

FIITJEE - JEE (Main)

PHYSICS, CHEMISTRY & MATHEMATICS
BATCHES: PANINI426-G1 & PANINI426XII-1
PHASE TEST – VII
Q.P. CODE: 101113

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

- Attempt ALL the questions. Answers have to be marked on the OMR sheets.
- This question paper contains **Three Sections**.
- Section-I** is Physics, **Section-II** is Chemistry and **Section-III** is Mathematics.
- Each **Section** is further divided into **Two Parts: Part-A & B** in the OMR.
- Rough spaces are provided for rough work inside the question paper. No additional sheets will be provided for rough work.
- 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:

- Ensure matching of OMR sheet with the Question paper before you start marking your answers on OMR sheet.
- 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.
- OMR sheet contains alphabets, numerals & special characters for marking answers.
- Do not fold or make any stray marks on the Answer Sheet.**

C. Marking Scheme for All Two Parts:

- 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.
- Part-B (01-05)** contains five (05) Numerical based questions, the answer of which may be positive or negative numbers or decimals. If the answer has more than two decimal places, truncate/round off the value 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

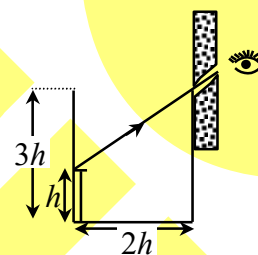
PART – A

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.

1. An object is moving towards a concave mirror of focal length 24 cm. When it is at a distance of 60 cm from the mirror its speed is 9 cm/s. The speed of its image at that instant, is
 (A) 4 cm/s towards the mirror (B) 6 cm/s towards the mirror
 (C) 4 cm/s away from the mirror (D) 6 cm/s away from the mirror

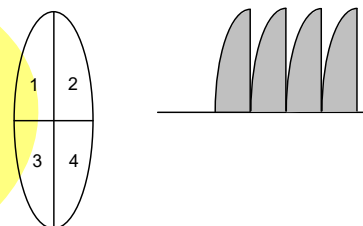
2. An observer can see through a pinhole the top end of a thin rod of height h , placed as shown in the figure. The beaker height is $3h$ and its radius h . When the beaker is filled with a liquid upto a height $2h$, he can see the lower end of the rod. Then the refractive index of the liquid is



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

3. Which of the following semiconductor is electrically positive?
 (A) Intrinsic semiconductor (B) P – type semiconductor
 (C) N – type semiconductor (D) None of the above

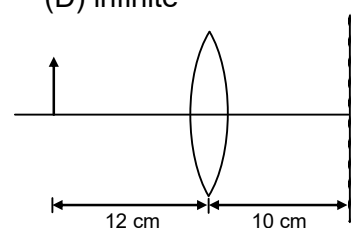
4. The given equi-convex lens is broken into four parts and rearranged as shown. If the initial focal length is f then after rearrangement, the equivalent focal length is



- (A) f (B) $f/2$
 (C) $f/4$ (D) $4f$

5. If an object is placed unsymmetrically between two plane mirrors inclined at an angle of 72° , then the total number of images formed is
 (A) 5 (B) 4 (C) 2 (D) infinite

6. An object, a convex lens of focal length 20 cm and a plane mirror are arranged as shown in the figure. How far behind the mirror is the second image formed?

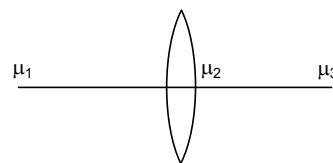


- (A) 30 cm (B) 20 cm
 (C) 40 cm (D) 50 cm

7. Which of the following is donor impurity element?
 (A) Aluminium (B) Boron (C) Phosphorus (D) Germanium

Space For Rough Work

8. The figure shows an equi-convex lens. What should be the condition of the refractive indices so that the lens becomes diverging?

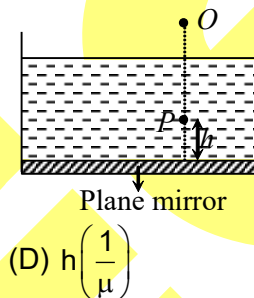


- (A) $2\mu_3 > \mu_1 - \mu_2$ (B) $2\mu_2 < \mu_1 + \mu_3$
(C) $2\mu_2 > 2\mu_1 - \mu_3$ (D) None of these

9. If μ_{ij} represents the refractive index when a light ray goes from medium i to medium j then the product $\mu_{21} \times \mu_{32} \times \mu_{43}$ is equal to

- (A) μ_{32} (B) μ_{42} (C) μ_{31} (D) $1/\mu_{14}$

10. A plane mirror is placed at the bottom of a tank containing a liquid of refractive index μ , P is a small object at a height h above the plane mirror. An observer O, vertically above P, outside the liquid, observer P and its image in the mirror. The apparent distance between object and its image will be



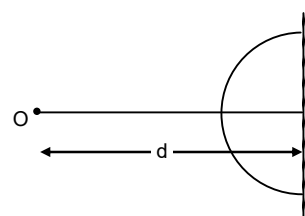
- (A) $2\mu h$ (B) $\frac{2h}{\mu}$ (C) $\frac{2h}{\mu - 1}$ (D) $h\left(\frac{1}{\mu}\right)$

11. The resistivity of a semiconductor
(A) increases as the temperature increases
(B) decreases as the temperature increases
(C) remains constant even when temperature varies
(D) none of the above

12. A man 180 cm high stands in front of a plane mirror. His eyes are at a height of 170 cm from the floor. Then the minimum length of the plane mirror for him to see his full length image is
(A) 90 cm (B) 180 cm (C) 45 cm (D) 360 cm

13. x-axis is normal to the reflecting surface of a plane mirror. If object is moving with velocity $(3\hat{i} + 4\hat{k})\text{m/sec}$. The relative velocity of image w.r.t. object will be along
(A) -x axis (B) +x axis (C) -z axis (D) +z axis

14. A plano-convex lens of focal length 10 cm is silvered at its plane surface. The distance d at which an object must be kept in order to get its image on itself is
(A) 5 cm (B) 20 cm
(C) 10 cm (D) 2.5 cm



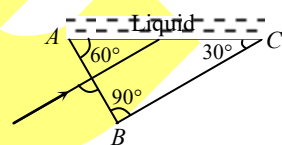
Space For Rough Work

15. An astronomical telescope has $f_o = 200$ cm and $f_e = 4$ cm. Telescope is focused to see an object 10 km from the objective. Final image is formed at infinity. The length L of the tube and the angular magnification of telescope are respectively
 (A) Length = 200 cm, angular magnification = 50
 (B) Length = 204 cm, angular magnification = 50
 (C) Length = 196 cm, angular magnification = 50
 (D) Length = 204 cm, angular magnification = 25

16. A bulb is placed at a depth of $2\sqrt{7}$ m in water and a floating opaque disc is placed over the bulb so that the bulb is not visible from the surface. The radius of the disc should be at least ($\mu_{\text{water}} = 4/3$)
 (A) 42 m (B) 6 m (C) $2\sqrt{7}$ m (D) 12 m

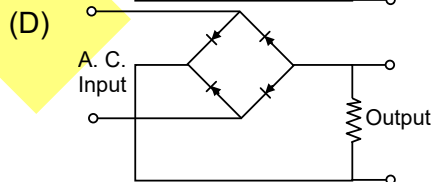
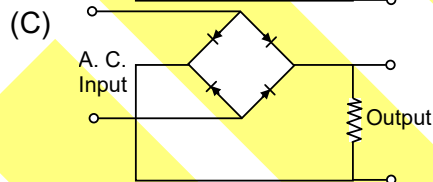
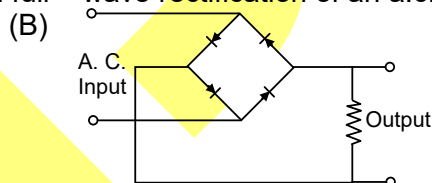
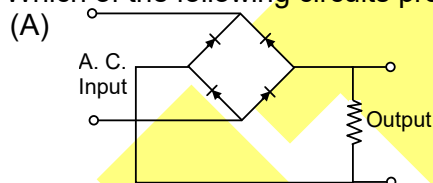
17. In N – type semiconductor:
 (A) electrons are majority carriers while holes are minority carriers.
 (B) electrons are minority carriers while holes are majority carriers.
 (C) both electrons as well as holes are majority carriers.
 (D) both electrons as well as holes are minority carriers.

18. Light is incident normally on face AB of a prism as shown in figure. A liquid of refractive index μ is placed on face AC of the prism. The prism is made of glass of refractive index $3/2$. The limits of μ for which total internal reflection cannot take place on face AC is



- (A) $\frac{3\sqrt{3}}{4} > \mu > \frac{\sqrt{3}}{2}$ (B) $\mu < \frac{3\sqrt{3}}{4}$ (C) $\mu > \sqrt{3}$ (D) $\mu < \frac{\sqrt{3}}{2}$

19. Which of the following circuits provided full – wave rectification of an a.c. input?

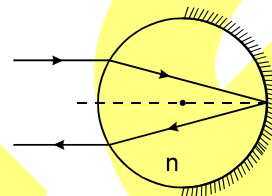


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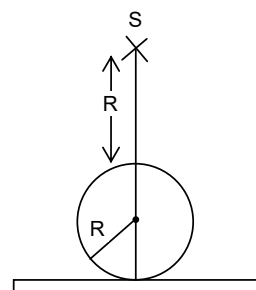
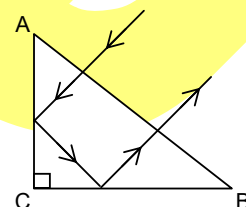
20. A electromagnetic radiation of frequency n , wavelength λ travelling with velocity v in air, enters a glass slab of refractive index μ . The frequency, wavelength and velocity of radiation in the glass slab will be respectively:
- (A) $n, \frac{\lambda}{\mu}, v$ (B) $\frac{n}{\mu}, \lambda, \frac{v}{\mu}$ (C) $n, \frac{\lambda}{\mu}, \frac{v}{\mu}$ (D) $\frac{n}{\mu}, \frac{\lambda}{\mu}, \frac{v}{\mu}$

PART-B
Numerical Type

1. A transparent cylinder has its right half polished so as to act as a mirror. A paraxial light ray is incident from left that is parallel to principal axis, exits parallel to the incident ray as shown. Find the refractive index n of the material of the cylinder.
2. A ray of light travelling in the direction $\frac{1}{2}(\hat{i} + 3\hat{j})$ is incident on a plane mirror. After reflection, it travels along the direction $\frac{1}{2}(\hat{i} - 3\hat{j})$. The angle of incidence is $10x^\circ$. The value of 'x' is



3. A ray of light is incident normally on face AB of an isosceles right angled prism as shown in figure. The least value of refractive index of the prism must be just greater than k , then 'k' is _____
4. A concave mirror of focal length 15 cm is placed in water of refractive index $\mu = 4/3$. Water is filled upto 30 cm. An object of height 1 cm is placed at a distance of 20 cm in front of the mirror. If the size of image is 'n' times size of object, then 'n' is
5. An opaque sphere of radius $R = 1\text{m}$ lies on a horizontal plane. On the perpendicular line through the point of contact, there is a point source of light at a distance R above the sphere. The area of the shadow on the plane is " k " S.I Units, then 'k' 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.

- The mass of any substance deposited or liberated at the electrode during electrolysis depends on the
I. Quantity of current passed through the solution
II. Time during which the current passed
III. Mass of the electrode
IV. Charge on ions of electrolyte
(A) I, II, III (B) I, III, IV (C) I, II, IV (D) I, IV
- Which of the following solution of identical concentration has the highest value of conductance?
(A) NaCl (B) HCl (C) KCl (D) LiCl
- Which of the following is not a transition element?
(A) Mn (B) Fe (C) Pb (D) Cu
- What is the coordination number of the complex $K_4[Fe(CN)_6]$?
(A) 2 (B) 4 (C) 6 (D) 10
- Which acid radical produces only SO_2 gas and no other sulphur containing species when treated with dil. HCl?
(A) SO_3^{2-} (B) S^{2-} (C) SO_4^{2-} (D) $S_2O_3^{2-}$
- Name the polymer obtained from hexamethylene diamine and adipic acid?
(A) Nylon 6 (B) Nylon 6, 6 (C) Nylon 60 (D) Nylon 62
- Which of the following reagent convert glucose to a product of the lowest molar mass?
(A) Br_2/H_2O (B) Conc. HI/red P (C) $PhNHNH_2$ (D) HCN
- Which of the following standard hydrogen electrode should be connected with Zn/Zn^{2+} electrode in order to find the electrode potential of Zn/Zn^{2+} ?
(A) Pt, $H_2(1\text{ atm})/H^+(1M)$ (B) Pt, $H_2(1\text{ bar}) | H^+(pH = 1)$
(C) $H^+(1M) | H_2(1\text{ atm}), Pt$ (D) $H^+(pH = 1) | H_2(1\text{ atm}), Pt$
- Which of the following is a colourless salt?
(A) $FeCl_3$ (B) $ZnSO_4$ (C) $Cr_2(SO_4)_3$ (D) $KMnO_4$

Space For Rough Work

10. What is the hybridization of the metal ion in $[\text{Fe}(\text{CN})_6]^{4-}$?
(A) sp^3d^2 (B) d^2sp^3 (C) sp^3d (D) dsp^3
11. Which of the following ion is having a half-filled electron configuration?
(A) Fe^{2+} (B) Mn^{2+} (C) Cr^{2+} (D) Co^{2+}
12. Which of the following complex is not soluble in water?
(A) $[\text{Cr}(\text{H}_2\text{O})_6]\text{Cl}_3$ (B) $[\text{Fe}(\text{H}_2\text{O})_3\text{Cl}_3]$
(C) $[\text{Cr}(\text{NH}_3)_6][\text{Co}(\text{CN})_6]$ (D) $\text{Na}_2[\text{Zn}(\text{CN})_4]$
13. Which ion is confirmed by brown-ring test?
(A) ClO_3^- (B) NO_3^- (C) SO_3^{2-} (D) CO_3^{2-}
14. $\text{CH}_2 = \text{CH} - \text{Cl}$ is the monomer of:
(A) Dacron (B) PVC (C) Nylon 6 (D) Neoprene
15. Which of the following structure of the amino acid is incorrect?
(A) $\begin{array}{c} \oplus \\ | \\ \text{NH}_3 - \text{CH} - \text{COO}^- \\ | \\ \text{CH}_3 \end{array}$ (B) $\begin{array}{c} \oplus \\ | \\ \text{CH}_3\text{CH}_2\text{CH}_2\text{CH} - \text{NH}_3 \\ | \\ \text{COO}^- \end{array}$
(C) $\begin{array}{c} \oplus \\ | \\ \text{NH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH} - \text{NH}_3 \\ | \\ \text{COO}^- \end{array}$ (D) $\begin{array}{c} \oplus \\ | \\ \text{HOOC} - \text{CH}_2 - \text{CH}_2 - \text{CH} - \text{NH}_3 \\ | \\ \text{COO}^- \end{array}$
16. Which of the following precipitate becomes soluble in NaCl?
(A) AgCl and $\text{Cr}(\text{OH})_3$ (B) $\text{Cr}(\text{OH})_3$ and PbCl_2
(C) PbCl_2 and AgCl (D) PbCrO_4 and AgCl
17. Isoprene is the monomer of:
(A) Buna-S (B) Rubber (C) Glyptal (D) Nylon-6
18. Which of the following forms a black colour product when reacts with glucose?
(A) Conc. H_2SO_4 (B) Conc. HNO_3 (C) Conc. HI (D) Conc. HCl
19. What is the effective atomic number of Ni in $[\text{Ni}(\text{CO})_4]$?
(A) 32 (B) 28 (C) 36 (D) 34
20. $\text{K}_2\text{SO}_4 \cdot \text{Cr}_2(\text{SO}_4)_3 \cdot 24\text{H}_2\text{O}$ was dissolved in water and H_2O_2 was added to the resulting solution. What is the final colour of the solution?
(A) Green (B) Brown (C) Yellow (D) Blue

Space For Rough Work

PART-B
Numerical Type

1. How many aluminium metal in gram unit is deposited at cathode by passing $\frac{1}{3}$ Faraday of electricity through aluminium chloride solution?
2. What is the co-ordination number of the following complex?
 $[\text{Ni}(\text{NH}_3)_4][\text{Zn}(\text{CN})_4]$
3. How many optical isomer(s) is/are possible for fructose?
4. A monomer of a protein contains two acidic groups and one amine group. The pK_a values of the amine groups is 8 and that of the acid groups are 4 and 2. What is the pH of the amino acid solution?
5. Glucose $\xrightarrow{\text{Mild oxidizing agent}}$ Product
How many oxygen atom(s) is/are present in the organic product of above reaction?

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.

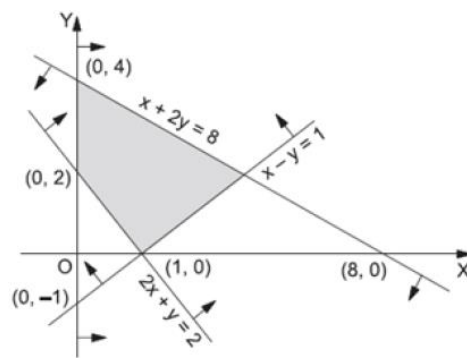
1. If $A = [a_{ij}]_{4 \times 4}$, such that $a_{ij} = \begin{cases} 2, & \text{when } i = j \\ 0, & \text{when } i \neq j \end{cases}$, then $\left\{ \frac{\det(\text{adj}(\text{adj} A))}{7} \right\}$ is [where $\{.\}$ represents fractional part function]
 (A) $\frac{1}{7}$ (B) $\frac{2}{7}$ (C) $\frac{3}{7}$ (D) $\frac{4}{7}$
2. If $A = \begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$ and $\det(A^n - I) = 1 - \lambda^n$, $n \in \mathbb{N}$, then the value of λ , is
 (A) 1 (B) 2 (C) 3 (D) 4
3. If $A = \begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix}$ and $f(x) = \frac{1+x}{1-x}$, then $f(A)$ is
 (A) $\begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$ (B) $\begin{bmatrix} 2 & 2 \\ 2 & 2 \end{bmatrix}$ (C) $\begin{bmatrix} -1 & -1 \\ -1 & -1 \end{bmatrix}$ (D) None of these
4. Let $\Delta_a = \begin{vmatrix} (a-1) & n & 6 \\ (a-1)^2 & 2n^2 & 4n-2 \\ (a-1)^3 & 3n^3 & 3n^2-3n \end{vmatrix}$, the value of $\sum_{a=1}^n \Delta_a$ is
 (A) 0 (B) $\frac{(n-1)n}{2}$ (C) $\frac{(n-1)n^2}{2}$ (D) $\frac{(n-1)n(2n-1)}{3}$
5. If $\Delta(x) = \begin{vmatrix} 1 & \cos x & 1 - \cos x \\ 1 + \sin x & \cos x & 1 + \sin x - \cos x \\ \sin x & \sin x & 1 \end{vmatrix}$, then $\int_0^{\pi/2} \Delta(x) dx$ is equal to
 (A) $-\frac{1}{2}$ (B) 0 (C) $\frac{1}{4}$ (D) $\frac{1}{2}$

Space For Rough Work

6. Number of values of a for which the system of equations $a^2x + (2-a)y = 4 + a^2$ and $ax + (2a-1)y = a^5 - 2$ possess no solution, is
(A) 0 (B) 1 (C) 2 (D) infinite
7. Three dice are thrown. The probability of getting a sum which is a perfect square, is
(A) $\frac{2}{5}$ (B) $\frac{9}{20}$ (C) $\frac{1}{4}$ (D) None of these
8. The probability that in a year of 22nd century chosen at random, there will be 53 Sundays, is
(A) $\frac{3}{28}$ (B) $\frac{2}{28}$ (C) $\frac{7}{28}$ (D) $\frac{5}{28}$
9. A pair of unbiased dices are rolled together till a sum of either 5 or 7 is obtained. Then the probability that 5 comes before 7 is,
(A) $\frac{1}{5}$ (B) $\frac{2}{5}$ (C) $\frac{3}{5}$ (D) $\frac{4}{5}$
10. The median AD of the $\triangle ABC$ is bisected at E. BE meets AC in F. Then, AF:AC is equal to
(A) $\frac{3}{4}$ (B) $\frac{1}{3}$ (C) $\frac{1}{2}$ (D) $\frac{1}{4}$
11. The sum of two forces is 18 N and resultant whose direction is at right angles to the smaller force is 12 N. The magnitude of the two forces are
(A) 13, 5 (B) 12, 6 (C) 14, 4 (D) 11, 7
12. If $|a| = 3$, $|b| = 4$, then a value of λ for which $a + \lambda b$ is perpendicular to $a - \lambda b$
(A) $\frac{9}{16}$ (B) $\frac{3}{4}$ (C) $\frac{3}{2}$ (D) $\frac{4}{3}$
13. If a line makes angle α, β and γ with the coordinates axes, then
(A) $\cos 2\alpha + \cos 2\beta + \cos 2\gamma - 1 = 0$ (B) $\cos 2\alpha + \cos 2\beta + \cos 2\gamma - 2 = 0$
(C) $\cos 2\alpha + \cos 2\beta + \cos 2\gamma + 1 = 0$ (D) $\cos 2\alpha + \cos 2\beta + \cos 2\gamma + 2 = 0$
14. The coordinates of the foot of the perpendicular drawn from the point A (1, 0, 3) to the join of the points B (4, 7, 1) and C (3, 5, 3) are
(A) $\left(\frac{5}{3}, \frac{7}{3}, \frac{17}{3}\right)$ (B) (5, 7, 17) (C) $\left(\frac{5}{7}, -\frac{7}{3}, \frac{17}{3}\right)$ (D) $\left(-\frac{5}{3}, \frac{7}{3}, -\frac{17}{3}\right)$

Space For Rough Work

15. Equation of plane passing through the points (2, 2, 1), (9, 3, 6) and perpendicular to the plane $2x + 6y + 6z - 1 = 0$, is
 (A) $3x + 4y + 5z = 9$ (B) $3x + 4y - 5z + 9 = 0$
 (C) $3x + 4y - 5z - 9 = 0$ (D) None of the above
16. The order of the differential equation of family of curves $y = C_1 \sin^{-1} x + C_2 \cos^{-1} x + C_3 \tan^{-1} x + C_4 \cot^{-1} x$ (where C_1, C_2, C_3 and C_4 are arbitrary constants) is
 (A) 2 (B) 3 (C) 4 (D) None of these
17. If $\int_a^x ty(t)dt = x^2 + y(x)$, then y as a function of x is
 (A) $y = 2 - (2 + a^2)e^{\frac{x^2 - a^2}{2}}$ (B) $y = 1 - (2 + a^2)e^{\frac{x^2 - a^2}{2}}$
 (C) $y = 2 - (1 + a^2)e^{\frac{x^2 - a^2}{2}}$ (D) None of these
18. Number of straight lines which satisfy the differential equation $\frac{dy}{dx} + x\left(\frac{dy}{dx}\right)^2 - y = 0$ is
 (A) 1 (B) 2 (C) 3 (D) 4
19. A furniture dealer deals in only two items; table and chairs. He has Rs. 5000 to invest and a space to store at most 60 pieces. A table costs him Rs. 250 and a chair Rs. 50. He can sell a table at a profit of Rs. 50 and a chair at a profit of Rs. 15. Assuming that he can sell all the items that he buys and the number of tables and chairs he should buy in order that he may maximize his profit are p and q respectively, then (p, q) is
 (A) (40, 20) (B) (30, 30) (C) (10, 50) (D) (20, 40)
20. Find the linear constraints for which the shaded area in the figure given is the solution set
 (A) $x \geq 0, y \geq 0, 2x + y \geq 2, x - y \geq 1$ and $x + 2y \leq 8$
 (B) $x \geq 0, y \geq 0, 2x + y \geq 2, x - y \leq 1$ and $x + 2y \leq 8$
 (C) $x \leq 0, y \geq 0, 2x + y \leq 2, x - y \leq 1$ and $x + 2y \leq 8$
 (D) $x \geq 0, y \geq 0, 2x + y \geq 2, x - y \leq 1$ and $x + 2y \leq 8$



Space For Rough Work

PART-B
Numerical Type

1. If $\Delta_1 = \begin{vmatrix} r & r-1 \\ r-1 & r \end{vmatrix}$, where r is a natural number, the value of $\sqrt[10]{\sum_{r=1}^{1024} \Delta_r}$ is
2. Three students appear in an examination of Mathematics. The probabilities of their success are $\frac{1}{3}$, $\frac{1}{4}$ and $\frac{1}{5}$, respectively. If the probability of success of at least two is $\frac{\lambda}{12}$, then the value of λ is
3. The three vectors $\hat{i} + \hat{j}$, $\hat{j} + \hat{k}$ and $\hat{k} + \hat{i}$ taken two at a time form three planes. If V be the volume of the tetrahedron having adjacent sides as the three unit vectors drawn perpendicular to those three planes, then find the value of $9\sqrt{3}V$.
4. If the angle between the line $x = \frac{y-1}{2} = \frac{z-3}{m}$ and the plane $x + 2y + 3z = 4$ is $\cos^{-1}\left(\frac{\sqrt{5}}{\sqrt{14}}\right)$, then $(3m+2)$ equal,
5. If $y = \frac{x}{\ln|cx|}$ (where c is an arbitrary constant) is the general solution of the differential equation $\frac{dy}{dx} = \frac{y}{x} + \phi\left(\frac{x}{y}\right)$, then the function $\phi\left(\frac{x}{y}\right)$ is $-\frac{y^m}{x^n}$, then the value of $(m+n)$ is,

Space For Rough Work

FIITJEE INTERNAL TEST

BATCHES: PANINI426-G1 & PANINI426XII-1**Phase – VII****PHYSICS, CHEMISTRY & MATHEMATICS****JEE MAIN-PHASE
ANSWER KEY****Paper Code
101113****SECTION – I****(PHYSICS)****PART – A**

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

PART – B

- | | | |
|------|-------------------------------|-------------------------------|
| 1. 2 | 2. 3 | 3. 1.41 (range: 1.40 to 1.42) |
| 4. 3 | 5. 9.42 (range: 9.30 to 9.45) | |

SECTION – II**(CHEMISTRY)****PART – A**

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

PART – B

- | | | | |
|------|------|------|------|
| 1. 3 | 2. 4 | 3. 8 | 4. 3 |
| 5. 7 | | | |

**SECTION – III
(MATHEMATICS)****PART – A**

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

PART – B

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