तेजस्विनावधीतमस्तु

अभ्युदय

मुख्यमंत्री अभ्युदय योजनान्तर्गत

NEET PHYSICS PEPAR

SOLUTION

(SECTION – A)

1. (c)

2. (a)

3. (c)

4. (C) Volume of sphare $V = \frac{4}{3}\pi r^3$

चूकि गोले का आयतन $V = \frac{4}{3}\pi r^3$

$$\frac{dv}{v} = 3\left(\frac{dr}{r}\right)$$

Percentage error in measurement in the volume =3 × 1% =3%

आयतन के मापन में प्रतिशत त्रुटि =3 × 1% =3%

5. (b)

6. (c)

7. (d)

8. (c)

9. (b) E_0 की विमा = $[M^{-1}L^{-3}T^4A^2]$

μ_0 की विमा =$[M^1L^1T^{-2}A^{-2}]$

$\therefore \quad \sqrt{\frac{E0}{\mu_0}} = \sqrt{\frac{[M^{-1}L^{-3}T^4A^2]}{[M^1L^1T^{-2}A^{-2}]}} = \sqrt{[M^{-2}L^{-4}T^6A^4} = [M^{-1}L^{-2}T^3A^2]$

$= [A^2T^3M^{-1}L^{-2}]$

10. (d) ऊर्जा E की विमा = $[M^1L^2T^{-2}]$

G की विमा = $\frac{fr^2}{m_1m_2} = \frac{= [M^1L^1T^{-2}][L^2]}{M^2} = [M^{-1}L^3T^{-2}]$

$\frac{E}{G}$ की विमा = $\frac{[M^1L^2T^{-2}]}{[M^{-1}L^3T^{-2}]} = [[M^2][\ L^{-1}][T^0]$

11. (b)

12. (C) राशियों को जोडने अथवा घटाने पर प्राप्त फल में दशमलव के बाद कुल उतने ही अंक होने चाहिये जितने की जोडने अथवा घटाने वाली किसी राशि में दशमलव के बाद कम से कम अंक होते है। अतः

9.99 - 0.0099 = 9.98 3 सार्थक अंक

13. (d)

अल्पतमांक = चूडी अन्तराल (पिच) / वृत्तीय पैमाने पर खानो की संख्या

0.01 mm = चूडी अन्तराल (पिच) / 5.0

(पिच) = 0-5 mm

14. (d) $Y \propto F^aV^bA^c$ $Y = \frac{F}{A}$

$\frac{[MLT^{-2}]}{[L^2]} \ \alpha \ [M^1L^1T^{-2}]^a[LT^{-1}]^b[L^2]^c$

$[M^1L^{-1}T^{-2}] \ \alpha \ [\mathrm{M}]^a \ [\mathrm{L}]^{a+b+2c}[\mathrm{T}]^{-2a-b}$

∴ a+b+2c= -1

-2a+b =-2

a=1, b=0, c=-1

∴ Y = $[F^1V^0A^{-1}]$

15. (b) दिया है x = $\frac{A^2B^{1/2}}{D^3C^{1/3}}$

∴ % त्रुटि $\frac{\Delta X}{X}$ = 2$\frac{\Delta A}{A}$ +$\frac{1}{2}\frac{\Delta B}{B}$ +$\frac{1}{3}\frac{\Delta C}{C}$ +3 $\frac{\Delta D}{D}$

$\frac{\Delta X}{X} \times 100$ = 2(1%)+$\frac{1}{2}$(2%)+$\frac{1}{3}$(3%)+3(4%)=16%

16. (C) V = At +B + 2 => $\frac{dx}{dy}$ = At +B + 2

=>$\int_0^x dx = \int_1^2 (\mathrm{At} + \mathrm{B} + 2)\mathrm{dt}$

X = $\frac{A}{2}(2^2 - 1^2)\frac{B}{3}(2^3 - 1^3) = \frac{3A}{2} + \frac{7B}{3}$

17. (b) समय = कुल लम्बाई / आपेक्षिक वेग

= $\frac{50+}{10+15}$ = $\frac{100}{25}$ = 4 sec.

18. (d) 3t = $\sqrt{3x}$ +6 => 3x =$(3\mathrm{t} - 6)^2$

= $3t^2 - 12t + 12$

V = $\frac{dx}{dt}$ = 6t-12

V=0 के लिए t = 2 sec.

अतः x= $3(2)^2 - 12 \times 2 = 0$

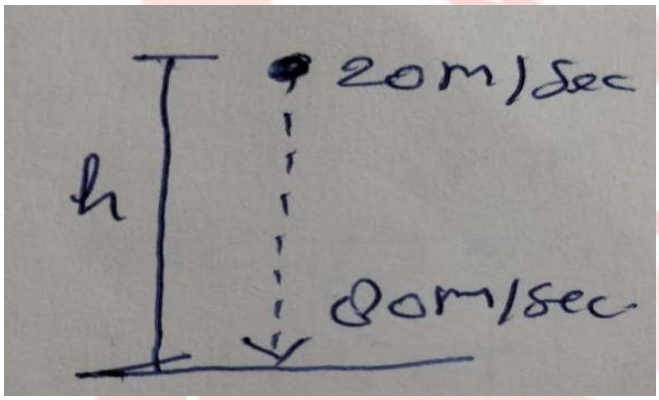
19. (c). $h_1 = \frac{1}{2}\, g(s)^2$, $h_2 = \frac{1}{2} g(10)^2$, $h_3 = \frac{1}{2} g(15)^2$

$=> h_1 = \frac{h_2}{3} = \frac{h_3}{5}$

20. (a) $\frac{s_n}{s_{n+1}} = \frac{u+\frac{1}{2}a(2n-1)}{v+\frac{1}{2}[2(n+1)-1]}$

दिया है u=0 then $\frac{s_n}{s_{n+1}} = \frac{\frac{1}{2}a(2n-1)}{\frac{1}{2}a(2n+1)} = \frac{(2n-1)}{(2n+1)}$

21. (a).



$v^2 = u^2 + 2gh$ $=>(80)^2 = (20)^2 + 2 \times 10h$

h = 300 meter

22. (c)

23. (b). बल F = (M Kg.sec^{-1})(V m sec^{-1}) = [MV Kg.m. sec^{-2}]

F= M V(.N)

24. (c)

25. (c)

26. (b). कार्य = बल × विस्थापन

यदि बल व बिस्थापन दोनो को दुगना कर दिया जाये तब कार्य चार गुना हो जायेगा।

27. (a)

28. (d) $E = \frac{P^2}{2M}$ => $E_2 = E_1 (\frac{P_2}{P_1})^2 = E_1(\frac{2P}{P})^2$

⇨ $E_2 = 4E_1 = E_1 + 3\ E_1 = E_1 + E_1$ का 300%

29. (c) $P = \sqrt{2ME}$, यदि E समान है तब $p\ \alpha\ \sqrt{m}$

$\therefore \frac{p_1}{p_2} = \sqrt{\frac{m_1}{m_2}} = \sqrt{\frac{1}{4}} = \frac{1}{2}$

30. (b)

31. (c) शक्ति (p) = $\frac{w}{t}$, यदि w नियत रहे तब $p\ \alpha\ \frac{1}{t}$

$\therefore \frac{p_1}{p_2} = \frac{t_2}{t_1} = \frac{20}{10} = 2$

32. (d). जिस बिन्दु पर बल आरोपित है उसका स्थिति सदिश r_1=i + 2j+ 3k

जिस बिन्दु के परितः बल आधूर्ण ज्ञात करना है उस दूसरे बिन्दु का स्थिति सदिश $r_1 = r_1 - r_2$ = (i + 2j + 3k)- (3i -2j-3k)

r_1^1 =-2i + 4j 6k

∴ बल आधूर्ण (Torque) $\tau = r_1^1 \times$ f=(-2i + 4j 6k) ×(3i -2j-3k)

$$\tau = \begin{vmatrix} -i & j & k \\ -2 & 4 & 6 \\ 4 & -5 & 3 \end{vmatrix}$$

= i (12+30) – j (-6-24)+k (10-16)

τ =(42i + 30 j – 6 k) Newton× meter

33. (a). Tα R^2

यदि त्रिज्या का मान आधा कर दे, तो आवर्तकाल का मान $\frac{1}{4}$ हो जायेगा अर्थात $\frac{24}{4}$ = 6 घण्टे

34. (c) घूर्णन गतिज ऊर्जा E = $\frac{1}{2}$ IW^2

$$\therefore W^2 = \frac{2E}{I}$$

$$W = \sqrt{\frac{2E}{I}}$$

∴ कोणीय संवेग (j) = I W = I × $\sqrt{\frac{2F}{I}}$

$$= \sqrt{2EJ}$$

35. (d)

36. (c) Scanning tunneling microscope limit of resoltuon = 0.1 A

Can resolve size of molecules and atoms.

स्कैनिग टनलिंग सूक्ष्मदर्शी विभेदन सीमा = 0.1 A अणुओं और परमाणुओं के आकार को विभेदित कर सकता है।

37. (d) M=1 mm, n_V=20, n_M=16

LC=($\frac{n_V - n_M}{n_V}$) M = $\frac{(20-16)}{20} \times 1 = 0.2$

38. (a) Total mass = 1.0 kg + 0.030 kg = 1.030 kg. = 1.0 kg

39. (d) Maximum horizontal range = 80m

$\theta = 45^0$m

$\therefore \frac{u^2}{g}$ = 80 m ,Maximum height h=$\frac{u^2}{2g}$ =$\frac{80}{2}$ 40m

40. (d)

Thermal resistance, R= $\frac{L}{KA}$ =$\frac{meter}{Watt meter^{-1} meter^{-1} (meter)^2}$ =$\frac{Kelvin}{Watt}$

Thermal conductance = $\frac{1}{R}$=$\frac{Watt}{Kelvin}$

41.(b)

$$R = \frac{V}{i} = \frac{100}{10} = 10\,\text{ohm}$$

$$\therefore \left(\frac{\Delta R}{R} \times 100\right)_{max} = \frac{\Delta V}{V} \times 100 + \frac{\Delta I}{I} \times 100$$

$$= \frac{5}{100} \times 100 + \frac{0.2}{10} \times 100 = (5+2)\% = 7\%$$

$$\Delta R = \frac{7 \times R}{100} = \frac{7 \times 10}{100} = 0.7 \text{ ohm}$$

42.(b)

$$P = \frac{\sqrt{abc^2}}{d^3 e^{1/3}} = \frac{a^{\frac{1}{2}} b^{\frac{1}{2}} c}{d^3 e^{\frac{1}{3}}}$$

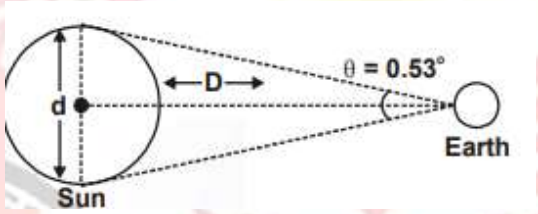
$$\Delta P\% = \frac{1}{2}\Delta a\% + \frac{1}{2}\Delta b\% + \Delta c\% + 3\Delta d\% + \frac{1}{3}\Delta e\%$$

$$\left(\frac{1}{2}\times 2\%\right) + \left(\frac{1}{2}\times 3\%\right) + (2\%) + (3\times 1\%) + \left(\frac{1}{3}\times 6\%\right)$$

= 1% + 1.5% + 2% + 3% + 2%

The minimum amount of error is contributed by the measurement of a that is 1%.

43.(c)



$$\text{angle} = \frac{\text{arc}}{\text{radius}} \Rightarrow \theta = \frac{d}{D}$$

$$d = \theta \times D$$

$$= 0.53 \times \frac{\pi}{180} \times 1.496 \times 10^{11}$$

$$= 1.38 \times 10^{9}\ \text{m}.$$

44.(b)

Total time of flight = 10 sec

so time to reach maximum height = $\frac{10}{2}$ = 5 sec

Hence total height will be $H = \frac{1}{2} \times g \times (t)^2$

$= \frac{1}{2} \times 10 \times (5)^2 = 125\ \text{m}$

45.(c)

8h/9 metres from the ground

$$h = ut + \frac{1}{2} gt^2$$

$$h = 0 + \frac{1}{2} gT^2$$

$$h = \frac{1}{2} gT^2$$

$$h = ut + \frac{1}{2}gt^2$$

$$h = 0 + \frac{1}{2}g\left(\frac{T}{3}\right)^2$$

$$h = \frac{1}{2} g \left(\frac{T^2}{9}\right)$$

$$= \frac{g}{18}T^2 = \frac{g}{18} \times \frac{2h}{g} \qquad = \frac{h}{9}$$

so from the ground its position $= h - \frac{h}{9} = \frac{8h}{9}$

46.(c)

$$v = At + Bt^2$$

$$\frac{dS}{dt} = At + Bt^2$$

$$\int_0^S dS = A\int_1^2 t\,dt + B\int_1^2 t^2 dt$$

$$= A\left[\frac{t^2}{2}\right]_1^2 + B\left[\frac{t^3}{3}\right]_1^2$$

$$= A\left[\frac{4}{2} - \frac{1}{2}\right] + \frac{B}{3}[8-1]$$

$$S = \frac{3A}{2} + \frac{7B}{3}.$$

47.(a)

दिया है $x(t) = (t-2)^2$ .....(i)

समय t पर वेग, $u = \frac{dx}{dt}$

$\Rightarrow v(t) = 2(t-2)$ .....(ii)

वेग के शून्य होने पर समय

$v = 0 \Rightarrow 2(t-2) = 0 \Rightarrow t = 2s$

4s के पहले कण का वेग शून्य हो रहा इसलिए वह वापस मुड़ जायेगा

कण का त्वरण = $\frac{dv}{dt} = 2ms^{-2}$ ....(iii)

$x(t) = v_0 t + 1/2\, at^2$

$\because$ $t = 0, v(0) = v_0 = -4\ ms^{-1}$ [t = 0 समी0 (ii)]

$a = +2ms^{-2}$ [(iii) समी0 से]

$x_1(t) = -4 \times 2 + 1/2 \times 2 \times (2)^2 = -8 + 4 = -4$

इस समय दूरी का मान = $|x(t)| = 4$ m

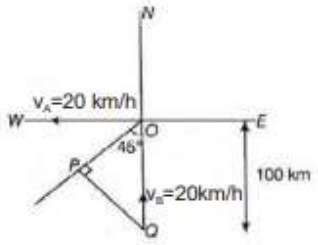
2s, $v_0 = v(2) = 0\ ms^{-1} \Rightarrow a = 2ms^{-2}$

$x_2(t) = 0 + 1/2 \times 2 \times (2)^2 = 4$

$\therefore$ कुल दूरी = 4 + 4 = 8m.

48. (a)

It is clear from the diagram that the shortest distance between ship A and B is PQ.



Here, $\sin 45° = \frac{PQ}{OQ}$

$\Rightarrow PQ = 100 \times \frac{1}{\sqrt{2}} = 50\sqrt{2}m$

Also, $v_{AB} = \sqrt{v_A^2 + v_B^2} = \sqrt{20^2 + 20^2}$

$= 20\sqrt{2}$ km/h

So, time taken for them to reach shortest path

$t = \frac{PQ}{v_{AB}} = \frac{50\sqrt{2}}{20\sqrt{2}} = 2.5h$

49. (b)

Using $v^2 = u^2 - 2as$ with final velocity = 0

$\therefore s \propto u^2$

$\frac{8}{s_2} = \left(\frac{30}{60}\right)^2$

$\therefore s_2 = 32$ m

50. (c)

$S_1 = S_{10} = 1/2 \times a \times 10^2 - 1/2(10)^2$

So $S_2 = 3S_1$

NEET BIOLOGY PAPER

SOLUTION

(SECTION – A)

BOTANY

REASON'S

Q-51. (b) Binomial system of nomenclature give by Linnaeus. This system. Scientific name of any one genus written in capital letter & species small letter.

Q-52.(a) Stamen defined the male reproductive part of flower.

Q-53. (d) All living beings shows in own life shape curve.

Q-54. (b) In classification the small unit is species.

Q-55. (b) Whittekar show five kingdom classification- They arranged multicellular in two kingdom.

Q-56 (a). Main base of two kingdom of classification is cell wall by whitteteker

Q-57. (b) In rice field loss of nitrogen. is covered by eyano Bactaria.

Q-58. (a) +ve Bacteria secrete. Only Tekoic Acid .

Q-59. (a) Citrus canker are Bacterial disenene in citrus fruits. eg.Lemon.etc.

Q-60. (d) Discovery question

Q-61. (c) In Bacteria. First experiment of sexuality in E.coli.

Q-62. (d) Discovery question.

Q-63. (a) Clamp connection is the process of cell division in Basidimycetes member(Lack of Rust) in this process all are laterally divieded.

Q-64. (c) In funi several types of spore held Asexual type of repro duction.

Q-65. (a) Mycology= mykes + logos.

Q-66. (b) Every fingus bears several types of component of cell wall – the main – chitin.

Q-67. (a) In human being Aspegellosis disease is caused by fungus.

Q-68. (c) Rust – puccinia

Smut- Ustilago

Mushroom- Agaricus

There are all members of Basidiomycetes by alexopolus.

Q-69. (c) cell wall of virus made up of proteen and nuclic Acid such as (DNA & RNA)

Q-70. (a) lichen =Algal & fungal

⇨ Algae portion of lichen all called=$\frac{phycobi}{mycobiot}$

$\frac{They\ can\ help.phosvjntu}{water\ absorption\ \&\ relaction}$

⇨ Both are made lichen.

Q-71. (c) Defenition of viroids:

"Free RNA. With out proteen

Q-72. (a) Pinus is a gymnospermic plant.

Pinus gerardiana seed are eat by human.

Q-73. (c) Defination of fungi-

Q-74. (b) lichen species of Rocella tinctoria are obtained litmus solutlion. There sheet prepare- litmus paper

Q-75. (a) Shilapuspa – are use as a eating purpose

Q-76. (d) Transfusion tissue supply nutrients of lateral parts in cycas leaflet- this structure is same to tracheids-

Q-77. (c) plasmid are extra chromosomal structure.

Q-78. (a) Typhoid are water borne disease causing by bactria

Titnus are also bacterial disease in human.

Q-79.(c) Discovery question

Q-80. (b) All gymospermic plants bears – micro- & megaspore. The determination male and female gametophyte.

Q-81. (c) Mycobiont & phycobiont are the component of lichen.

Q-82. (c) witteker divided cyanobactmia in monera

Q-83. (c) Mostly bacteria are heterotrophic on the basic of mode of nutrition.

Q-84. (d) Plant body of fungi in basidiomycetes ,Deuteromycetes and Ascomycetes are Sepetate & Branched

Q-85. (b) In gymnospic plant – life cycle sporophytic phase dominent the divided – Root, stem & leaves.

Q-86. (d)

The main criteria for five Kingdom classification used by him include cell structure, body organisation, mode of nutrition, reproduction and phylogenetic relationships.

Q-87. (c)

Chemosynthetic autotrophic bacteria oxidise various inorganic substances such as nitrates, nitrites and ammonia and use the released energy for their ATP production. They play a great role in recycling nutrients like nitrogen, phosphorous, iron and sulphur.

Q-88. (a)

Instead of a cell wall, Euglenoids have a protein rich layer called pellicle which makes their body flexible.

Q-89. (a)

Archaebacteria differ from other bacteria in having a different cell wall structure and this feature is responsible for their survival in extreme conditions.

Q-90. (d)

In modern medicine certain infectious neurological diseases were found to be transmitted by an agent consisting of abnormally folded protein. The agent was similar in size to viruses These agents were called prions. The most notable diseases caused by prions are bovine spongiform encephalopathy (BSE) commonly called mad cow disease in cattle.

Q-91. (b)

However, in other fungi (ascomycetes and basidiomycetes), an intervening dikaryotic stage (n + n, i.e., two nuclei per cell) occurs; such a condition is called a dikaryon and the phase is called dikaryophase of fungus.

Q-92. (b)

These bacteria are special since they live in some of the most harsh habitats such as extreme salty areas (halophiles), hot springs (thermoacidophiles) and marshy areas (methanogens).

Methanogens are present in the gut of several ruminant animals such as cows and buffaloes and they are responsible for the production of methane (biogas) from the dung of these animals. 1

Q-93. (c)

This group includes diatoms and golden algae (desmids). They are found in fresh water as well as in marine environments. They are microscopic and float passively in water currents (plankton).

Q-94. (a)

- Phycomycetes – *Mucor, Rhizopous*
- Ascomycetes – *Penicillium, Claviceps*
- Basidiomycetes – *Agaricus, Ustilago*
- Deuteromycetes – *Alternaria, Colletotricum*

Q-95. (c)

Most of them are photosynthetic. In diatoms the cell walls form two thin overlapping shells, which fit together as in a soap box.

Q-96. (a)

They are attached to the soil through multicellular and branched rhizoids.

Q-97. (b)

In cycas male cones and magasporophylls are borne on different trees

Q-98. (d)

Equisetum is a homosporous pteridophytes in which all above characters are present.

Q-99. (b)

The space between the hump and the mantle is called the mantle cavity in which feather like gills are present.

Q-100. (d)

Cnidoblasts or cnidocytes (which contain the stinging capsules or nematocytes) present on the tentacles and the body. Cnidoblasts are used for anchorage, defense and for the capture of prey.

NEET CHEMISTRY PAPER

SOLUTIONS

SECTION - A

Q-101. (d) 22.4 L of a gas at STP has no. Of molecules=6.023×10^{23}

∴ 8.96L of a gas at STP has no of molecules =$\frac{6.023\times10^{23}\times8.96}{22.4}$

=2.408×10^{23} =24.08×10^{22}

Q-102. (c) Wt. of metallic chloride = 74.5

Wt. Of chlorine = 35.5

∴Wt. Of metal = 74.5-35.5 = 39

Fquivalent weight of metal =$\frac{weight\ of\ metal}{weight\ of\ chlorine}\times35.5$

=$\frac{37}{35.5}\times35.5=39$

Q-103. (d) The density of gas = $\frac{molecular\ wt\ of\ metal}{volume}$ = $\frac{45}{22.4}$

=2 gm $liter^{-1}$

Q-104. (d) Nucleus consists of proton and neutron both are called as nucleon.

Q-105. (c) cl^{-} have 17 proton, 18 neutron and 18 electron.

Q-106. (b) Mass of the particle (m)=10^{-6}kg and velocity of the particle(v)=$10ms^{-1}$

$\lambda = \frac{h}{mv} = \frac{6.63\times10^{-34}}{10\times10^{-6}} = 6.63\times 10^{-29}$m.

Q-107. (c) From debroglie equation $\lambda = \frac{h}{mv} = \frac{6.62\times10^{-34}}{0.5\times100}$

$=1.32\times 10^{-35}m$

Q-108. (c) $\Delta x \times \Delta P \geq \frac{h}{4\pi}$

$\Delta x = \Delta P \Rightarrow \Delta P^2 = \frac{h}{4\pi} \Rightarrow \Delta P = \frac{1}{2}\sqrt{\frac{h}{\pi}}$

$m\Delta v = \frac{1}{2}\sqrt{\frac{h}{\pi}} \Rightarrow \Delta v = \frac{1}{2m}\sqrt{\frac{h}{\pi}}$

Q-109. (b) Each orbital has almost two electron.

Q-110. (b) $k_{19}=1s^2 2s^2 2p^6 3s^2 3p^6 4s^1$

For $4s^1$ electron

n=4, l=0, m=0 and s=+ $\frac{1}{2}$

Q-111. (c) $mv(4a_0) = \frac{h}{v}$

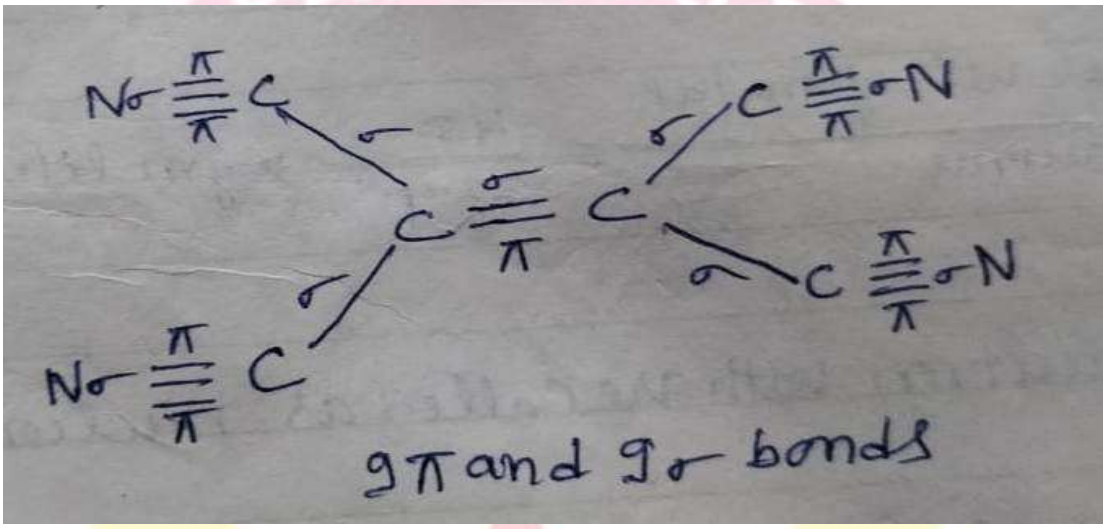
So, $v = \frac{h}{4m\pi a_0}$

So, KE= $\frac{1}{2}mv^2 = \frac{1}{2}m\frac{h^2}{16m^2\pi^2 a_0^2} = \frac{h^2}{32m\pi^2 a_0^2}$

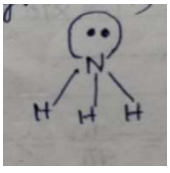
Q-112. (d) Graph of IφI $\frac{v}{s}$ r, touches r axis at 1 point so it has one radial node and since at r=0, it has same value so it should be for 's' orbital

$\therefore$ n-1-1=1 where l=0 => n-1=1

Q-113. (a)



Q-114. (b) In the ammonia molecule n atom is sp^3 hybridized but dueto the presence of one lone pair of $\overline{e}$ (i.e. due to greater L_p-b_P repulsion it has distorted tetrahedral (or pyramidal) geometry.



Q-115. (c) Generally octahedral compound show sp^3d^2 hybridization

Q-116. (a)

Q-117. (a) Oxidation state of X_e in X_eF_6 is +6.

In the formation of X_eF_6, sp^3d^3 hybridisation occurs which gives the molecule a pentagonal bipyramidal structure. Six positions are occupied by fluorine atoms and one position is occupied by a lone pair of electrons. Due to presence of lone pair distortion in structure takes place. The actual structure is distorted octahedsal.

Q-118. (d) Molecular orbital electronic configuration of o_2 is

$(\sigma 15)^2(\sigma^* 15)^2(\sigma 25)^2(\sigma^* 25)^2(\sigma 2p_z)^2(\pi 2p_x)^2(\pi^2 p_y)^2(\pi^* p_x)^1(\pi^* p_y)^1$

B.o. of O_2=$\frac{1}{2}$(10-6) =2

$(\sigma 15)^2(\sigma^* 15)^2(\sigma 25)^2(\sigma^* 25)^2(\sigma 2p_z)^2(\pi 2p_x)^2(\pi^1 2p_y)^2(\pi^* 2p_x)^1$

B.o. of O_2^+ = $\frac{1}{2}$(10-5) =2.5

Molecular orbital electronic configuration of O_2^- is

$$(\sigma 15)^2(\sigma^* 15)^2(\sigma 25)^2(\sigma^* 25)^2(\sigma 2p_z)^2(\pi 2p_x)^2(\pi 2p_y)^2(\pi^* 2p_x)^2(\pi^* 2p_y)^1$$

B.o. of O_2^- = $\frac{1}{2}$(10-7) =1.5

Molecular orbital electronic configuration of O_2^{2-} is

$$(\sigma 15)^2(\sigma^* 15)^2(\sigma 25)^2(\sigma^* 25)^2(\sigma 2p_z)^2(\pi 2p_x)^2(\pi 2p_y)^2(\pi^* 2p_x)^2(\pi^* 2p_y)^2$$

B.o. of O_2^{2-} = $\frac{1}{2}$(10-8) =1.0

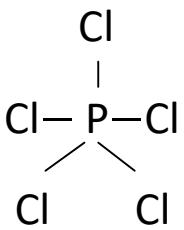
Increasing order of B.O. is

$O_2^{2-} < O_2^- < O_2 < O_2^+$

Q-119. (c) Oxygen is paramagnetic due to the presence of two unpaired electron.

$$\sigma(15)^2\sigma^*(15)^2\sigma(25)^2\sigma^*(25)^2\sigma(2p_x)^2\pi(2p_y)^2\pi^1(p_x)^2\pi^*(2p_y)^1\pi^*(2p_z)^1$$

Q-120. (d) PCL_5 SF_6 BF_3 BrF_5



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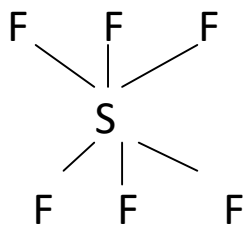

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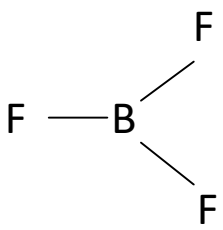

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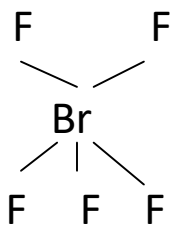

bp=5

lp=0	lp=0	lp=0	lp=1
total = 5	total = 6	total = 3	total = 6
trigonal bipyramidal	sp^3d^2 octahedral	Trigonal planar	sp^3d^2 square

so correct answer

(a) pcl_5 ⟶ Trigonal bipyramidal 4

(b) SF_6 ⟶ Octahedral 3

(c) BrF_5 ⟶ Square pyramidal 1

(d) BF_3 ⟶ Trigonal planar 2

Q-121. (a) $u_{av} = v_{rms}$

$$\sqrt{\frac{8RT}{\pi m}} = \sqrt{\frac{3RT}{m}}$$

$$\frac{8RT}{\pi m} = \frac{3RT}{m} \Rightarrow \frac{8RT}{\pi m} = \frac{3R\times300}{m}$$

T= 353.57 K, t= 80.57 ^{0}C

or

Q-121. (a) Root Mean Square Speed

$$= \left[\frac{n_1\ c_1^2+n_2c_2^2+n_3c_3^2}{n_1+n_2+n_3}\right]^{\frac{1}{2}}$$

Q-122. (e) Calorific value of

$$\text{Butane} = \frac{\Delta H_e}{Mol.wt} = \frac{2658}{58} = 45.8\ \frac{kj}{gm}$$

Cylinder consist 14 kg of butane means 14000 gm of butane

1 gm gives = 45.8 kj

∴ 14000 gm gives = 14000×45.8 = 641200kJ

Family need 20,000 KJ/day

So gas full fill the requirement for $\frac{641200}{20,000}$ = 32.06 days

Q-123. (b).....

Q-124. (d) $\frac{C_p}{C_v} = \frac{{}^5/_2\, R}{{}^3/_2\, R} = \frac{5}{3} = 1.67$

Q-125. (c) $K_1 = \frac{[So_3]}{[So_3][O_2]^{\frac{1}{2}}}$ and $K_2 = \frac{[So_2]^2\,[O_2]}{[So_3]^2}$, $K_2 = \frac{1}{k_1^2}$

Q-126. (c) According to lechatelier's principle

Q-127. (c)Because it gain and also lose lose the proton

$$H_2O + H_2O \rightarrow H_3O^+ + OH^-$$

Q-128. (a) P O H = P K_b + log $\frac{[salt]}{[base]}$

= 5 + log $\frac{0.02}{0.2}$ = 5 + log $\frac{1}{10}$ = 5 + (-1) = 4

P_H = 14 -P^{OH} = 14 – 4 = 10.

Q-129. (a) BF_3 is a lewis acid because 'B' has incomplete octet.

Q-130. (b) Due to higher pressure inside the boiling point is elevated.

Q-131. (b) m= $\frac{K_b \times W \times 1000}{\Delta T_b \times W}$

K_b= 2.16, w=0.11, W=15g, ΔT_b= 0.1

=$\frac{2.16 \times 0.11 \times 1000}{0.1 \times 15}$ = 158.40 = 158

Q-132.(a) In case of ideal solution

$\Delta s_{mix} > 0$

Q-133. (c) m= $\frac{18 \times 1000}{180 \times 500}$ = 0.2 m

Q-134. (a) .....

Q-135. (d) P = CRT or $\frac{P}{C}$ = RT

Chemistry (section-b)

Q-136. (c)

Q-137. (d)

$$E = \frac{hc}{\lambda}$$

$$E = hc\bar{v}$$

Q-138. (c)

$$r_n = \frac{a_0 n^2}{z}$$

$$= \frac{0.53 \times (1)^2}{3}$$

$$= 0.265\ \text{Å}$$

Q-139. (c)

$$n_p = 20$$

Q-140. (c)

$BF_3 - 120^0$

$SiH_4 - 109^028'$

$NH_3 - 107^0$

$H_2S - 92^0$

Q-141. (c)

$$\text{Bond order} \propto \frac{1}{\text{Bond length}}$$

B.O $O_2 > O_3 = KO_2 > Na_2O_2$

(O–O)

Q-142. (a)

Q-143. (d)

$M_1V_1 = M_2V_2$

$0.5 \times 200 = 0.1 \times V_2$

1000 ml $= V_2$

Volume of water added = 800 mL

= 0.8 L

Q-144. (b)

$V_1 = 380$ ml, $P_1 = 730$ mm

$V_2 = ?$ $P_2 = 760$ mm

Boyle's law = $(P_1V_1 = P_2V_2)$

$$V_2 = \frac{P_1V_1}{P_2} = \frac{730 \times 380}{760} = 365 \text{ ml}$$

Q-145. (d)

$(p + an^2/V^2)(V-nb) = nRT$

Q-146. (d)

Temperature independent concentration terms mass % and mole fraction

Q-147. (c)

Q-148. (d)

Pressure is doubled, volume is halved (at const. temp.)

Q-149. (d)

Same mass → Same element → Different

Atomicities → Same no. of atoms.

Q-150. (a)

$\sigma 1s^2, \sigma^* 1s^2, \sigma 2s^2, \sigma^* 2s^2, \sigma 2pz^2$

$\pi 2px^2 = \pi 2py^2\ \pi^* 2px^1 = \pi^* 2py^1$

2 unpaired electron.

ANSWER

1	c	31	c	61	c	91	b	121	a
2	a	32	d	62	d	92	b	122	e
3	c	33	a	63	a	93	c	123	b
4	c	34	c	64	c	94	a	124	d
5	b	35	d	65	a	95	c	125	c
6	c	36	C	66	b	96	a	126	c
7	d	37	d	67	a	97	b	127	c
8	c	38	a	68	c	98	d	128	a
9	b	39	d	69	c	99	b	129	a
10	d	40	d	70	a	100	d	130	b
11	b	41	b	71	c	101	d	131	b
12	c	42	b	72	a	102	c	132	a
13	d	43	c	73	c	103	d	133	c
14	d	44	b	74	b	104	d	134	a
15	b	45	c	75	a	105	c	135	d
16	c	46	c	76	d	106	b	136	c
17	b	47	a	77	c	107	c	137	d
18	d	48	a	78	a	108	c	138	c
19	c	49	b	79	c	109	b	139	c
20	a	50	c	80	b	110	b	140	c
21	a	51	b	81	c	111	c	141	c
22	c	52	a	82	c	112	d	142	a
23	b	53	d	83	c	113	a	143	d
24	c	54	b	84	d	114	b	144	b
25	c	55	b	85	b	115	c	145	d
26	b	56	a	86	d	116	a	146	d
27	a	57	b	87	c	117	a	147	c
28	d	58	a	88	a	118	d	148	d
29	C	59	a	89	a	119	c	149	d
30	b	60	d	90	d	120	d	150	a

तेजस्विनावधीतमस्तु

AURAIYA