# Sri Chaitanya IIT Academy.,India.

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A right Choice for the Real Aspirant

ICON Central Office - Madhapur - Hyderabad

SEC: Sr. Super60 NUCLEUS-BT JEE-MAIN Date: 28-06-2025
Time: 09.00Am to 12.00Pm WTM-34 Max. Marks: 300

# KEY SHEET

## MATHEMATICS

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | **4** | 2 | **3** | 3 | **3** | 4 | **2** | 5 | **3** |
| 6 | **4** | 7 | **2** | 8 | **2** | 9 | **1** | 10 | **3** |
| 11 | **1** | 12 | **1** | 13 | **1** | 14 | **3** | 15 | **2** |
| 16 | **4** | 17 | **1** | 18 | **2** | 19 | **1** | 20 | **3** |
| 21 | **38** | 22 | **57** | 23 | **55** | 24 | **4949** | 25 | **183** |

## PHYSICS

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 26 | **1** | 27 | **2** | 28 | **1** | 29 | **4** | 30 | **4** |
| 31 | **3** | 32 | **1** | 33 | **2** | 34 | **4** | 35 | **4** |
| 36 | **2** | 37 | **4** | 38 | **1** | 39 | **1** | 40 | **2** |
| 41 | **1** | 42 | **3** | 43 | **1** | 44 | **4** | 45 | **1** |
| 46 | **5** | 47 | **2** | 48 | **1** | 49 | **9** | 50 | **65** |

## CHEMISTRY

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 51 | **1** | 52 | **2** | 53 | **3** | 54 | **2** | 55 | **3** |
| 56 | **1** | 57 | **1** | 58 | **3** | 59 | **3** | 60 | **1** |
| 61 | **1** | 62 | **4** | 63 | **2** | 64 | **2** | 65 | **1** |
| 66 | **4** | 67 | **2** | 68 | **3** | 69 | **1** | 70 | **1** |
| 71 | **6** | 72 | **5** | 73 | **390** | 74 | **4** | 75 | **2** |

# SOLUTIONS

## MATHEMATICS

1. Put 3 in middle place. Next arrange 1, 1, 2, 3, 4, 4, 4 on either side of 3. Then no. of ways to get a palindrome = $\frac{\lfloor 7}{\lfloor 2 . \lfloor 3} = 420$

No. of such palindromes where no two 4s are adjacent $= \left(\frac{\lfloor 4}{\lfloor 2}\right) \times \left({}^{5}C_{3}\right) = 120$

Required probability $= \frac{120}{420} = \frac{2}{7}$

2. A = Event that at least one face of the selected cube is painted.
B = Event that only one face is painted

$P\left(\frac{B}{A}\right) = \frac{n(A \cap B)}{n(A)} = \frac{n(B)}{n(A)} [\because B \subset A]$

Number of cubes with

(i) only one face painted = $6 \times (n-2)^2$; $n = 4$

(ii) exactly 2 faces painted = 12(n – 2)

(iii) exactly 3 faces painted = 8

$\therefore n(A) = 6(2)^2 + 12(2) + 8 = 56$ and $n(B) = 24$ $\quad \therefore P\left(\frac{B}{A}\right) = \frac{24}{56} = \frac{3}{7}$

3. If the product is even, hence at least one number must be even and since sum is odd.
So, there can be 2 cases
Case I: 1 odd + 3even
Case II : 3 odd, 1 even

Total ways = $\left({}^{4}C_{3} . 3^{3} . 3 = 324\right) \times 2$ ways

probability $= \frac{648}{6^4 - 3^4} = \frac{648}{1215} = \frac{8}{15}$

4. $P\left(\frac{E_2}{E_1}\right) = \frac{P(E_1 \cap E_2)}{P(E_1)} \therefore P(E_1 \cap E_2) = \frac{1}{8}$

$P\left(\frac{E_1}{E_2}\right) = \frac{P(E_1 \cap E_2)}{P(E_2)} = \frac{1}{4} \Rightarrow P(E_2) = \frac{1}{2}$

5. First cube has five red faces and 1 blue face

$P(R) = \frac{5}{6}, P(B) = \frac{1}{6}$

Let second cube has n red faces and (6-n) blue faces.

$P(R) = \frac{n}{6}, P(B) = \frac{6-n}{6}$

Probability that the two top faces shows same colour =1/2

$\Rightarrow \frac{5}{6} \times \frac{n}{6} + \frac{1}{6} \times \frac{6-n}{6} = \frac{1}{2} \quad \Rightarrow 4n = 12 \quad \Rightarrow n = 3$

6. $\dfrac{P\left(E\cap\overline{F}\right)+P\left(\overline{E}\cap\overline{F}\right)}{P\left(\overline{F}\right)}=\dfrac{P\left(\overline{F}\right)}{P\left(\overline{F}\right)}=$

7. $P\left(\dfrac{A}{B}\right)=\dfrac{A\left(A\cap B\right)}{P\left(B\right)}=\dfrac{2}{14}=\dfrac{1}{7}$

8. $n\left(s\right)={}^{10}C_4=210$

Last two digits of the number must be 20, 32, 40, 52, 60, 64, 72, 76 for which favorable cases

Are ${}^{7}C_2+{}^{6}C_2+{}^{5}C_2+{}^{4}C_2+{}^{3}C_2+{}^{3}C_2+{}^{2}C_2+{}^{2}C_2=60$

$\therefore$ required probability = 2/5

9. Required probability =

$\dfrac{3}{5}\times\dfrac{3}{5}\times\dfrac{3}{5}\times\dfrac{3}{5}=\dfrac{81}{625}$ ($\therefore$ each ball can be black or white with probability 9/5)

10. Let $n=\left(2^3\times3^4\times5^2\times7^1\right)$

Number of even positive integral divisors of $n=\left(3\times5\times3\times2\right)=a$

Number of positive integral divisors of 'n' where each divisor is a multiple of

10 = [number of all positive integral divisors of $\dfrac{n}{10}=2^2.3^4.5^1.7^1$]

$=\left(3\times5\times2\times2\right)=b$ $\therefore$ required probability = (b/a) 2/3

11. Consider 10 placed numbered from 1 to 10. A is not in places 1, 10 as per given condition. Then to arrange B there are 9 places of which 2 adjacent places to A are favorable to the event that A, B are adjacent

$\therefore$ required probability = 2/9

12. $P=\dfrac{\frac{6}{10}\times\frac{5}{9}}{\frac{4}{10}\times\frac{6}{9}+\frac{6}{10}\times\frac{5}{9}}=\dfrac{5}{9}$ m = 5, n = 9 m + n = 14

13. $x+y=24,\ x,\ y\in N$

$AM>GM\Rightarrow xy\le144$ $xy\ge108$

Favorable pairs of (x, y) are

(13, 11), (12, 12), (14, 10), (15, 9), (16, 8) ,

(17, 7), (18, 6), (6, 18), (7, 17), (8, 16), (9, 15), (10, 14), (11, 13)

i.e. 13 cases

total choices for x + y = 24 is 23

Probability = $\dfrac{13}{23}=\dfrac{m}{n}$ $n-m=10$

14. $P\left(A\cup B\right)=P\left(A\right)+P\left(B\right)-P\left(A\right)\times P\left(B\right)$

$\Rightarrow0.7=0.4+p-0.4p$ $\therefore0.6\ p=0.3\Rightarrow p=\dfrac{1}{2}$

15. Conceptual

16. 'n' cards are drawn and are found all spade, thus remaining spades = 13 – x

Remaining total cards = 52 – x

Now given that P(lost card is space) = $\frac{11}{50}$ i.e. $\frac{^{13-n}C_1}{^{52-n}C_1} = \frac{11}{50}$

$50(13-n) = 11(52-n) \quad 39n = 78 \quad n = 2$

17. $P(A) = \frac{7}{10}, P(B) = \frac{4}{10} \qquad P(A \cup \bar{B}) = \frac{5}{10}$

$$P\left(\frac{B}{A \cup \bar{B}}\right) = \frac{P(B \cap (A \cup \bar{B}))}{P(A \cup \bar{B})} = \frac{P((B \cap \bar{B}) \cup (B \cap A))}{P(A \cup \bar{B})} = \frac{P(A \cap B)}{P(A \cup \bar{B})}$$

$$= \frac{P(A) - P(A \cap \bar{B})}{P(A) + P(\bar{B}) - P(A \cap \bar{B})} = \frac{\frac{7}{10} - \frac{5}{10}}{\frac{7}{10} + \left(1 - \frac{4}{10}\right) - \frac{5}{10}} = \frac{2}{8} = \frac{1}{4}$$

18. $P(A \cap \bar{B}) \cup (\bar{A} \cap B) = P(A).P(\bar{B}) + P(\bar{A}).P(B)$

19. $12x^2 - 7x + 1 = 0 \quad x = \frac{1}{3}, \frac{1}{4} \qquad \text{Let } P\left(\frac{A}{B}\right) = \frac{1}{3} \ \& \ P\left(\frac{B}{A}\right) = \frac{1}{4}$

$\frac{P(A \cap B)}{P(B)} = \frac{1}{3} \ \& \ \frac{P(A \cap B)}{P(A)} = \frac{1}{4} \qquad \Rightarrow P(B) = 0.3 \qquad \& \ P(A) = 0.4$

Now $\frac{P(\bar{A} \cup \bar{B})}{P(\bar{A} \cap \bar{B})} = \frac{P(\overline{A \cap B})}{P(\overline{A \cup B})} = \frac{1 - P(A \cap B)}{1 - P(A \cup B)} = \frac{1 - 0.1}{1 - 0.6} = \frac{9}{4}$

20. $P\left(\frac{E_1}{E_2}\right) = \frac{P(E_1 \cap E_2)}{P(E_2)}$

21. A = Event that at least one ball is blue
B = Event that the 3 balls drawn are of different colours
n(A) = [no. of ways to get 1 blue and 2 other or 2 blue and 1 other or 3 blue]
$= \left(^5C_1 \times {}^7C_2 + {}^5C_2 \times {}^7C_1 + {}^5C_3\right) = 185 \qquad n(B) = \left(^3C_1 \times {}^4C_1 \times {}^5C_1\right)$

$$P\left(\frac{B}{A}\right) = \frac{n(A \cap B)}{n(A)} = \frac{n(B)}{n(A)} = \frac{12}{37} \Rightarrow 18\left(\frac{1}{p} - 1\right) = \frac{18 \times 25}{12} = 37.50$$

22. $E : (P \cup Q)$ contains 4 elements from {1, 2, …., 6}

$F : (P \cap Q)$ contains only 1 element

$E \cap F : (P \cup Q)$ contain 4 elements and only one of these 4 elements belongs to $(P \cap Q)$

$$P\left(\frac{F}{E}\right) = \left[\frac{n(E \cap F)}{n(E)}\right] = \left[\frac{^6C_4 \times {}^4C_1 \times 2^3}{^6C_4 \times 3^4}\right] = \left(\frac{32}{81}\right) = \left(\frac{\alpha}{\beta}\right)$$

$\Rightarrow \beta - \alpha = 81 - 31 = 49$

Sum of all positive integral divisors of 49 = (1 + 7 + 49) = 57

23. $P(\bar{A}_1 \cap \bar{A}_2 \cap \bar{A}_3 \cap \bar{A}_4 \cap \bar{A}_5 \cap \bar{A}_6 \cap \bar{A}_7 \cap \bar{A}_8 \cap \bar{A}_9 \cap \bar{A}_{10})$

$P(\bar{A}_1).P(\bar{A}_2).P(\bar{A}_3).P(\bar{A}_4).P(\bar{A}_5).P(\bar{A}_6).P(\bar{A}_7).......P(\bar{A}_9).P(\bar{A}_{10})$

$=\left(\frac{1}{2}\times\frac{2}{3}\times\frac{3}{4}\times\frac{4}{5}\times\frac{1}{6}\times\frac{6}{7}\times\frac{7}{8}\times\frac{8}{9}\times\frac{9}{10}\times\frac{10}{11}\right)=\frac{1}{55}$

24. $1\le a < ar^2 \le 40$

$(\text{If } r\in N)$

**If r = 2**

$1\le a<2a<4a\le 40$

$a\in\{1,........,10\}$ (10 GP)

**If r = 3**

$1\le a<3a<9a\le 40$

$a\in\{1,2,3,4\}$ (4 GP)

**If r = 4**

$1\le a<4a<16a\le 40$

$a\in\{1,2\}$ (2 GP)

**If r = 5**

$1\le a<5a<25a\le 40$

$a\in\{1\}$ (1 GP)

**If r = 6**

$1\le a<6a<36a\le 40$

$a\in\{1\}$ (1 GP)

$\left(P=\frac{18}{9880}=\frac{9}{4940}\right)$ as per NTA for $r\in N$

$m+n=4949$

25. Let $P(W_1)=x$

$\sum_{i=1}^{120} P(W_i)=1$

$x+2x+2^2x+2^3x+........+2^{119}x=1$

$\frac{x(2^{120}-1)}{(2-1)}=1\Rightarrow x=\frac{1}{2^{120}-1}.......(1)$

Rank of CDBEA

$A.......... = \underline{|4} = 24$

$B.......... = \underline{|4} = 24$

$CA.......... = \underline{|3} = 6$

$CB.......... = \underline{|3} = 6$

$CDA.......... = \underline{|2} = 2$

CDBAE = 1

CDBEA = 1

# PHYSICS

26. $A_1 \xrightarrow{\lambda_1} A_2 \xrightarrow{\lambda_2} A_3 \quad N_0 \ 0 \ 0$

At $t = 0$

$N_1 \ N_2 \ N_3$

$$+\frac{dN_2}{dt} = \lambda_1 N_1 - \lambda_2 N_2$$

$$\frac{dN_2}{dt} + \lambda_2 N_2 = \lambda_1 N_1$$

$$\frac{dN_2}{dt} + \lambda_2 N_2 = \lambda_1 e^{-\lambda_1 t}$$

Integrating for $N_2$ from

$t = 0$ to $t = t$ $\quad N_2 = \frac{\lambda_1 N_0}{\lambda_2 - \lambda_1}\left[e^{-\lambda_1 t} - e^{-\lambda_2 t}\right]$

at $A_2$ maximum $\frac{dN_2}{dt} = 0 \Rightarrow t = \frac{\ln\left(\frac{\lambda_2}{\lambda_1}\right)}{\lambda_2 - \lambda_1}$

27. From the equation

Energy of proton + $(7 \times 5.60) = 2 \times [4 \times 7.06]$

Energy of proton = 17.28 MeV

28. $R = R_0 (A)^{1/3}$ $\quad \frac{R_{Al}}{R_{Te}} = \frac{(27)^{1/3}}{(125)^{1/3}} = \frac{3}{5}$

$R_{Te} = \frac{5}{3} \times 3.6$ or $R_{Te} = 6$ fm

29. Law of conservation of momentum gives

$m_1 v_1 = m_2 v_2 \Rightarrow \frac{m_1}{m_2} = \frac{v_2}{v_1}$

$m = \frac{4}{3}\pi r^3 p$ or $m \propto r^3$ $\quad \frac{m_1}{m_2} = \frac{r_1^3}{r_2^3} = \frac{v_2}{v_1}$

30. $\frac{3}{2}KT = 20.7 \times 10^{-14}$ J, $T = \frac{2 \times 20.7 \times 10^{-14}}{3 \times 1.38 \times 10^{-23}} = 10^9$ K

31. Combining two given equations

We have $3\ {}_1H^2 = 2^{H_e^4} + p + n$

$\Delta m = 3 \times 2.014 - 4.001 - 1.007 - 1.008 = 0.026$ u

Energy released by 3 deutrons

$= 0.026 \times 931.5 \times 1.6 \times 10^{-13}$ J $= 3.9 \times 10^{-12}$ J

Now, $\left(10^{16} \times t\right) = \left(\frac{10^{40}}{3}\right)\left(3.9 \text{ kt } 10^{-12}\right)$

Solving we get, $t \approx 1.3\times10^{12}s$

32. Probability of survival

$$P = \frac{\text{number of nuclei left}}{\text{initial number of nuclei}} = \frac{N_0e^{-\lambda t}}{N_0}$$

$$\text{At } t = \text{one mean life} = \frac{1}{\lambda} P = e^{-1} = \frac{1}{e}$$

33. Energy released = final binding energy – initial binding energy
= (7.0 – 1.1)4 = 23.6 MeV

34. $(KE)_\alpha = \frac{P^2}{2m_\alpha} = \frac{P^2}{2\times4}$ $(KE)_d = \frac{P^2}{2m_d} = \frac{P^2}{\alpha(A-4)}$

$\frac{(KE)_\alpha}{(KE)_d} = \left(\frac{A-4}{4}\right)$ Also, $A_0 = \lambda N_0$ $N_0 = A_0/\lambda$

$A = A_0e^{-\lambda_t}$ $A_0/n = A_0e^{-\lambda_t}$

$n^{-1} = e^{\lambda t} \Rightarrow n = e^{\lambda_t} \Rightarrow \log n = \lambda t$ $\therefore t = \log n/\lambda$

35. Conceptual

36. $A = A_0e^{-\lambda_t}$ and $I = i_0e^{-t/\tau}$

Given, $\frac{A}{i} = \frac{a_0e^{-\lambda t}}{i_0e^{-t/\tau}} = \frac{A_0}{i_0}e^{t(-\lambda+1/\tau)}$

for time independent value of $\frac{i}{A}$. $-\lambda + \frac{1}{\tau} = 0$ $\therefore \lambda = \frac{1}{\tau}$ $T_{mean} = \frac{1}{\lambda} = \tau = 0.4$ s

37. Let the initial no be $N_o$

For X, $\lambda_x = \frac{0.693}{T_x}$, $\lambda_y = \frac{0.693}{T_y}$ $0.2 = e^{-\lambda_1 t}$ $0.8 = e^{-\lambda_2 t}$

38. Conceptual

39. Conceptual

40. Released energy =
$140\times7+8\times40-180\times6$
$980+320-1080 = 220MeV$

41. $A = \lambda N = \lambda N_0 e_{in}^{-\lambda t}$
$ln A = ln \lambda N_0 - \lambda t$

42. $\phi = B.E_{products} - B.E_{reac\tan ts}$

43. $\frac{dN}{dt} = t^2 - \lambda N$ for $\frac{dN}{dt}$ to be minimum : $\frac{ds^2N}{dt^2} = 0$

$$\Rightarrow \frac{d^2N}{dt^2} = 2t - \lambda(t^2 - \lambda N) = 0 \quad \text{or } N = \frac{2t_0 - \lambda t_0^2}{\lambda^2}$$

46. $I^{131} \xrightarrow[T_{1/2}=8\text{ days}]{} Xe^{131} + \beta$ $A_0 = 2.4\times10^5$ bq $= \lambda N_0$

Let the volume is V, $t = 0$ $A_0 = \lambda N_0$

$t = 11.5\text{ h} \quad A = \lambda N \quad 115 = \lambda\left(\frac{N}{V}\times 2.5\right),\ 115 = \frac{\lambda}{V}\times 2.5\times\left(N_0 e^{-\lambda t}\right)$

$115 = \frac{(N_0\lambda)}{V}\times(2.5)\times e^{-\frac{\ln 2}{8\text{ day}}(11.5\text{ h})},\ 115 = \frac{(2.4\times 10^5)}{V}\times(2.5)\times e^{-1/24}$

$V = \frac{2.4\times 10^5}{115}\times 2.5\left[1-\frac{1}{24}\right], = \frac{2.4\times 10^5}{115}\times 2.5\left[\frac{23}{24}\right] = \frac{10^5\times 23\times 25}{115\times 10^2} = 5\times 10^3\text{ ml} = 5\text{L}$

47. Let initial numbers are $N_1$ and $N_2$.

$\frac{\lambda_1}{\lambda_2} = \frac{\tau_2}{\tau_1} = \frac{2\tau}{\tau} = 2 = \frac{T_2}{T_1}$ $(T = \text{half line})$

Initial activity is same $\therefore \lambda_1 N_1 = \lambda_2 N_2$

Activity at time t, $A = \lambda N^+ = \lambda N_0 e^{-\lambda t}$

$A_1 = \lambda_1 N_1 e^{-\lambda_1 t} \quad \Rightarrow R_1 - = \frac{dA_1}{dt} = \lambda_1^2 N_1 e^{-\lambda_1 t}$

Similarly, $R_2 = \lambda_2^2 N_2 e^{-\lambda_2 t}$

After $t = 2\tau$ $\quad \lambda_1 t = \frac{1}{\tau_1}(t) = \frac{1}{\tau}(2\tau) = 2, \quad \lambda_2 t = \frac{1}{\tau_2}(t) = \frac{1}{2\tau}(2\tau) = 1$

$\frac{R_P}{R_Q} = \frac{\lambda_1^2 N_1 e^{-\lambda_1 t}}{\lambda_2^2 N_2 e^{-\lambda_2 t}},\ \frac{R_P}{R_Q} = \frac{\lambda_1}{\lambda_2}\left(\frac{e^{-2}}{e^{-1}}\right) = \frac{2}{e}$

48. $A \xrightarrow{\lambda_1} B \xrightarrow{\lambda_2} C \qquad \frac{dN_B}{dt} = \lambda_1 N_A - \lambda_2 N_B = 0$

$\frac{N_A}{N_B} = \frac{\lambda_2}{\lambda_1} \Rightarrow \frac{\lambda_1 N_A}{\lambda_2 N_B} = 1$

49. $\Delta m = 2(2.015) - (3.017 + 1.009) = 0.004\text{ amu}$

Energy released $= (0.004\times 931.5)\text{MeV} = 3.726\text{ MeV}$

Number of deuterons in $1\text{kg} = \frac{6.02\times 10^{26}}{2} = 3.01\times 10^{26}$

Energy released per kg of deuterium fusion

$= (3.01\times 10^{26}\times 1.863) = 5.6\times 10^{26}\text{MeV} = 9.0\times 10^{13}\text{J}$

50. Mass of one atom of $U^{235}$ is 235.121420 a.m.u.

Mass of one neutron = 1.008665 a.m.u.

Sum of the masses of $U^{235}$ and neutron

= 236.130085 = 236.130 a.m.u.

Mass of one atom of $U^{236}$ is

236.123050 a.m.u. = 236.123 a.m.u.

Mass defect = 236.136 – 236.123

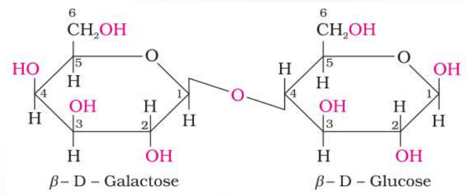
= 0.007 a.m.u.

Therefore, energy required to remove one neutron is

$0.007\times 931\text{ MeV} = 6.517\text{ MeV} = 6.5\text{ MeV}$

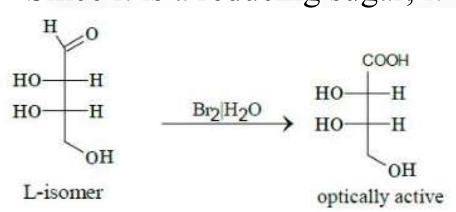
# CHEMISTRY

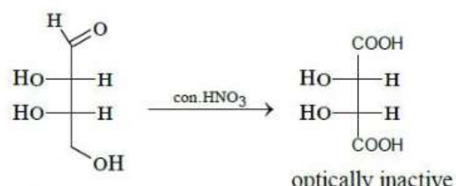
51. On oxidation with nitric acid, glucose as well as gluconic acid both yield a dicarboxylic acid, saccharic acid.
52. Monosaccharides**:** A carbohydrate that cannot be hydrolysed further to give simpler unit of polyhydroxy aldehyde or ketone. ex glucose, fructose, ribose, etc.
53. Despite having the aldehyde group, glucose does not give Schiff's test
54. $2^0$ amine will give +ve nitrosamine test
55. The linkage is between $C_1$ of galactose and $C_4$ of glucose.



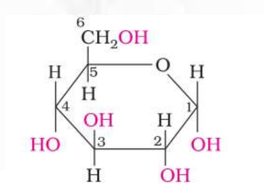
Lactose

56. NCERT Page no-289
57. Inversion of sugar.
58. Muta rotation result
59. Since it is a reducing sugar, it can show mutarotation. It is a maltose.

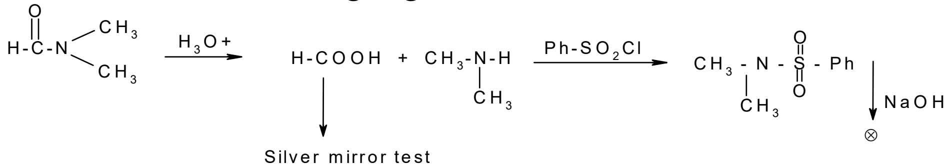



60. L-isomer
61.

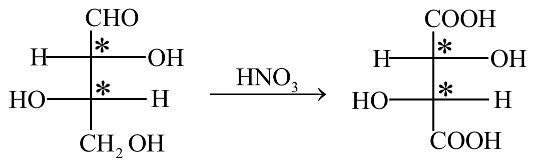

$\alpha$ – D – (+) – Glucopyranose

62. Carbyl amine test is given by aliphatic and aromatic primary amines
63. D-Fructose and D-mannose give the same osazone as D-glucose. The difference in these sugars present on the first and second carbon atoms are marked when osazone crystals are formed.
64. Sucrose is a non reducing sugar



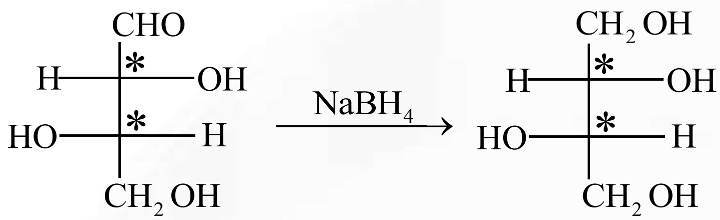

65.

66.



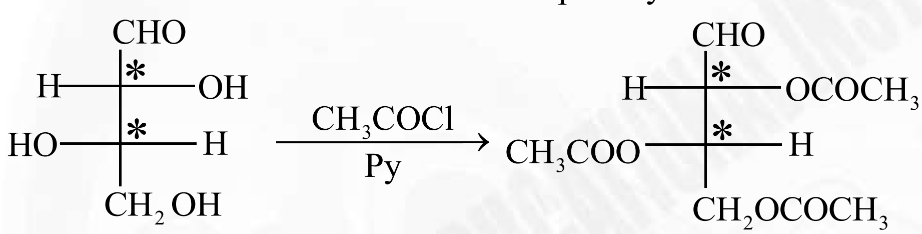
(x) (A)

L-tetrose with two chiral centre



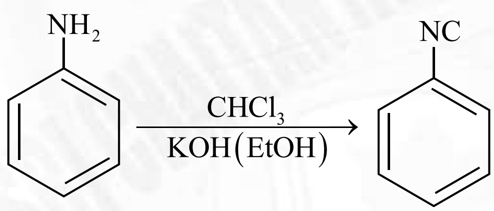
(B)

optically active



(B)

67. A) $R-NH_2 \xrightarrow[HCl]{NaNO_2} R-N_2^{\oplus}Cl^{(-)}$



B)

C) Only primary amine gives carbyl amine test

$Ph-SO_2Cl \rightarrow$ Hinsberg reagent

D) Benzene sulphonyl chloride

E) Tertiary amine do not react with $Ph-SO_2Cl$

68. (P) Gabriel phthalimide synthesis is used for the preparation of pliphatic primary amines. Aromatic primary amines cannot be prepared by this method.

(Q) $2^0$-amines reacts with Hinsberg's reagent to give solid insoluble in NaOH

(R) Aromatic primary amine react with nitrous acid at low temperature (273 – 298 K) to form diazonium salts, which form red dye with $\beta$ Napththol

69. Conceptual

70. Conceptual

71. Conceptual

72. $\beta-D-(+)-$ glucose contains five chiral carbons including anomeric carbon.

73. Molecular weight of $CH_3CO-$ group = 43, since 'H' is replaced by $-COCH_3$, Therefore, increase in weight per $COCH_3$ is 42.

Molecular weight of glucose pentaacetate

$=180+5\times42=180+210=390\text{ g mol}^{-1}$

74. Aniline and N-methylaniline can be ….. $1^0$ and $2^0$ amines can be distinguished using Azo dye test, Hoffmann's mustard oil reaction, carbyl amine test and Hinsberg reagent

75. Conceptual