FIITJEE (JEE-Advanced)

PHYSICS, CHEMISTRY & MATHEMATICS

Pattern - 1 | **QP Code:** | **TEST - 3**

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*: –1 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 **–1** 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 :_____

BATCHES – All 2022 batches (A – Iot)

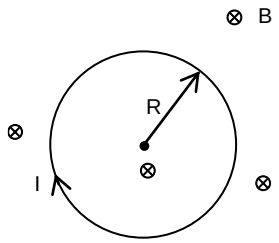
SECTION-1 : PHYSICS

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. A conducting loop is placed in a magnetic field (uniform) as shown in figure.
For this situation, markout the correct statement
(A) The force of compression experienced by loop is IRB
(B) The force of compression experienced by loop is 2IRB
(C) The force of expansion experienced by loop is 2IRB
(D) The force of expansion experienced by loop is IRB



1. **D**

2. A metallic wire is folded to form a square loop of side a. It carries a current i and is kept perpendicular to a uniform magnetic field B. If the shape of the loop is changed from square to an equilateral triangle without changing the length of the wire and current, the amount of work done in doing so is

(A) $Bia^2\left(1-\frac{4\sqrt{3}}{9}\right)$ (B) $Bia^2\left(1-\frac{\sqrt{3}}{9}\right)$ (C) $\frac{2}{3}Bia^2$ (D) zero

2. **A**

3. A particle of charge q and mass m starts moving from the origin under the action of an electric field $\vec{E}=E_0\hat{i}$ and $\vec{B}=B_0\hat{i}$ with a velocity $\vec{v}=v_0\hat{j}$. The speed of the particle will become $2v_0$ after a time

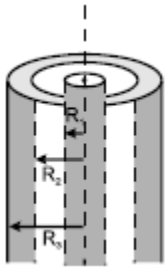
(A) $t=\frac{2mv_0}{qE}$ (B) $t=\frac{2Bq}{mv_0}$ (C) $t=\frac{\sqrt{3}\,Bq}{mv_0}$ (D) $t=\frac{\sqrt{3}\,mv_0}{qE}$

3. **D**

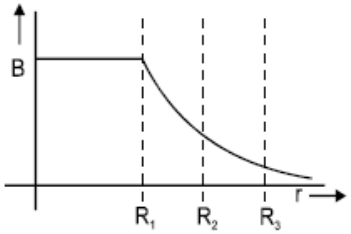
4. A charged particle is thrown perpendicular to a uniform magnetic field only, then
(A) it must move in a circular path. (B) it may not move on a circular path.
(C) it must move on a straight path. (D) it may move on a straight path.

4. **A**

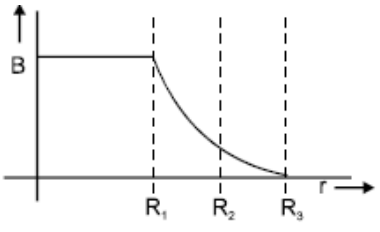
5. A coaxial cable is made up of two conductors. The inner conductor is solid and is of radius R_1 & the outer conductor is hollow of inner radius R_2 and outer radius R_3. The space between the conductors is filled with air. The inner and outer conductors are carrying currents of equal magnitudes and in opposite directions. Then the variation of magnetic field with distance from the axis is best plotted as:

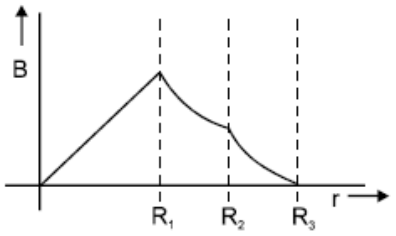


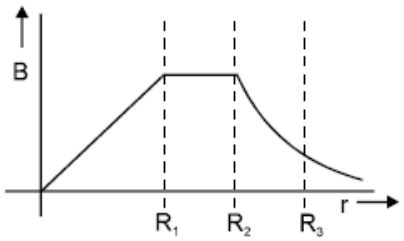
(A)



(B)



(C) 

(D) 

5. **C**

6. A circular loop of area 1 cm^2, carrying a current of 10 A, is placed in a magnetic field of 0.1 T perpendicular to the plane of the loop. The torque on the loop due to the magnetic field is
(A) zero (B) 10^{-4} N-m
(C) 10^{-2} N-m (D) 1 N-m

6. **A**

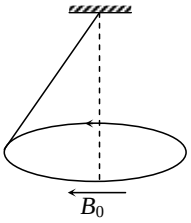
(Multi Correct Choice Type)

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 proton is fired form origin with velocity $\vec{v} = v_0\hat{j} + v_0\hat{k}$ in a uniform magnetic field $\vec{B} = B_0\hat{j}$. In the subsequent motion of the proton
(A) its z coordinate can never be negative
(B) its x coordinate can never be positive
(C) its x and z coordinates cannot be zero at the same time
(D) its y coordinate will be proportional to its time of flight.

7. **BD**

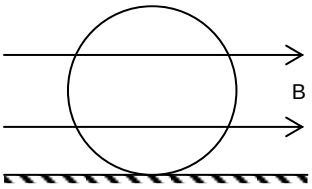
8. A uniform current carrying ring of mass *m* and radius *R* is connected by a massless string as shown. A uniform magnetic field B_0 exist in the region to keep the ring in horizontal position, then the current in the ring is (*l* = length of string)



(A) $\frac{mg}{\pi RB_0}$ (B) $\frac{mg}{RB_0}$ (C) $\frac{mg}{3\pi RB_0}$ (D) $\frac{mgl}{\pi R^2B_0}$

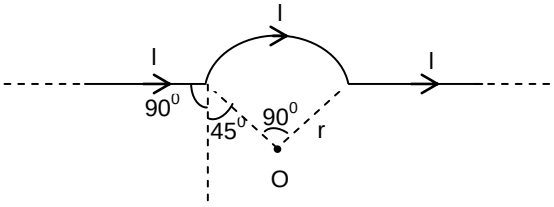
8. **A**

9. A conducting ring of mass 2 kg and radius 0.5 m is placed on a smooth horizontal plane. The ring carries a current of I = 4A. A horizontal magnetic field B = 10T, coplanar with ring, is switched on at time t = 0 as shown in figure. Then at t=0
(A) angular acceleration of the ring is $40\,\pi$rad s^{-2}
(B) torque on the ring is $20\ \pi$Nm
(C) angular acceleration of the ring is $20\,\pi$rad s^{-2}
(D) torque on the ring is $10\ \pi$Nm



9. **CD**

10. The magnetic field at the centre O of the arc in figure is (r is the radius of circular arc)



(A) $\frac{\mu_0 I}{4\pi \times r}\left[\sqrt{2}+\pi\right]$

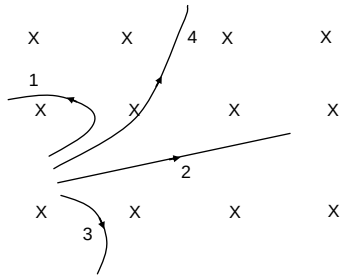
(B) $\frac{\mu_0 I}{2\pi r}\left[\frac{\pi}{4}+1\left(\sqrt{2}-1\right)\right]$

(C) $\frac{\mu_0}{4\pi}\times\frac{I}{r}\left[\sqrt{2}+r\right]$

(D) $\frac{\mu_0}{4\pi}\times\frac{I}{r}\left[\sqrt{2}+\frac{\pi}{4}\right]$

10. **B**

11. Four particles are projected from a point with equal speeds in an inward magnetic field. The paths of the particles are shown. Then:



(A) the particle 2 is neutral.
(B) the particle 1 and 4 are positive.
(C) the particle 3 is negative.
(D) the specific charge of the particle 1 is more than that of particle 3 and specific charge of particle 3 is greater than that of the particle 2.

11. **ABCD**

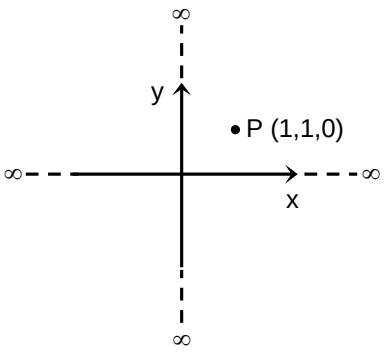
12. A charged particle moves in a gravity-free space without change in velocity. Which of the following is/are possible?

(A) E = 0, B = 0 (B) E = 0, B ≠ 0 (C) E ≠ 0, B = 0 (D) E ≠ 0, B ≠ 0

12. **ABD**

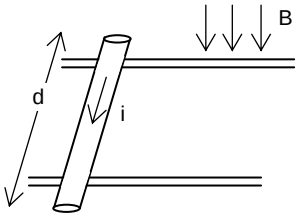
PART – B
(Numerical based)

1. There are two infinitely long & broad sheets, one is lying on xz plane and another one is lying on yz plane. In both the sheets, current is moving in positive z direction having linear density (current per unit perpendicular length) equal to $\frac{\sqrt{2}}{\pi}\times 10^7$ Ampere/meter. The magnitude of magnetic field (in Tesla) at point P shown in the figure is $\frac{8}{5}\times x$. Find the value of 'x'.



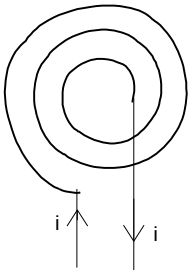
1. **2.5**

2. A cylindrical uniform rod of mass 0.72 kg and radius 6 cm rests on two parallel rails, that are d = 50 cm apart. The rod caries a current I = 48A (In the direction shown) and rolls along the rails without slipping. If it starts from rest due to applications of uniform magnetic field of magnitudes 0.25 T (directed perpendicular to the rod and the rail), then the friction force(In N) between rod and rails is



2. **2**

3. A thin insulate wire forms a plane spiral of N = 100 turns carrying a current I = 2.3 A. The inner and outer radii are equal to a = 5 cm and b = 10cm. Find the magnetic field (In 10^{-3} T)at the centre of spiral [In 2 = 0.69]



3. **2**

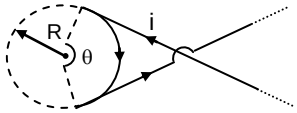
4. A charged particle is projected in a magnetic field $\vec{B} = \left(x\hat{i} + 4\hat{j}\right)10^{-2}\,T$. The acceleration of the particle is found to be a $\vec{a} = \left(\frac{16}{3}\hat{i} - 2\hat{j}\right) m/s^2$. Find the value of 'x'.

4. **1.5**

5. A circular current carrying ring gives a magnetic field of intensity. $B = \frac{\mu_o i R^2}{k(x^2 + R^2)^{3/2}}$, at distance 'x' on its axis, then k is

5. **2**

6. A wire carrying current i has the configuration shown in figure. Two semi-infinite straight section, each tangent to the same circle, are connected by a circular arc, of angle θ, along the circumference of the circle, with all sections lying in the same plane. What must θ (in rad) be in order for B to be zero at the centre of circle?



6. **2**

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. $CH_3CH_2CONH_2 \xrightarrow{Br_2/NaOH} CH_3CH_2NH_2$

Which is not a role of OH^- or NaOH in the above reaction?

(A) Deprotonation of hydrogen from NH_2 group.

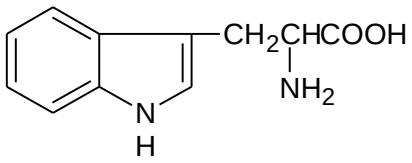
(B) Conversion of Br_2 to BrO_3^-

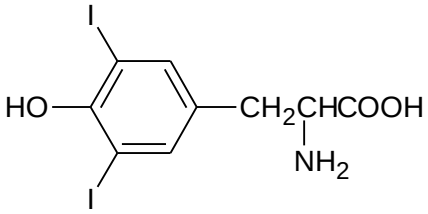
(C) attacking the ethyl isocyanate intermediate

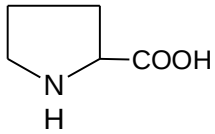
(D) Absorb CO_2

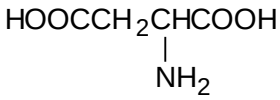
1. B

2. Peptide formed by which amino acid do not form α-helix structure.

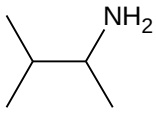
(A) 

(B) 

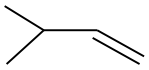
(C) 

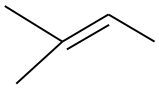
(D) 

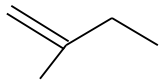
2. C

3.  $\xrightarrow[Ag_2O/H_2O/\Delta]{CH_3I(excess)}$ Major product (P)

In above reaction(P) is

(A) 

(B) 

(C) 

(D) $(CH_3)_2NH$

3. A

4. In the Mustard oil reaction

$RNH_2 + CS_2 + HgCl_2 \longrightarrow RNCS + HgS + HCl$

CS_2 behaves as a/an

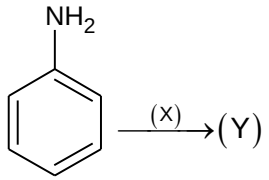
(A) Lewis acid

(B) reducing agent

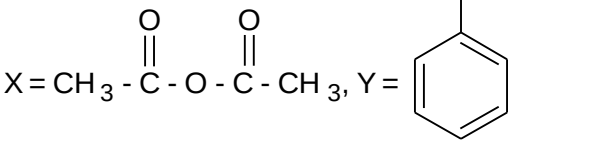
(C) oxidizing agent

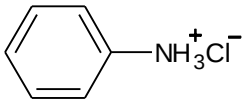
(D) dehydrochlorinating agent

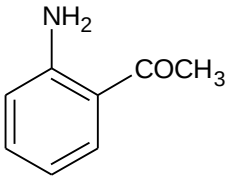
4. A

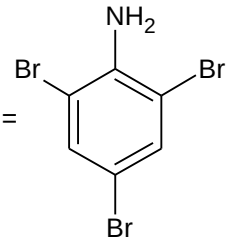
5. 

In which option are (X) and (Y) incorrect i.e., reagent(X) does not give product(Y)?

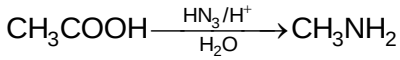
(A) 

(B) 

(C) 

(D) 

5. C

6. 

Which gases are evolved in above reaction?

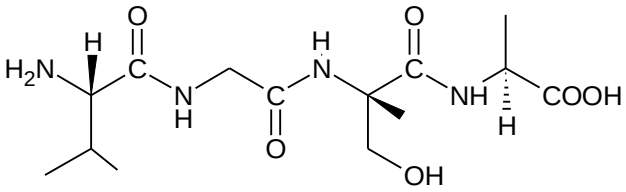
(A) N_2 and CO_2 (B) H_2 and NH_3

(C) N_2 and CO (D) N_2 and O_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. 

Choose correct statement(s) regarding the enzyme hydrolysis products of above peptide?

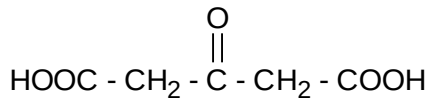
(A) Each hydrolysis product can absorb a maximum of three CH_3I molecules.

(B) Three hydrolysis products can form intermolecular cyclic diamides that can show geometrical isomerism

(C) One of the hydrolysis products has two asymmetric carbon atoms

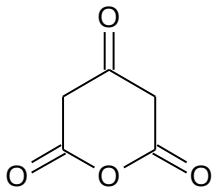
(D) One hydrolysis product is called amino acetic acid.

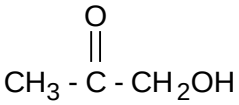
7. ABD

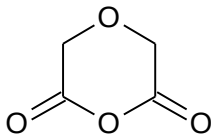
8. 

Heating of above compound produces.

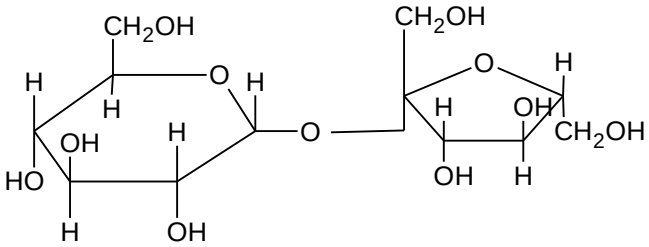
(A) CH_3COCH_3

(B) 

(C) 

(D) 

8. AB

9. 

Sucrose

Choose correct statement(s) regarding sucrose.

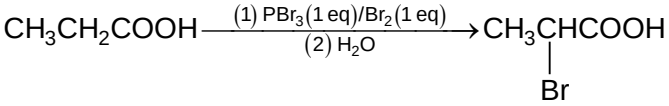
(A) It can consume three molecules of HIO_4.

(B) One molecule of HCOOH is produced when it reacts with HIO_4.

(C) Hydrolysis of Octa-O-methylsucrose with dil.HCl gives 2, 3, 4, 6-tetra-O-methyl-D-glucose and 1, 3, 4, 6-tetra-O-methyl-D-fructose.

(D) In sucrose the glucose is present in furanose form and the fructose in pyranose form

9. ABC

10. 

The stepwise reaction(s) taking place above is/are

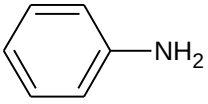
(A) Nucleophilic acyl substitution reaction with PBr_3

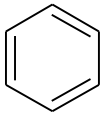
(B) Keto-enol tautomerisation of acyl bromide

(C) Addition of bromine to the enol

(D) Hydrolysis of α-bromoacylbromide

10. ABCD

11. Which reagent(s) do you need from the following in order to form aniline 

from benzene  ?

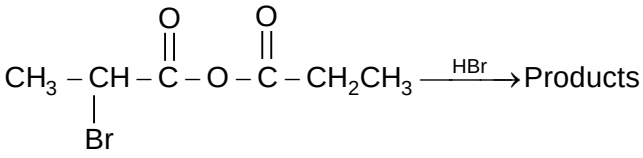
(A) Conc. H_2SO_4

(B) Conc. HNO_3

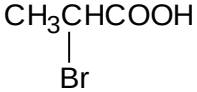
(C) Sn

(D) HCl

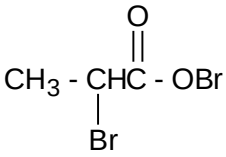
11. ABCD

12. 

The products(s) of above reaction is/are

(A) 

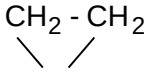
(B) CH_3CH_2COBr

(C) 

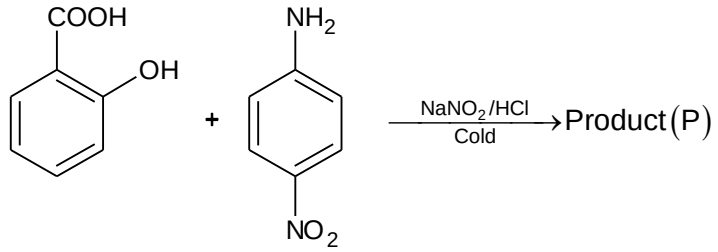
(D) CH_3CH_2COOH

12. AB

PART – B
(Numerical based)

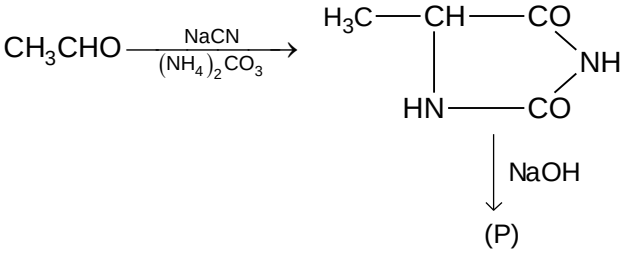
1. A dicarboxylic acid(P) forms a monocarboxylic acid(Q) upon heating. Reduction of (Q) with $LiAlH_4$ forms an alcohol(R). Heating of the vapours of (R) with Al_2O_3 forms compound(S). Hydroxylation of (S) with $KMnO_4/OH^-$/Cold forms a diol(T). (T) forms  on heating. What is the molar mass of (P) in g mol^{-1} unit?

1. 104

2. 

How many pi-bond(s) is/are present in the product of above reaction?

2. 9

3. 

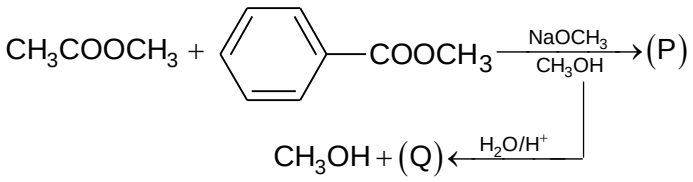
What is the molar mass of (P) in above reaction in g mol^{-1} unit?

3. 89

4. A polymer is formed by the reaction between the monomers $HOOC-(CH_2)_4-COOH$ and $H_2N-(CH_2)_6-NH_2$. How many carbon atom(s) is/are present in the repeating unit of the polymer?

4. 12

5.



If the molar mass of (Q) is expressed as $\frac{X}{10}$ g mol^{-1}, then the value of X is

5. 16.4

6. The soda extract of an organic compound gives red colouration with Fe^{3+} ions. How many elements including carbon are confirmed by the test?

6. 3

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. $\int \frac{\sin x+\cos x}{9+16\sin 2x}dx =$

(A) $\frac{1}{20}\ln\left|\frac{5+4(\sin x-\cos x)}{5-4(\sin x-\cos x)}\right|+c$ (B) $\frac{1}{20}\ln\left|\frac{5-4(\sin x-\cos x)}{5+4(\sin x-\cos x)}\right|+c$

(C) $\frac{1}{40}\ln\left|\frac{5-4(\sin x-\cos x)}{5+4(\sin x-\cos x)}+c\right|$ (D) $\frac{1}{40}\ln\left|\frac{5+4(\sin x-\cos x)}{5-4(\sin x-\cos x)}\right|+c$

1. D

2. $\int \frac{x^3dx}{x^4\sqrt{1-x^4}} =$

(A) $\frac{1}{4}\ln\left|\frac{\sqrt{1-x^4}+1}{\sqrt{1-x^4}-1}\right|+c$ (B) $-\frac{1}{4}\ln\left|\frac{\sqrt{1-x^4}+1}{\sqrt{1-x^4}-1}\right|+c$

(C) $\frac{1}{2}\ln\left|\frac{\sqrt{1-x^4}+1}{\sqrt{1-x^4}-1}\right|+c$ (D) none of these

2. B

3. If $\frac{3\pi}{4}<x<\frac{5\pi}{4}$, then $\int \frac{\tan x}{\sqrt{1-\tan^2 x}}dx =$

(A) $-\frac{1}{\sqrt{2}}\ln\left|\sqrt{2}\cos x+\sqrt{2\cos^2 x-1}\right|+c$ (B) $\frac{1}{\sqrt{2}}\ln\left|\sqrt{2}\cos x+\sqrt{2\cos^2 x-1}\right|+c$

(C) $\sqrt{2}\ln\left|\sqrt{2}\cos x+\sqrt{2\cos^2 x-1}\right|+c$ (D) $-\sqrt{2}\ln\left|\sqrt{2}\cos x+\sqrt{2\cos^2 x-1}\right|+c$

3. B

4. $\int e^{x\sin x+\cos x}\left(\frac{x^4\cos^3 x-x\sin x+\cos x}{x^2\cos^2 x}\right)dx =$

(A) $e^{x\sin x+\cos x}\left(x-\frac{1}{\cos x}\right)+C$ (B) $e^{x\sin x+\cos x}\left(x-\frac{1}{x\cos x}\right)+C$

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

4. B

5. If $\int \frac{\cos ec^2 x - 2010}{\cos^{2010} x}\,dx = -\frac{f(x)}{(g(x))^{2010}} + C$, where $f\left(\frac{\pi}{4}\right) = 1$, then the number of solutions of the equation $\frac{f(x)}{g(x)} = \{x\}$ in $[0, 2\pi]$ is (here {.} represents fractional part function)

(A) 0 (B) 1
(C) 2 (D) 3

5. A

6. If $\int_0^1 {}^{207}C_7 x^{200} (1-x)^7\,dx = \frac{1}{k}$, where $k \in N$, then the value of 'k' is equal to

(A) 208 (B) 210
(C) 212 (D) 214

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. If $\int \tan^4 x dx = K\tan^3 x + L\tan x + f(x) + c$, then

(A) $K = \frac{1}{3}$ (B) $L = -1$

(C) $f(x) = x$ (D) $K = \frac{2}{3}$

7. ABC

8. Let $f(x) = \int_0^x e^t \sin(x-t)\,dt$. Then

(A) $f''\left(\frac{\pi}{2}\right) - f'\left(\frac{\pi}{2}\right) = -1$ (B) $f''(0) - f'(0) = 1$

(C) $(f''(x) - f(x))_{max} = \sqrt{2}$ (D) $f''\left(\frac{\pi}{2}\right) - f\left(\frac{\pi}{2}\right) = 1$

8. BCD

9. If the exhaustive values of x satisfying the equation $|\cos^{-1} x| + |\sin^{-1} x| + |\tan^{-1} x| = |\pi - \cot^{-1} x|$ is the interval $[\alpha, \beta]$, then

(A) the last digit of $(2013)^{2012}$ is $\cos(\alpha\beta)$

(B) $\int_\alpha^\beta \frac{\tan^{-1} x}{\cot^{-1}(1-x+x^2)}\,dx = \frac{1}{2}$

(C) $\int_0^{\pi/2} \sin(2(\alpha+\beta)x)\sin(\sin(\beta x))\,dx$ is equal to $2(\sin 1 + \cos 1)$

(D) $2|\sin x| + |\cos x| = |2\sin x + \cos x|$ is true for all $x \in [\alpha, \beta]$

9. ABD

10. $\int \frac{dx}{\left(1+\sqrt{x}\right)^8} = -\frac{1}{3\left(1+\sqrt{x}\right)^{k_1}} + \frac{2}{7\left(1+\sqrt{x}\right)^{k_2}} + C$, then

(A) $k_1 = 5$ (B) $k_1 = 6$

(C) $k_2 = 7$ (D) $k_2 = 8$

10. BC

11. Suppose $J = \int \frac{\sin^2 x + \sin x}{1+\sin x+\cos x} dx$ and $K = \int \frac{\cos^2 x + \cos x}{1+\sin x+\cos x} dx$. If C is an arbitrary constant of integration, then which of the following is/are correct?

(A) $J = \frac{1}{2}\left(x - \sin x + \cos x\right) + C$ (B) $J = K - \left(\sin x + \cos x\right) + C$

(C) $J = x - K + C$ (D) $K = \frac{1}{2}\left(x - \sin x + \cos x\right) + C$

11. BC

12. If $\int \frac{3\cot 3x - \cot x}{\tan x - 3\tan 3x} dx = px + qg\left(x\right) + c$, where 'c' is the constant of integration, then

(A) $p = 1;\ q = \frac{1}{\sqrt{3}};\ g\left(x\right) = \ln\left|\frac{\sqrt{3}-\tan x}{\sqrt{3}+\tan x}\right|$

(B) $p = 1;\ q = -\frac{1}{\sqrt{3}};\ g\left(x\right) = \ln\left|\frac{\sqrt{3}-\tan x}{\sqrt{3}+\tan x}\right|$

(C) $p = 1;\ q = -\frac{2}{\sqrt{3}};\ g\left(x\right) = \ln\left|\frac{\sqrt{3}+\tan x}{\sqrt{3}-\tan x}\right|$

(D) $p = 1;\ q = -\frac{1}{\sqrt{3}};\ g\left(x\right) = \ln\left|\frac{\sqrt{3}+\tan x}{\sqrt{3}-\tan x}\right|$

12. AD

PART – B
(Numerical based)

1. If $\lim\limits_{n\to\infty}\left(\frac{^{3n}C_n}{^{2n}C_n}\right)^{1/n} = \frac{a}{b}$, where a and b are relatively prime integers, then find the value of $a + b - 40$.

1. 3

2. If $\int_{-10}^{10} \frac{25^{-\sum\limits_{r=0}^{49}\left\lfloor x+\frac{r}{50}\right\rfloor}}{5^{-100x}} dx$ (where [.] = G.I.F.) is equal to $\frac{n}{\ln 5}$, then the sum of the digits of n is equal to

2. 6

3. If the value of $\int_0^{4\pi} \ln\left|13\sin x + 3\sqrt{3}\cos x\right| dx$ is equal to k, then the value of $\frac{k}{\pi}\log_{\sqrt{7}} e$ is equal to

3. 8

4. If the value of the integral $\int_0^{\pi/2} \cos^{2011} x \sin(2013x)\, dx$ is equal to $\frac{a}{b}$, where a and b are co – prime integers, then find the sum of the digits of $(2a+b)$.

4. 7

5. Let $f(x)$ be a function satisfying $f(x) = f\left(\frac{100}{x}\right)\ \forall\ x > 0$. If $\int_1^{10} \frac{f(x)}{x} dx = 5$, then find the value of $\frac{1}{2}\int_1^{100} \frac{f(x)}{x} dx$.

5. 5

6. If $\int_0^{\pi/4} \frac{\ln(\cot x)\sin^{2008}(2x)}{\left(\sin^{2009} x + \cos^{2009} x\right)^2} dx = \frac{a^b \ln a}{(b+1)^2}$ (where a and b are integers in their lowest form), then find the value of $\frac{a+2b-18}{1000}$.

6. 4

ANSWERS

SECTION-1 : PHYSICS

PART – A

PART – B

SECTION – 2 : CHEMISTRY

PART – A

PART – B

SECTION – 3 : MATHEMATICS

PART – A

PART – B