) does not exist

9. The left-hand derivative of $f(x)=[x]\sin\pi x$ at $x=k$, k is an integer is [.] denotes G.I.F

(A) $(-1)^k(k-1)\pi$ (B) $(-1)^{k-1}(k-1)\pi$ (C) $(-1)^k k\pi$ (D) $(-1)^{k-1}k\pi$

10. $f(x)=\begin{cases} |x-4| & \text{for } x\geq 1 \\ \frac{x^3}{2}-x^2+3x+\frac{1}{2} & \text{for } x<1 \end{cases}$, then

(A) $f(x)$ is continuous at $x=1$ and $x=4$

(B) $f(x)$ is differentiable at $x=4$

(C) $f(x)$ is continuous and differentiable at $x=1$

(D) $f(x)$ is only continuous at $x=1$

11. Let $f(x)=\frac{\sin 4\pi[x]}{1+[x]^2}$, where [x] is the greatest integer less than or equal to x, then

(A) $f(x)$ is not differentiable at some points

(B) $f(x)$ exists but is different from zero

(C) LHD (at $x=0$) = 0, RHD (at $x=1$) = 0

(D) $f(x)=0$ but f is not a constant function

12. If $f(x)=\begin{cases}[\cos\pi x] & ,x<1 \\ |x-2|, & 1\leq x<2\end{cases}$, then $f(x)$ is_____(where [.] denotes G.I.F)

(A) Discontinuous and non-differentiable at $x=-1$ and $x=1$

(B) Continuous and differentiable at $x=\frac{1}{2}$

(C) Not differentiable at $x=\frac{1}{2}$

(D) Continuous but not differentiable at $x=0$

13. The function $f(x)=(x^2-1)|x^2-3x+2|+\cos(|x|)$ is not differentiable at

(A) $x=-1$ (B) $x=0$ (C) $x=1$ (D) $x=2$

***Space For Rough Work***

14. The critical points of the function $f(x)=(x-2)^{\frac{2}{3}}(2x+1)$ are

(A) 1 and 2 (B) 1 and $\frac{-1}{2}$ (C) –1 and 2 (D) 1

15. The maximum of $f(x)=\frac{\log x}{x^2}(x>0)$ occurs at $x=$

(A) e (B) $\sqrt{e}$ (C) $\frac{1}{e}$ (D) $\frac{1}{\sqrt{e}}$

16. $\int e^{e^{e^x}}.e^{e^x}.e^x\,dx=$

(A) $e^{e^{e^x}}+c$ (B) $\left(e^{e^{e^x}}\right)^2+c$

(C) $\frac{1}{2}e^{e^{e^x}}+c$ (D) none of these

17. $\int x^3e^{x^2}\,dx=$

(A) $x^2\left(e^{x^2}-1\right)+c$ (B) $\frac{1}{2}x^2\left(e^{x^2}-1\right)+c$

(C) $\frac{1}{2}e^{x^2}\left(x^2-1\right)+c$ (D) $\frac{1}{2}\left(e^{x^2}-1\right)+c$

18. $\int\frac{x^2+2}{x^4+4}dx$ is equal to

(A) $\frac{1}{2}\tan^{-1}\frac{x^2+2}{2x}+C$ (B) $\frac{1}{2}\tan^{-1}\left(x^2+2\right)+C$

(C) $\frac{1}{2}\tan^{-1}\frac{2x}{x^2-2}+C$ (D) $\frac{1}{2}\tan^{-1}\frac{x^2-2}{2x}+C$

19. Let $f:R\to R$ be defined by $f(x)=\begin{cases}b-2x, & \text{if } x\le -1\\ 2x+3, & \text{if } x>-1\end{cases}$

If f has a local minimum at x = –1, then a possible value of b is equal to

(A) 0 (B) $\frac{-1}{2}$ (C) –1 (D) 1

***Space For Rough Work***

20. $\int \frac{2x\,dx}{1+x^4} =$

(A) $\tan^{-1}\left(x^2\right)+c$ (B) $\frac{1}{2}\tan^{-1}x^2+c$

(C) $\log\left(1+x^4\right)+c$ (D) $\tan^{-1}\left(\frac{1}{x^2}\right)+c$

## PART-B
## Numerical Type

1. The value of the integral is equal to $\int_0^{\infty} \frac{\ell n\, x}{1+x^2}dx$

2. If $k=\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \frac{\cos^2 x}{1+5^x}dx$ then $\frac{16k}{\pi}$ is

3. $\int_3^7 \frac{\cos x^2}{\cos x^2+\cos(10-x)^2}dx$ is

4. Evaluate $\int_0^2 \left[x^2\right]dx$ (where [.] denotes greatest integer function) $p-\sqrt{q}-\sqrt{r}$ then $p+q+r$ equals

5. If $\int \frac{1}{\left(x^2-6x+9\right)\sqrt{x^2-6x+4}}dx=\frac{1}{K}\frac{\sqrt{x^2-6x+4}}{(x-3)}+c$, then $|K|=$

***Space For Rough Work***

# FIITJEE INTERNAL TEST

## BATCH: NWCMPA425A1-PT-1

## PHYSICS, CHEMISTRY & MATHEMATICS

## JEE MAIN-PHASE

**Paper Code 100720**

## ANSWER KEY

### SECTION – I

### (PHYSICS)

### PART – A

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

### PART – B

| | | | | | |
|---|---|---|---|---|---|
| 1. | 3 | 2. | 1 | 3. | 7.50 (range 7.40 to 7.60) |
| 4. | 4 | 5. | 0.50 | | |

### SECTION – II

### (CHEMISTRY)

### PART – A

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

### PART – B

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | 9 | 2. | 0.8 | 3. | 6.3 | 4. | 7 |
| 5. | 9.25 | | | | | | |

### SECTION – III

### (MATHEMATICS)

### PART – A

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

### PART – B

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | 0 | 2. | 4 | 3. | 2 | 4. | 10 |
| 5. | 5 | | | | | | |