

JEE 2024 FEB 1st Shift-2 Questions

HISTORY CREATED

39 YEARS OF ACADEMIC EXCELLENCE

ASIS'S GREATEST EDUCATION BRAND IN

IIT-JEE, NEET & OLYMPIADS

THE PERFECT HAT-TRICK WITH ALL-INDIA RANK 1

JEE MAIN



S VENKAT KOUNDINYA
H.T.No. 230310124339
CLASSROOM STUDENT
FROM GRADE I - XII

NEET



B VARUN CHAKRAVARTHI
H.T.No. 1205120175
CLASSROOM STUDENT
FROM GRADE VI - XII

JEE ADVANCED



VAVILALA CHIDVILAS
H.T.No. 236165088
CLASSROOM STUDENT
FROM GRADE VI - XII

01-Feb-2024 Shift-2

Maths

- Let α and β the roots of equation $px^2 + qx - r = 0$, where $P \neq 0$. If p, q, r be the consecutive term of non constant G.P and $\frac{1}{\alpha} + \frac{1}{\beta} = \frac{3}{4}$, then the value of $(\alpha - \beta)^2$ is:
Ans: $(\frac{80}{9})$
- The number of solution of the equation $4\sin^2 x - 4\cos^3 x + 9 - 4\cos x = 0, x \in [-2\pi, 2\pi]$ is:
Ans: (0)
- If the mirror image of the point $P(3,4,9)$ in the Line $\frac{x-1}{3} = \frac{y+1}{2} = \frac{z-2}{1}$ is (α, β, γ) then find $(\alpha + \beta + \gamma)$ is:
Ans: (108)
- If the domain of the function $f(x) = \frac{\sqrt{x^2-25}}{(4-x^2)} + \log(x^2 + 2x - 15)$ is $(-\infty, \alpha) \cup [\beta, \infty)$, then $\alpha^2 + \beta^2$ is equal b.
Ans: (50)
- Let the system of equation $x + 2y + 3z = 5, 2x + 3y + z = 9, 4x + 3y + \lambda z = \mu$ have infinite number of solution. Then $\lambda + 2\mu$ is equal to.
Ans: (17)
- Let S_n be the sum of first n terms of an A.P. If $S_{10} = 390$ and the ratio of the tenth and the fifth terms is $15:7$, then $S_{15} - S_5$ is equal to
Ans: (790)
- Let the Locus of the mid point of the Chords of the circle $x^2 + (y-1)^2 = 1$ drawn from the origin interests the line $x + y = 1$ at P and Q . Then the length of PQ is.

Ans: $(\frac{1}{\sqrt{2}})$

8. The value of $\int_0^1 (2x^3 - 3x^2 - x + 1)^{1/3} dx$ is equal to.

Ans: (0)

9. If z is a complex number such that $|z| \geq 1$, then the minimum value of $|z + \frac{1}{2}(3 + 4i)|$ is

Ans: $(\frac{3}{2})$

10. A point P on the ellipse $\frac{x^2}{9} + \frac{y^2}{4} = 1$ and at point Q is on the circle $x^2 + y^2 = 9$ and R is a point such that it cuts the line joining PQ in the ratio 4:3 then find the eccentricity of the locus of R .

Ans: $(\frac{\sqrt{13}}{7})$

11. The probability that Ajay will not go to office is $\frac{1}{5}$ and probability that Ajay and Vijay will not go to the office is $\frac{2}{7}$, if their visits to office is independent of each other, then find the probability that Ajay will go to the office, but Vijay will not go, is

(a) $\frac{12}{28}$

(b) $\frac{13}{35}$

(c) $\frac{18}{35}$

(d) $\frac{24}{35}$

Ans: (c)

12. Let $L_1, L_2, L_3, \dots, L_{20}$ are 20 lines and for $n = 1, 2, 3, \dots, 10$ the lines L_{2n-1} are parallel and the all the lines (L_{2n}) intersect at a common point P than the maximum number of points of intersection of all these lines

Ans: (101)

13. $\int_0^{\pi/3} \cos^4 x dx = a\pi + b\sqrt{3}$ where a and b are rational numbers then $9a + 8b$ is equal to

(a) $\frac{3}{2}$

(b) 2

(c) 1

(d) 3

Ans: (b)

14. $|2x^2 - 5|x| + 3|$ is discontinuous at m pts and non differentiable at n pts Find $m+n$

Ans: (4)

15. Let m and n be the coefficient of 7^{th} and 13^{th} term in expansion of

$\left(\frac{1}{3}x^{\frac{1}{3}} + \frac{1}{2x^5}\right)^{18}$, then $\left(\frac{m}{n}\right)^{\frac{1}{3}}$ is:

Ans: $\left(\frac{4}{9}\right)$

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Physics

1. In a isobaric process work done by gas is 200 J. Adiabatic constant for the gas is 1.4 then find the heat supply to the gas during the process.

Ans: 700J

2. A body of mass of 4kg experiences two forces $\vec{F}_1 = 5\hat{i} + 8\hat{j} + 7\hat{k}$, & $\vec{F}_2 = 3\hat{i} - 4\hat{j} - 3\hat{k}$ then acceleration acting on the body R.

Ans: $\sqrt{6}$

3. A Big drop is formed by coalescing 1000 small droplets of water. The surface water. The surface energy will become.

Ans: 1/10

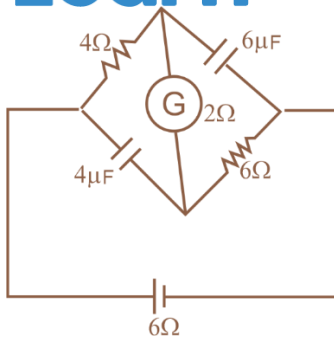
4. Two trains run on North-South parallel tracks. Train A moves with velocity 20 m/s towards North and train B moves with velocity 30 m/s towards South. Then find the velocity of train B with respect to train A.

Ans: 50m/s

5. A source produced electromagnetic wave of frequency 60MHz. Find wavelength of this wave in air.

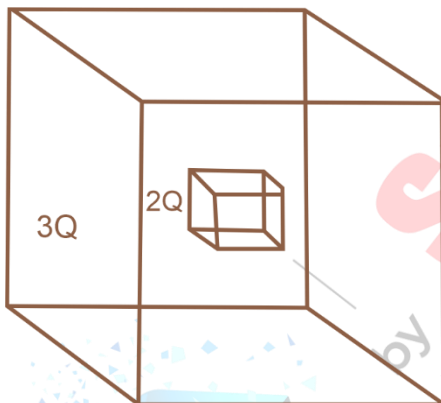
Ans: 5m

6. In the given circuit, galvanometer has 2Ω resistance. Find ratio of charge stored in $4\mu\text{F}$ and $6\mu\text{F}$ capacitors.



Ans: 18/5

7. Find the ratio of electric flux passing through bigger cube to smaller cube in the given situation. $3Q$ and $2Q$ charges are placed on the center of the surface on respective cubes.



Ans: 2/7

8. A block of mass m is connected with a spring. Time period of its oscillation is T . Find the time period if $9m$ mass is connected instead of m mass.

Ans: 1/3

9. A solid sphere is rolling purely with speed v on horizontal surface. It rolls up an incline surface and stops at height h . Then height h is [g is the acceleration due to gravity]:

(a) $\frac{3}{10} \frac{v^2}{g}$

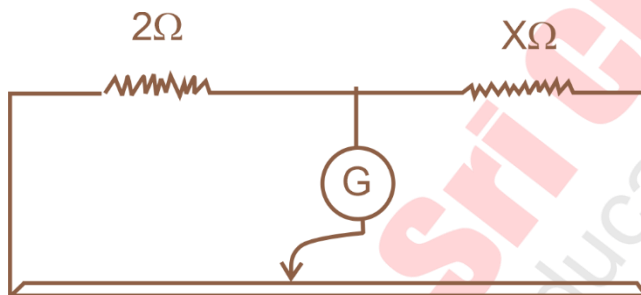
(b) $\frac{7}{10} \frac{v^2}{g}$

(c) $\frac{5}{7} \frac{v^2}{g}$

(d) $\frac{7}{5} \frac{v^2}{g}$

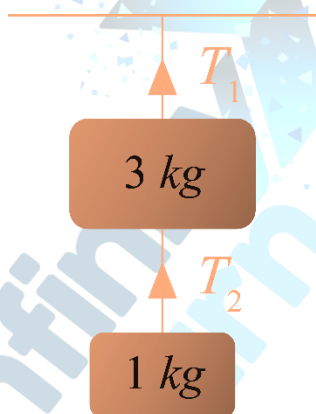
Ans: b

10. Initially the balance point of the meter bridge is at 40 cm. Now if unknown resistance (X) is shunt by 5Ω resistance in series then find the new balance point.



Ans: 8x

11. In the figure shown, find the ratio of tensions in the strings, $\frac{T_1}{T_2}$



(a) $\frac{1}{4}$

(b) $\frac{1}{2}$

(c) $\frac{1}{3}$

(d) 4

Ans: d

12 .If the power of a light source is P and frequency of photons emitted is f Find number photons emitted in time t.

(a) $\frac{Pt}{2hf}$

(b) $\frac{Pt}{hf}$

(c) $\frac{1}{2} \frac{pf}{ht}$

(d) $\frac{Pf}{ht}$

Ans: b

13.Find the number of significant digits in the value 10.05 :

Ans: 4

14.A ball of mass 120 g moving with initial velocity 25 m/s is stopped by an external force F in 0.15sec. Find value of F in newton :

Ans: 20



by

Sri Chaitanya
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1-Feb-2024 Shift-2

Chemistry

1. Number of radial / angular nodes present in 3p are

- a) 0
- b) 1
- c) 2
- d) 4

Ans: b

2. Which has highest reducing character?

- a) NH_3
- b) PH_3
- c) SbH_3
- d) BiH_3

Ans: d

3. Highest Boiling point

a)



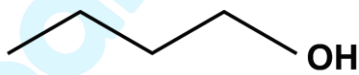
b)



c)



d)

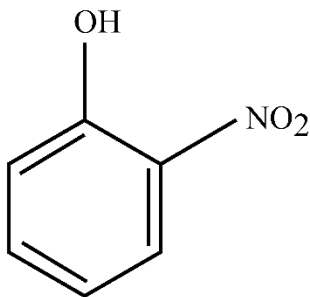


Ans: d

4. Which of the following compound has intramolecular hydrogen bonding in?

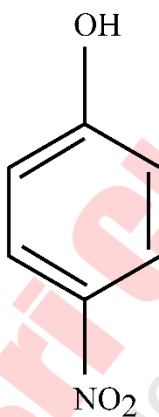
a) NH_3

b)



c) H_2O

d)



Ans: b

5. Among the following which show negative resonance effect

- (a) COOH
- (b) CH_3
- (c) NH_2
- (d) OH

Ans: a

6. Which of the following has highest 3rd ionization energy?

- (a) Mn
- (b) V
- (c) Cr
- (d) Fe

Ans: a

7. $[\text{CoF}_6]^{-3}$ and $[\text{Co}(\text{NH}_3)_6]^{+3}$ are

- (a) Spin paired complex
- (b) Low spin complex

- (c) Outer orbital complex
- (d) Inner orbital complex

Ans: b

8. Which of the following set of elements can be detected by Lassaigne's Test ?
- (a) N and S only
 - (b) N, P and S only
 - (c) P and halogens only
 - (d) N, P, S and halogens

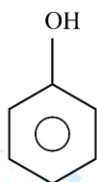
Ans: d

9. Which of the following compound in 3d series does not show +3 oxidation state?

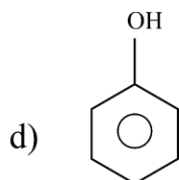
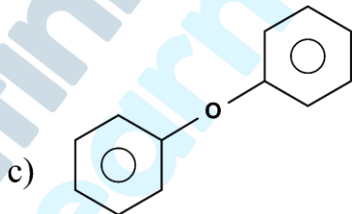
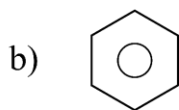
- (a) V
- (b) Cr
- (c) Mn
- (d) Cu

Ans: d

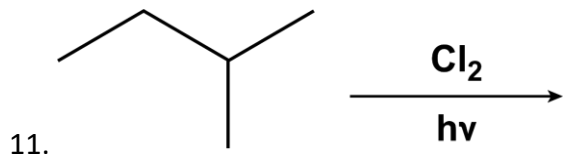
10.



A is ?



Ans: b



Total isomers formed

Ans: 6

12. Solubility of $\text{Ca}_3(\text{PO}_4)_2$ in 100 mL of pure water is W gm. Find out K_{sp} of $\text{Ca}_3(\text{PO}_4)_2$ is:

Ans: $108 \times 10^5 \left(\frac{W}{M}\right)^5$

HISTORY CREATED

SRI CHAITANYA STUDENTS SECURE TOP RANKS
in JEE ADVANCED 2023

ALL-INDIA OPEN CATEGORY RANKS

ALL INDIA



1

RANK

VAVILALA CHIDVILAS
H.T.No. 236165088

CLASSROOM STUDENT
FROM GRADE VI - XII

ALL INDIA




2

RANK

RAMESH SURYA THEJA
H.T.No. 236131371

CLASSROOM STUDENT
FROM GRADE VIII - XII

ALL INDIA




3

RANK

RISHI KALRA
H.T.No. 237047209

AIITS PROGRAM STUDENT
FROM GRADE XII

ALL INDIA



4

RANK

RAGHAV GOYAL
H.T.No. 237020329

CLASSROOM STUDENT
FROM GRADE IX - XII

ALL INDIA



7

RANK

B ABHINAV CHOWDAR
H.T.No. 236163128

CLASSROOM STUDENT
FROM GRADE IV - XII