FIITJEE (JEE-Advanced)

BATCHES – NWCM721O1S, NWCM921X1W, NWCM921A1W & PANINI921-XIIG1

PHYSICS, CHEMISTRY & MATHEMATICS

Pattern - CPT-1 | **QP Code:** | **Test - 7**

Time Allotted: 3 Hours **Maximum Marks: 198**

- Please read the instructions carefully. You are allotted 5 minutes specifically for this purpose.
- You are not allowed to leave the Examination Hall before the end of the test.

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. Blank Papers, clip boards, log tables, slide rule, calculator, cellular phones, pagers and electronic devices, in any form, are not allowed.

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 HB pencil 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.

C. Marking Scheme For All Two Parts.

(i) **Part-A (01-06) –** Contains six (06) multiple choice questions which have ONLY ONE CORRECT answer Each question carries **+3 marks** for correct answer and **-1 marks** for wrong answer.

(ii) **Part-A (07-12) –** Contains seven (06) multiple choice questions which have **One or More** correct answer.
Full Marks: **+4** If only the bubble(s) corresponding to all the correct options(s) is (are) darkened.
Partial Marks: **+1** For darkening a bubble corresponding **to each correct option,** provided NO incorrect option is darkened.
Zero Marks: **0** If none of the bubbles is darkened.
***Negative Marks*: –2 In all other cases.**
For example, if **(A), (C) and (D)** are all the correct options for a question, darkening all these three will result in **+4 marks**; darkening only **(A) and (D)** will result in **+2 marks**; and darkening **(A) and (B)** will result in **–2** marks, as a wrong option is also darkened.

(ii) **Part-B (01-06)** contains Six (06) 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 :_____

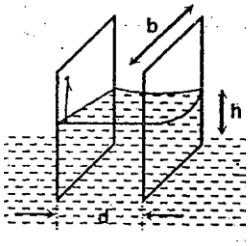
SECTION-1 : PHYSICS

PART – A

(Single Correct Choice Type)

This section contains **6 multiple choice questions**. Each question has four choices (A), (B), (C) and (D) out of which **ONLY ONE is correct.**

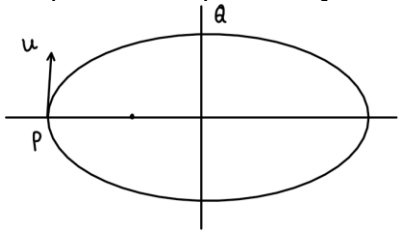
1. Two glass plates of width b are kept close to each other in water at a small distance d as shown in the figure. Density of water is ρ, surface tension T while contact angle with glass is 0 degrees. The force with which two plates attract each other.



(A) $\frac{2T^2b}{\rho g d^2}$ (B) $\frac{4T^2b}{\rho g d^2}$ (C) $\frac{2T^2d}{\rho g b^2}$ (D) $\frac{4T^2d}{\rho g b^2}$

1. **A**

2. A planet is revolving in an elliptical path of eccentricity 0.45 with sun at its focus. If speed of the planet is u at perihelion point then speed at Q will be:



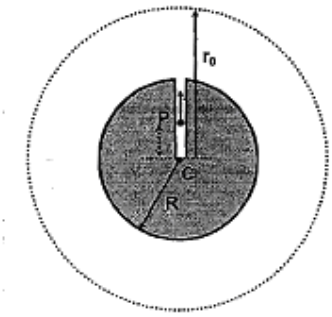
(A) 5u/4 (B) 4u/3 (C) $u\sqrt{\frac{11}{29}}$ (D) $u\sqrt{\frac{29}{11}}$

2. **C**

3. When a force accelerates a body immersed in a fluid, some of the fluid must also be accelerated since it must be pushed out of the way of the body and flow around it. Thus, the force must overcome not only the inertia of the body, but also the inertia of the fluid pushed out of the way. It can be shown that for a spherical body completely immersed in a nonviscous fluid, the extra inertia is that of a mass of fluid half as large as the fluid displaced by the body. The acceleration of a small spherical air bubble in water is nearly.
(A) Zero (B) g (C) g/2 (D) 2g

3. **D**

4. A satellite is to be launched in a circular orbit of radius r_0 around the planet of radius R. For this two stage rocket is to be used. The first stage rocket is used to lift the satellite vertically up to the desired height r_0 (measured from the center C of the Planet), after launching it from the launch point P. Distance of the launch point P from the center of the Planet is r_L. The launch point P lies inside the tunnel as shown in the figure. Second stage rocket is used to impart it a tangential velocity so as to put it in a circular orbit. Let E_1 and E_2 be the energies delivered by the first and second stage of the rocket. Assume that the mass of the rocket is negligible with respect to the mass of the planet and atmospheric resistance to be zero. Find the value of E_1/E_2 if $r_0 = 4R$ and $r_L = \frac{R}{\sqrt{2}}$.



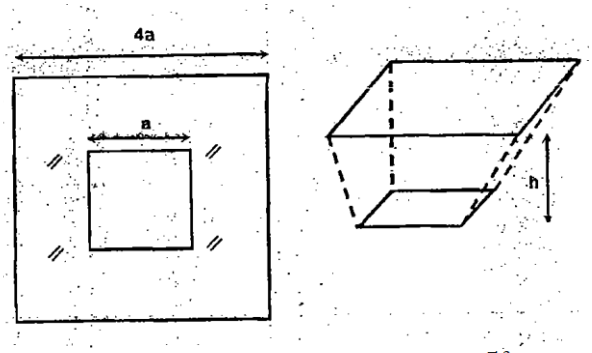
(A) 1 (B) 1/2 (C) 6 (D) 8

4. **D**

5. A small ball of mass m and radius r is released from rest in a viscous liquid of coefficient of viscosity η and density half that of the ball.
(A) The ball will never attain constant velocity.
(B) After time $t = \frac{m(ln\,2)}{6\pi\eta r}$ the velocity of the ball will be half of the terminal velocity.
(C) The velocity of the ball will remain constant.
(D) Work done by the viscous force keeps on increasing as the ball moves in the fluid.

5. **B**

6. Figure shows a soap film formed between two square figures made of a uniform wire. The bigger square is held while keeping it in a horizontal plane and the smaller square is slowly allowed to drop vertically. If reaches an equilibrium state after dropping a height h. Let surface tension of the soap = T. Mass per unit length of the wire = λ. Acceleration due to gravity g. The value of h will be



(A) $\frac{3\lambda ga}{2\sqrt{4T^2-\lambda^2 g^2}}$ (B) $\frac{5\lambda ga}{2\sqrt{4T^2-\lambda^2 g^2}}$

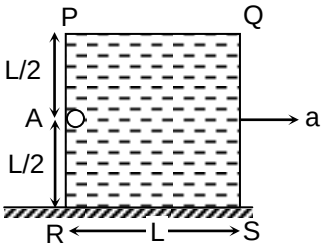
(C) $\frac{5\lambda ga}{2\sqrt{4T^2-\lambda\ \ g^2}}$ (D) $\frac{3\lambda ga}{2\sqrt{4T^2-\lambda\ \ g^2}}$

6. **A**

(Multi Correct Choice Type)

This section contains 6 **multiple choice questions.** Each question has four choices (A), (B), (C) and (D) out of which **ONE OR MORE** may be correct.

7. A small solid ball of density ρ is held inside at point *A* a cubical container of side *L*, filled with an ideal liquid of density 4ρ as shown in the figure. Now, if the container starts moving with constant acceleration *a* horizontally and the ball is released from point *A* simultaneously, then



(A) For ball to hit the top of container at end *Q*, $a = 3g$

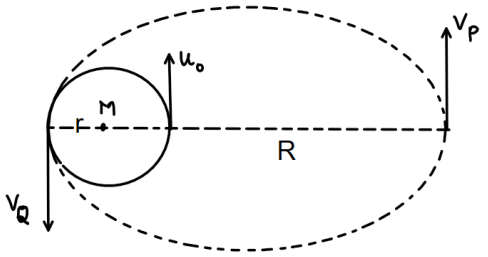
(B) For ball to hit the top of container at end *Q*, $a = 2g$

(C) Ball hits the top of container at end *Q* after a time $t = \sqrt{\frac{L}{3g}}$

(D) Ball hits the top of container at end *Q* after a time $t = \sqrt{\frac{2L}{3g}}$

7. **BC**

8. A light satellite is initially rotating around a planet in circular orbit of radius r. its speed in this circular orbit was u_0. It is put in an elliptical orbit by increasing its speed from u_0 to v_Q (instantaneously). In the elliptical orbit, the satellite reaches the farthest point P which is at a distance R from the planet. Satellite's speed at farthest point is v_p. At point Q, the speed required by satellite to escape the planet's gravitational pull is v_{esc}.



(A) $v_{esc} = 2u_0$

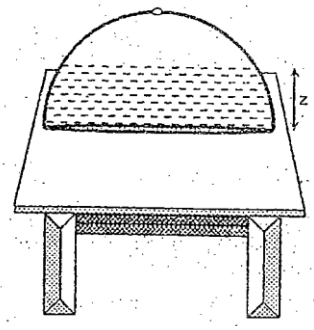
(B) $v_Q = u_0\sqrt{\frac{2}{R(r+R)}}$

(C) $v_Q = u_0\sqrt{\frac{2R}{R(r+R)}}$

(D) $v_Q = u_0 r\sqrt{\frac{2R}{R(r+R)}}$

8. **C**

9. A hemispherical container of mass M is placed upside down on smooth horizontal surface. Through a small hone at the top of container, water is poured into it as shown in the figure. Exactly when the container gets fill(completely filled). Water starts leaking from between the table and the edge of the container. The density of water is ρ and radius of the hemi-spherical container is R. (neglect the atmospheric pressure and effect of surface tension) choose the correct statement(s)



(A) the force of buoyancy on the container when half filled is $\frac{11}{24}\pi R^2\rho g$

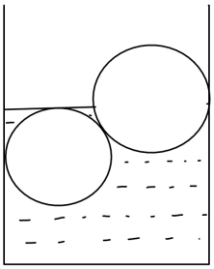
(B) the force of buoyancy on the container when half filled is $\frac{7}{8}\pi R^2\rho g$

(C) the mass M of the container is $\frac{2}{3}\pi R^3\rho$

(D) the mass M of the container is $\frac{1}{3}\pi R^3\rho$

9. **AD**

10. There are two cylinder shaped wooden billets, each having a mass of 45 kg, in a vertical wall sewage, which contains water in it. The two billets have the same size and the same material, they touch each other and the walls of the sewage. One of them is totally under the water whilst only half of the other one is immersed into the water. Friction is negligible everywhere. (density of water is 1000 kg/m^3 and g = 10 m/s^2). Choose correct option(s).



(A) Density of the wood is 750 kg/m^3
(B) Density of the wood is 800 kg/m^3
(C) the forces exerted by the billets on the vertical walls is 260 N approximately
(D) the forces exerted by the billets on the vertical walls is 320 N approximately

10. **AC**

11. A binary star system in which stars are considered as point mass having mass m and 2 m are separated by a large distance r. choose the correct statement(s).
(A) Radius of circular path of star of mass 2 m is r/3.
(B) Kinetic energy of 2 m mass star is one fourth of that lighter star.
(C) Time period of revolution of each star is same.
(D) Angular momentum of lighter star is more.

11. **ACD**

12. In 1783, Rev. John Mitchell, an amateur astronomer was the first person who suggested the existence of the black holes. According to him if body with same average density as the sun had about 500 times the radius of the sun, the magnitude of escape velocity would be greater than the speed of light c = 3×10^8 m/s. All the light emitted from such a body would be made to return toward it. With the help this theory in 1961, Schwarzschild introduced the concept of critical radius. A body of mass M will act as a black body if its radius is less than of equal to critical radius R_s. The radius is known as the Schwarzschild Radius.
[it is given that mass of sun = 1 solar mass = 2×10^{30} kg, Radius of Sun = 7×10^8 m].
Now choose the correct option(s)
(A) A burned out star with three solar mass, collapsed under its own gravity to form black hole then the radius of its even horizon is approximately 18.9 km.
(B) A burned out star with three solar mass, collapsed under its own gravity to form black hole then the radius of its event horizon is approximately 8.9 km.
(C) The average density of formed black hole will be approximately 2×10^{18} kg/m^3.
(D) The average density of formed black hole will be approximately 1.2×10^{18} kg/m^3.

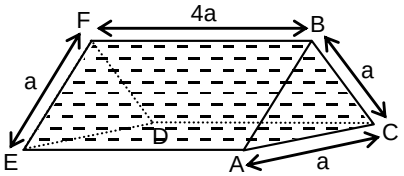
12. **BC**

PART – B
(Numerical based)

1. A satellite of mass M_s is orbiting the earth in a circular orbit of radius R_s. It starts losing energy slowly at a constant rate C due to friction. M_e and R_e are the mass and radius of earth. If the time taken by the satellite to fall to the earth, is $\frac{GM_sM_e}{nC}\left[\frac{1}{R_e}-\frac{1}{R_s}\right)$ then find the value of n.

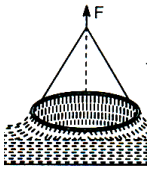
1. **2**

2. ABCDEF is a closed container like a prism placed such that face ACDE is lying horizontally. A liquid of uniform density is filled inside the container. Let F_1 is the force due to liquid on the face ABC and F_2 is the force on the face ABFE. The ratio of $\frac{F_1}{F_2}$ is (assume that pressure at line FB is zero). $\frac{1}{n\sqrt{3}}$ then the value of 'n' is



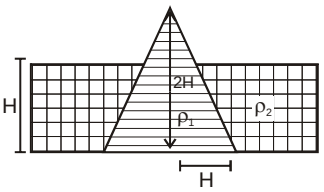
2. **4**

3. A ring is cut from a platinum tube of 8.5 cm internal and 9.5 cm external diameter. It is supported horizontally from a pan of a balance so that it comes in contact with the water in a glass vessel. The surface tension (in CGS unit) of water if an extra 9π weight is required to pull it away from water (g = 1000 cm/s^2) is 100 K. Find the value of 'K'.



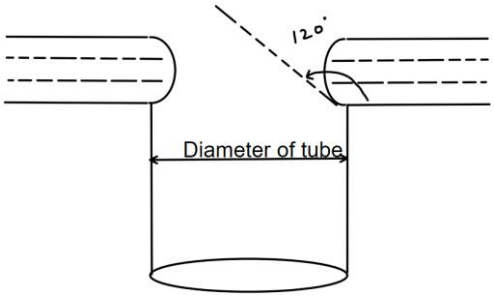
3. **5**

4. The light cone is in equilibrium under the action of hydrostatic forces of two liquids of densities ρ_1 and ρ_2. Find $\frac{\rho_1}{\rho_2}$.



4. **0.31**

5. A small amount of water is poured from the top of the water surface assumes the profile as shown in the figure. Assume that water does not wet the vertical part of the tube the angle of contact α is 120 degrees and the surface tension of the water is 0.070 N/m. the thickness h of the layer of water in mm is (assume the thickness of the layer of water substantially smaller than the diameter of the open tube and g = 10 m/s^2)



5. **4.60**

6. A rocket is launched from a pole of the earth with velocity v_0, where v_0 is the orbital velocity of rotation near the surface of earth, in such a way that it lands at the equator. The rocket's time flight is $T = K\sqrt{\frac{R}{g}}$ where R = Radius of earth, g = acceleration due to gravity on the surface. Find the value of 'K'.

6. **4.55**

SECTION-2 : CHEMISTRY

PART – A

(Single Correct Choice Type)

This section contains **6 multiple choice questions**. Each question has four choices (A), (B), (C) and (D) out of which **ONLY ONE is correct.**

1. An insulted container of gas has two chambers separated by an insulating partition. One of the chamber has volume V_1 and contains ideal gas at pressure P_1 and temperature T_1. The other chamber has volume V_2 and contains same ideal gas at pressure P_2 and temperature T_2. If the partition is remove without doing any work on the gas, the final equilibrium temperature of the gas in the container will be

(A) $\frac{T_1T_2(P_1V_1+P_2V_2)}{P_1V_1T_2+P_2V_2T_1}$ (B) $\frac{P_1V_1T_1+P_2V_2T_2}{P_1V_1+P_2V_2}$

(C) $\frac{P_1V_1T_2+P_2V_2T_1}{P_1V_1+P_2V_2}$ (D) $\frac{T_1T_2(P_1V_1+P_2V_2)}{P_1V_1T_1+P_2V_2T_2}$

1. A

2. The surface area of truncated octahedron of edge length 'a' is
(A) $26.784a^2$ (B) $21.321a^2$
(C) $23.461a^2$ (D) $22.131a^2$

2. A

3. The volume of a truncated octahedron of edge length 'a' is
(A) $8\sqrt{2}\,a^3$ (B) $8\sqrt{3}\,a^3$
(C) $9\sqrt{2}\,a^3$ (D) $7\sqrt{5}\,a^3$

3. A

4. The temperature of 5 mL of a strong acid increases by 5^o when 5 mL of a strong base is added to it. If 10 mL of each is mixed, the temperature should increase by
(A) 5^o (B) 10^o
(C) 15^o (D) cannot be known

4. A

5. A mineral having the formula AB_2 crystallilzes in the ccp lattice with A atoms occupying the lattice points. The CN of A is 8 and that of B is 4. What percentage of the tetrahedral sites is occupied by B atoms?
(A) 25% (B) 50%
(C) 75% (D) 100%

5. D

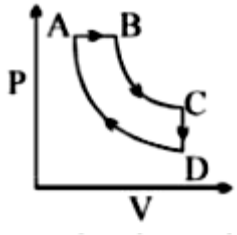
6. A substance A_xB_y crystallizes in an f.c.c lattice in which atoms of 'A' occupy each corner of the cube and atoms of 'B' occupy the centres of each face of the cube. Identify the correct composition of the substance A_xB_y.
(A) AB_3 (B) A_4B_3
(C) A_3B (D) composition cannot be specified

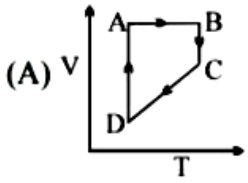
6. A

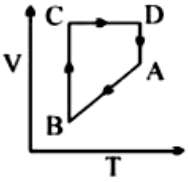
(Multi Correct Choice Type)

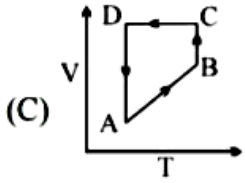
This section contains 6 **multiple choice questions.** Each question has four choices (A), (B), (C) and (D) out of which **ONE OR MORE** may be correct.

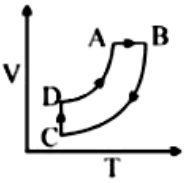
7. A cyclic process ABCD is shown in PV diagram for an ideal gas. Which of the following diagram does not represent the same process?



(A) 

(B) 

(C) 

(D) 

7. ABD

8. When 500 calories heat is given to the gas X in an isobaric process, its work done comes out as 142.8 calories. The gas X cannot be
   (A) O_2 (B) NH_3
   (C) He (D) SO_2

8. BCD

9. For a process $H_2O(\ell)$ (1 bar, 373 K) $\rightarrow$ $H_2O(g)$ (1 bar, 373 K), the incorrect set of thermodynamics parameters is
   (A) $\Delta G = 0, \Delta S = 0$ (B) $\Delta G = 0, \Delta S = -ve$
   (C) $\Delta G = +ve, \Delta S = 0$ (D) $\Delta G = -ve, \Delta S = +ve$

9. ABCD

10. Select correct statement for fcc unit cell
   (A) number of 2nd nearest neighbour are 6
   (B) number of 3rd nearest neighbour are 24
   (C) Distance of any sphere with second nearest neighbour is equal to edge length
   (D) Number of 3rd nearest neighbour are 12

10. ABC

11. Which of the following statements are correct for BCC unit cell?
   (A) Number of distorted tetrahedral voids are 12
   (B) Number of linear voids are 6
   (C) Linear voids are located at centre of each edge and centre of each face
   (D) Linear voids are also known as distorted octahedral voids

11. ABCD

12. Which is/are correct statement about zinc blende structure?
(A) The number of first neighbours of S^{2-} is 4
(B) The maximum distance between Zn^{2+} is $\sqrt{3}a$, where 'a' = edge length of unit cell
(C) If all tetrahedral voids occupied by Zn^{2+} then C.N. of S^{2-} is 8.
(D) If all tetrahedral voids occupied by Zn^{2+} then C.N. change from 4 : 4 to 8 : 8

12. ABC

PART – B
(Numerical based)

1. 20% surface sites have absorbed N_2. On heating, N_2 as is evolved from sites and were collected at 0.001 atm and 298 K in a container of volume 2.46 cm^3. Density of surface sites is 6.023 $\times 10^{14}$ cm^{-2} and surface area of 1000 cm^2. Find out the number of surface sites occupied per molecule of N_2

1. 2

2. Calculate the void fraction for the structure formed by A and B atoms such that A forms hexagonal closed packed structure and B occupies 2/3rd of octahedral voids, assuming that B atoms exactly fitting into octahedral voids in the hcp formed by A.

2. 0.22
(Range 0.22 to 0.23)

3. In a hexagonal ice structure, each oxygen is coordinated tetrahedrally with 4 other oxygens, with an intervening hydrogen between adjoining oxygens. ΔH of sublimation of ice at 0^oC is 51.0 kJ/mol H_2O. It has been estimated by comparison with non-hydrogen-bonded solids having intermolecular van der Waals forces similar to those in ice that the ΔH of sublimation would be only 15.5 kJ/mol H_2O is ice were not hydrogen-bonded. From these data, estimate the strength of the hydrogen bond in kJ in ice.

3. 17.75

4. Calculate the work done in kJ by system in an irreversible(single step) adiabatic expansion of 1 mole of a polyatomic gas from 300 K and pressure 10 atm to 1 atm(Υ = 1.33)

4. 1.68
(range 1.67 to 1.70)

5. Calculate the entropy of mixing of one mole of oxygen gas and two moles of hydrogen gas, assuming that no chemical reaction occurs and the gas mixture behaves ideally. Calculate the entropy J/K.

5. 15.38
(Range 15.00 – 16.00)

6. Find ratio of number of hexagonal faces to that of number of triangular faces in truncated tetrahedral?

6. 1.00

SECTION-3 : MATHEMATICS

PART – A

(Single Correct Choice Type)

This section contains **6 multiple choice questions**. Each question has four choices (A), (B), (C) and (D) out of which **ONLY ONE is correct.**

1. If α,β,γ are the three positive roots of cubic equation $x^3-ax^2+bx-16\sqrt{6}=0$ then the minimum value of $\left(\frac{4}{\alpha\beta}+\frac{3}{\beta\gamma}+\frac{2}{\gamma\alpha}\right)$ is.

(A) 1 (B) $\frac{3}{2}$

(C) $\frac{2}{3}$ (D) $\frac{3}{4}$

1. D

2. The value of the sum $\sum_{k=1}^{\infty}\sum_{n=1}^{\infty}\frac{k}{2^{n+k}}$ is equal to

(A) 5 (B) 4

(C) 3 (D) 2

2. D

3. If the first term of a G.P. $a_1,a_2,a_3,.....$ is unity such that the quantity $4a_2+5a_3$ has the least value then the sum to infinite number of terms of the sequence, is

(A) can not be found out as diverges (B) $\frac{5}{3}$

(C) $\frac{7}{5}$ (D) $\frac{5}{7}$

3. D

4. If 1, $\frac{x}{2}$, y are in harmonic progression $(x,y\neq 0)$, then the number of integral ordered pairs (x, y) is

(A) 2 (B) 3

(C) 4 (D) 5

4. D

5. Let α,β be the roots of $ax^2+bx+c=0(a\neq 0)$ and γ,δ be the roots of $px^2+qx+r=0(p\neq 0)$, and D_1,D_2 be the respective discriminants of these equations. If $\alpha,\beta,\gamma,\delta$ are in A.P., then $D_1:D_2$ equals

(A) $\frac{a^2}{p^2}$ (B) $\frac{a^2}{b^2}$

(C) $\frac{b^2}{q^2}$ (D) $\frac{c^2}{r^2}$

5. A

6. If A, G, H are the arithmetic, geometric and harmonic means of two positive real numbers and if A = 3H, then $\frac{A^2}{G^2}$ is equal to

(A) 1 (B) 2
(C) 3 (D) 4

6. C

(Multi Correct Choice Type)

This section contains 6 **multiple choice questions.** Each question has four choices (A), (B), (C) and (D) out of which **ONE OR MORE** may be correct.

7. If the integers a, b, c, d are in A.P, a < b < c< d and $d = a^2 + b^2 + c^2$, then which of the following is/are true

(A) $a+b+c+d=0$ (B) $a-b-c+2=0$
(C) $a^2+b^2+c^2+d^2=6$ (D) $a+b+c+d=2$

7. BCD

8. If X, Y, 6, Z, 9X are five numbers such that first three are in A.P., last three are in H.P. and 6 is geometric mean of Y and Z, then three digit number ZYX is divisible by

(A) 2 (B) 3
(C) Two prime numbers (D) Three prime numbers

8. ABD

9. If A_i, G_i and H_i (i = 1, 2, ……10) are respectively 10 A.M's, G.M's and H.M's between two distinct positive numbers, then

(A) $\frac{A_1}{A_2} = \frac{H_9}{H_{10}}$

(B) $(A_1 H_{10})^5 = G_1.G_2.G_3.....G_{10}$

(C) $(A_1 + A_2 + ... + A_{10}) = \frac{1}{H_1} + \frac{1}{H_2} + ... + \frac{1}{H_{10}}$

(D) $A_1 A_2 = H_9.H_{10}$

9. AB

10. If a, b, c be positive real number where $2a+3b+c=12$ such that a^2b^3c is maximum, then identify the correct option(s)

(A) $a+b+c=6$ (B) $a=b=c$
(C) $a+b \neq 0$ (D) $a=2$

10. ABCD

11. Let $P_n = 1+2+3+4+.....+n$. The sum $\frac{\sum_{n=1}^{2013} P_n}{(2013)(2014)}$ equals

(A) $\frac{1012}{6}$ (B) $\frac{1015}{6}$
(C) $\frac{1018}{6}$ (D) $\frac{2015}{6}$

11. D

12. Let $a_1, a_2, a_3, ..., a_n$ be in geometric progression. If $a_1 + a_3 + a_5 = 455$ and $a_2 + a_4 + a_6 = 1365$, then the ratio between each consecutive term is

(A) 2 (B) 3
(C) 4 (D) any other number

12. B

PART – B
(Numerical based)

1. If p, q, r are positive numbers satisfying $pqr = 3^{-5/2}$, then minimum value of $p^2 + 9q^2 + 6pq + 2r^2$ is

1. 2

2. If S_n denotes the sum of n terms of the series $1.2 + 2.3 + 3.4 + ...$ and σ_n denotes the sum of n terms of $\frac{1}{1.2.3.4} + \frac{1}{2.3.4.5} + \frac{1}{3.4.5.6} + ...$, then the value of $18S_n\sigma_{n-1} - S_n - 2$ is

2. -4

3. If S denotes the sum of infinite series $\frac{1}{1.3.5} + \frac{1}{2.4.6} + \frac{1}{3.5.7} + \frac{1}{4.6.8} + ..., $ then value of $\frac{22}{S}$ is

3. 192

4. If $T_r = \frac{8r}{\left(16r^4 - 8r^2 + 1\right)}$, then the value of $100\left(\sum_{r=1}^{\infty} T_r\right)$ is equal to

4. 100

5. If $a_n = \sqrt{1 + \left(1 - \frac{1}{n}\right)^2} + \sqrt{1 + \left(1 + \frac{1}{n}\right)^2}\ ; (n \geq 1)$, then value of $\sum_{i=1}^{20} \frac{1}{a_i}$ is

5. 7

6. Suppose that all the terms of an arithmetic progression (A.P.) are natural numbers. If the ratio of the sum of the first seven terms to the sum of the first eleven terms is 6 : 11 and the seventh term lies in between 130 and 140, then the common difference of this A.P. is

6. 9

ANSWERS

SECTION-1 : PHYSICS

PART – A

PART – B

SECTION – 2 : CHEMISTRY

PART – A

PART – B

SECTION – 3 : MATHEMATICS

PART – A

PART – B