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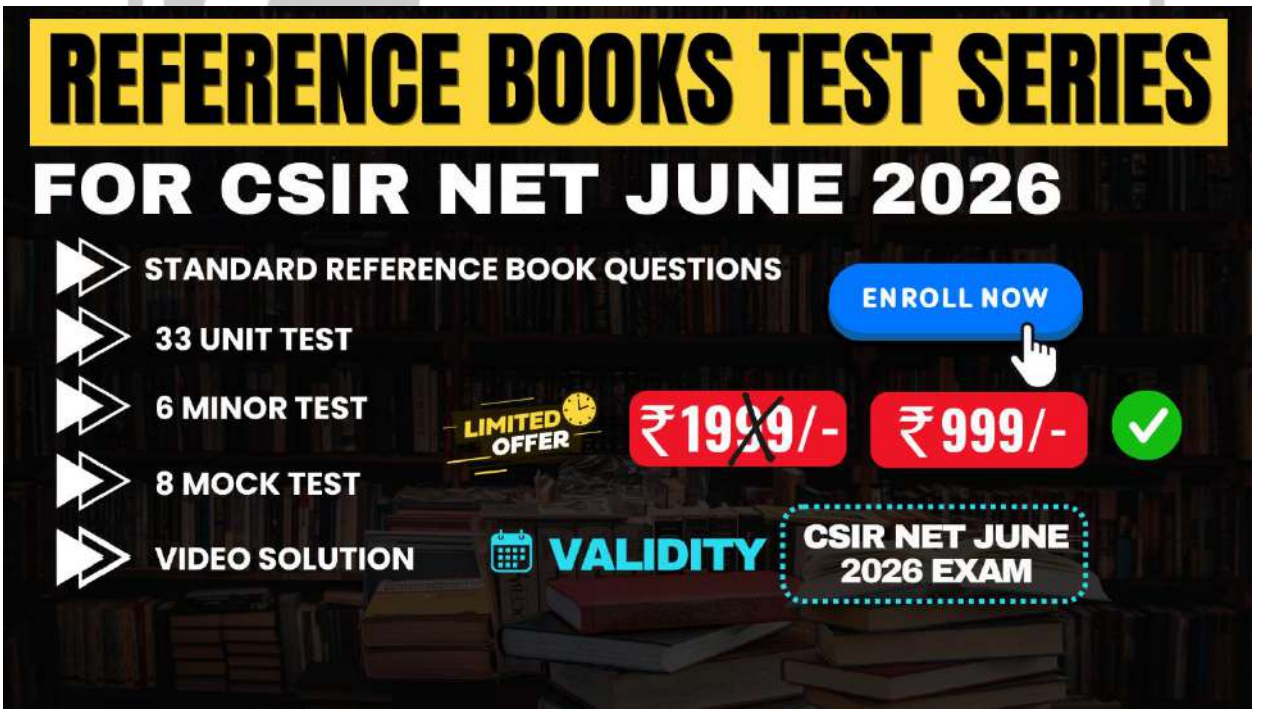
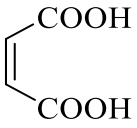
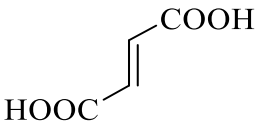
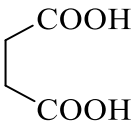
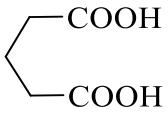
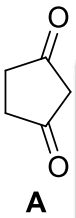
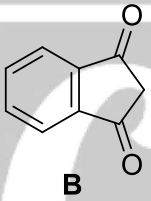
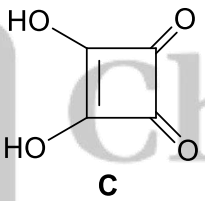


General Organic Chemistry PYQ 2011- 2025

1. Among the following diacids, the one that forms an anhydride fastest on heating with acetic anhydride is: **[CSIR NET JUNE – 2012]**

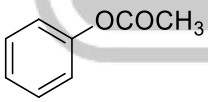
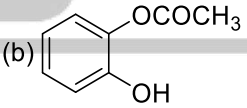
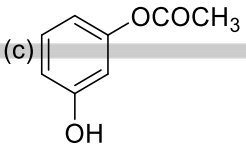
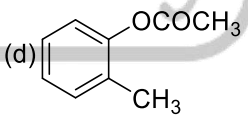
(a)  (b)  (c)  (d) 

2. The correct order of acidity of the compounds A – C is: **[CSIR NET DEC – 2012]**


A

B

C

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

3. Among the following esters, the one that undergoes acid hydrolysis fastest is: **[CSIR NET JUNE – 2013]**

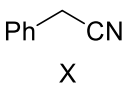
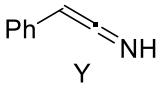
(a)  (b)  (c)  (d) 

(1) 1 (2) 2 (3) 3 (4) 4

4. The pair of solvents in which PCl_5 does NOT ionize, is: **[CSIR NET JUNE – 2014]**

(1) CH_3CN, CH_3NO_2 (2) CH_3CN, CCl_4 (3) C_6H_6, CCl_4 (4) CH_3CN, C_6H_6

5. Consider the statements about the following structures X and Y: **[CSIR NET JUNE – 2014]**


X

Y

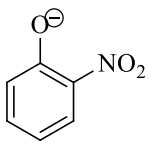
(A) X and Y are resonance structures (B)X and Y are tautomers

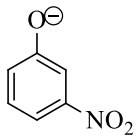
(C)Y is more basic than X (D)X is more basic than Y

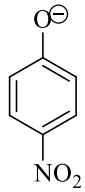
The correct statement (s) among the above is/are

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

6. The correct order of basicity for the following anion is **[CSIR NET DEC – 2014]**


(I)

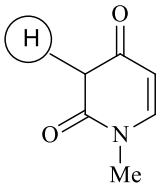

(II)

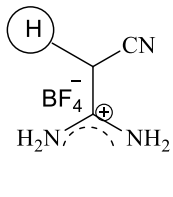

(III)

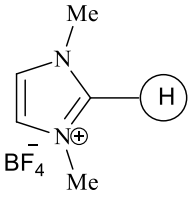
(a) *II* > *III* > *I* (b) *I* > *II* > *III* (c) *II* > *I* > *III* (d) *III* > *II* > *I*

7. The increasing order of pKa values of the circled hydrogen in the following compound is

[CSIR NET DEC – 2014]

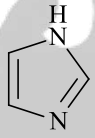

(I)

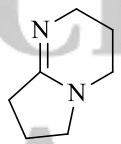

(II)

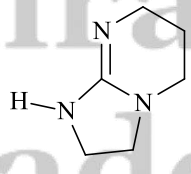

(III)

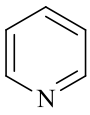
(a) *I* < *II* < *III* (b) *I* < *III* < *II* (c) *II* < *I* < *III* (d) *II* < *III* < *I*

8. The decreasing order of basicity of the following compound is **[CSIR NET DEC – 2014]**


(I)

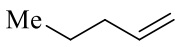

(II)

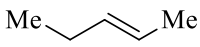

(III)

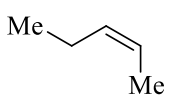

(IV)

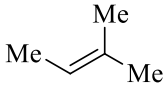
(a) *I* > *II* > *III* > *IV* (b) *IV* > *I* > *II* > *III* (c) *III* > *II* > *I* > *IV* (d) *IV* > *III* > *II* > *I*

9. The correct order of heat of hydrogenation for the following compound is **[CSIR NET DEC – 2014]**


(I)


(II)

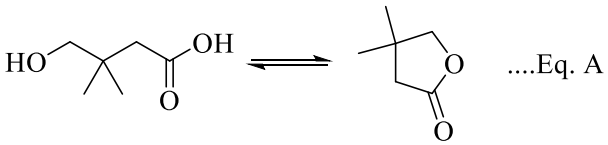

(III)

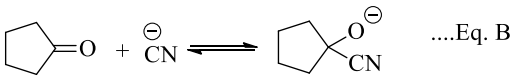

(IV)

(a) *I* > *II* > *III* > *IV* (b) *I* > *III* > *II* > *IV* (c) *IV* > *I* > *III* > *II* (d) *IV* > *II* > *I* > *III*

10. Correct statement on the effect of addition of aq. HCl on the equilibrium is

[CSIR NET JUNE – 2015]


....Eq. A


....Eq. B

(a) Equilibrium will shift towards right in case of both A and B

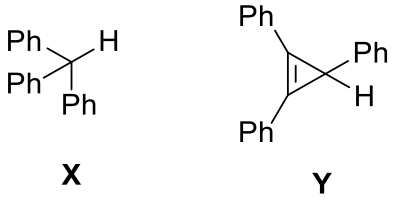
(b) Equilibrium will shift towards left in case of both A and B

(c) Equilibrium will shift towards right in A and left in case of B

(d) Equilibrium will shift towards right in B and left in case of A.

11. The correct statements are about the reaction of X and Y with $NaNH_2$ are?

[CSIR NET JUNE – 2016]



A. X reacts faster than Y

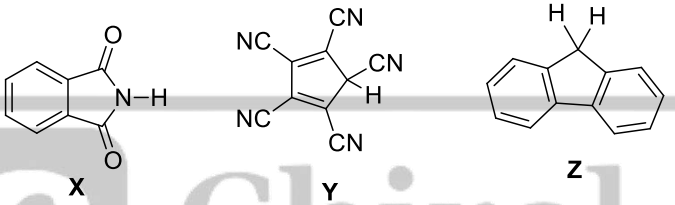
B. Y reacts faster than X

C. X and Y behave as Lewis acids

D. X is stronger Bronsted acid than Y

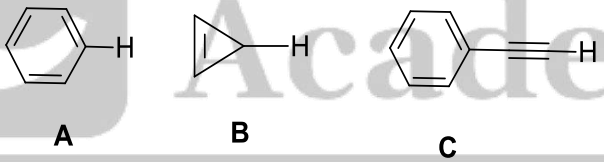
(1) A and C (2) A and D (3) B and C (4) B and D

12. The correct order of pKa values for the compounds X, Y and Z is: **[CSIR NET JUNE – 2016]**



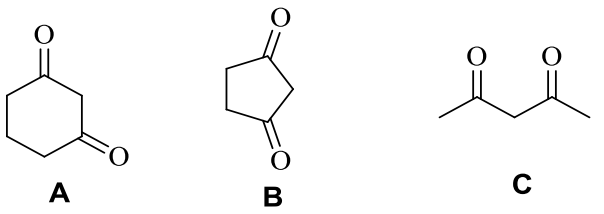
(1) X >Y >Z (2) Y >Z >X (3) Z >X >Y (4) Y >X >Z

13. The correct order of the bond dissociation energies for the indicated C-H bond in following compounds is: **[CSIR NET DEC – 2016]**



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

14. The correct order of the acidity for the following compounds is: **[CSIR NET DEC – 2016]**



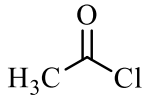
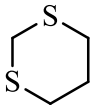
(1) B > C > A (2) C > B > A (3) B > A > C (4) C > A > B

15. The correct order of pKa values for the following species is: **[CSIR NET JUNE – 2017]**

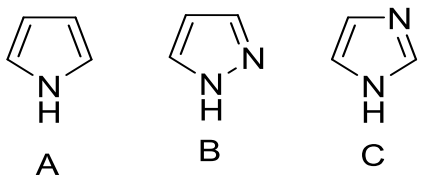
(1) $PhNH_3^+$<i-$Pr_2NH_2^+$<$Ph_2NH_2^+$ (2) $Ph_2NH_2^+$<$PhNH_3^+$<i-$Pr_2NH_2^+$

(3) i-$Pr_2NH_2^+$<$Ph_2NH_2^+$<$PhNH_3^+$ (4) $PhNH_3^+$<$Ph_2NH_2^+$<i-$Pr_2NH_2^+$

16. Among the following, the synthetic equivalent of acetyl anion is **[CSIR NET JUNE – 2017]**

(a)  (b) CH_3CN (c)  (d) $CH_3CH_2NO_2$

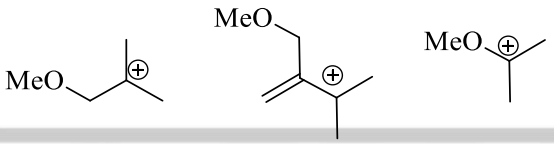
17. The correct order of basicity for the following heterocycles is: **[CSIR NET DEC – 2017]**



A B C

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

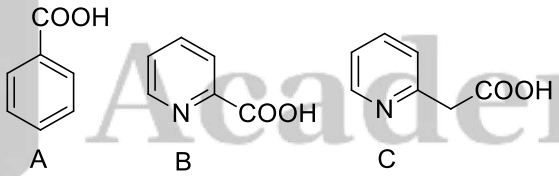
18. The correct order of stability of the following carbocations is: **[CSIR NET DEC – 2017]**



A B C

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

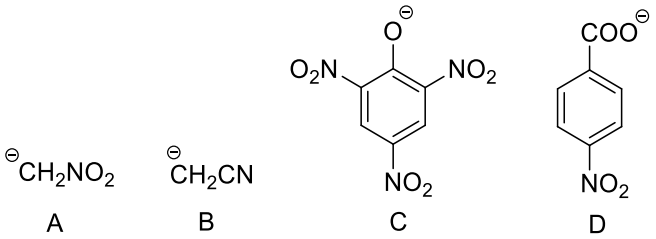
19. The correct order for the rate of thermal decarboxylation of the following compounds is: **[CSIR NET DEC – 2019]**



A B C

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

20. The correct order of basicity of the following anions is: **[CSIR NET DEC – 2019]**



A B C D

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

21. The synthetic equivalent of the given synthon is **[CSIR NET JUNE (Nov) – 2020]**

(a) t-butyl isocyanide (b) t-butyl cyanide (c) t-butyl cyanate (d) t-butyl isocyanate

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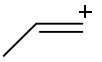
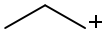
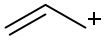
22. The correct order of stability of the carbocations A-C is **[CSIR NET JUNE (Nov) – 2020]**



A



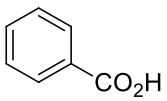
B



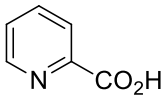
C

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

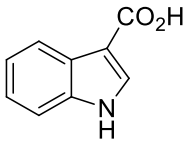
23. The following carboxylic acids undergo decarboxylation upon heating. The ease of decarboxylation is in the order **[CSIR NET JUNE (Nov) – 2020]**



A



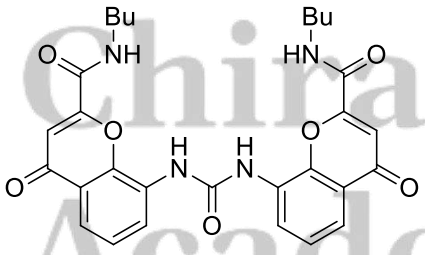
B



C

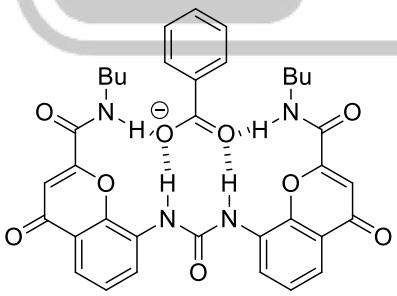
(1) B >A >C (2) C > B>A (3) A > C > B (4) C>A>B

24. The correct depiction of the strongest hydrogen bonded complex between benzoate anion and receptor A is **[CSIR NET JUNE (Nov) – 2020]**

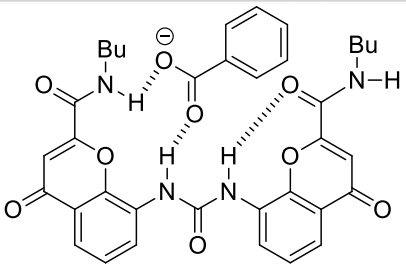


A

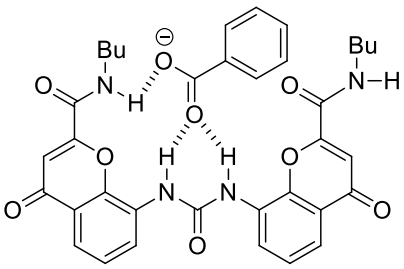
1.



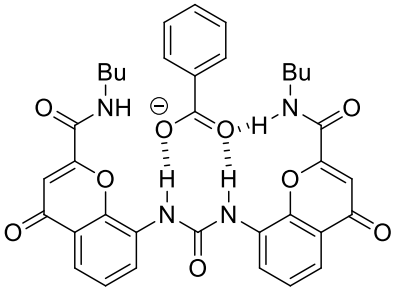
2.



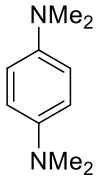
3.



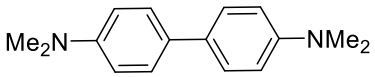
4.



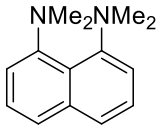
25. The correct order of basicity for following compounds is **[CSIR NET JUNE (Nov) – 2020]**



A



B



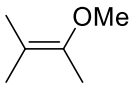
C

Choose the correct answer from the options given below **[CSIR NET JUNE (Nov) – 2020]**

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

26. The correct order of reactivity of the following olefins towards ozone is

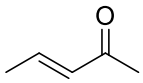
[CSIR NET JUNE(Nov) – 2020]



A

B

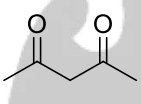
C



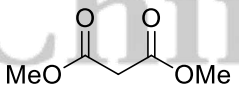
D

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

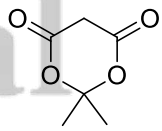
27. The pKa values for the following compounds **[CSIR NET FEB – 2022]**



A



B

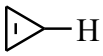
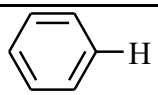
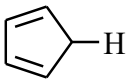


C

(A) B > C > A (B) A > B > C (C) C > B > A (D) B > A > C

28. The correct match for the bond dissociation Energies (BDE) of the C–H bonds compounds in Column I, with the values in Column II is (As an example, the BDE for Me-H is 105.0 kcal/mol)

[CSIR NET FEB – 2022]

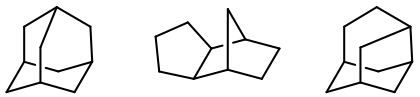
	Column		Column II BDE (kcal/mol)
a.		i.	110.9
b.		ii.	71.1
c.		iii.	132.0
d.	$CH \equiv C-H$	iv.	90.6

(a) a – iii; b – iv; c – i; d – ii (b) a – i; b – iii; c – ii; d – iv

(c) a – iii; b – i; c – iv; d – ii (d) a – iv; b – i; c – ii; d – iii

29. The correct order for the magnitude of heats of formation of the following structural isomers is

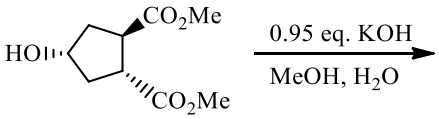
[CSIR NET JUNE – 2022]

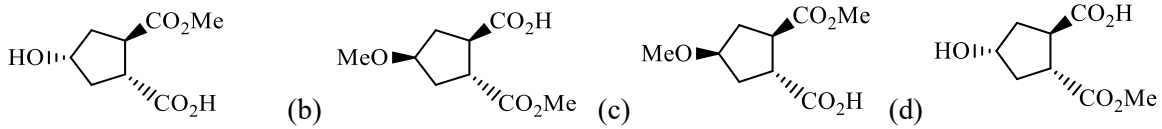


A B C

(a) A > B > C (b) B > A > C (c) C > A > B (d) A > C > B

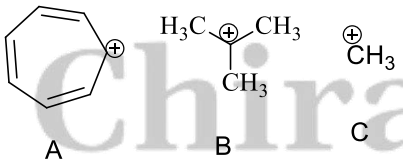
30. The major product formed in the given reaction is **[CSIR NET JUNE – 2023]**





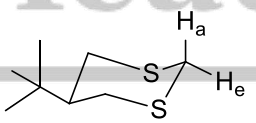
31. In the gas phase, the correct order of hydride affinity for the given carbocations is

[CSIR NET JUNE – 2023]



1. A > C > B 2. B > C > A 3. C > B > A 4. C > A > B

32. In the following dithiane, the correct statement about acidity of Ha and He protons and the reason for the stability of the carbanion formed by deprotonation is: **[CSIR NET JUNE – 2024]**



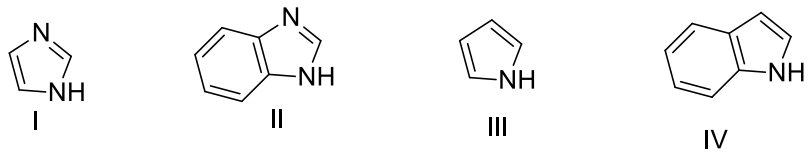
1. Ha is more acidic; axial carbanion is delocalised into the σ* orbital of C-S bond
2. He is more acidic; equatorial carbanion is delocalised into the σ* orbital of C-S bond
3. Ha is more acidic; axial carbanion is delocalised into the empty 3d orbital of sulfur
4. He is more acidic; equatorial carbanion is delocalised into the empty 3d orbital of sulphur

33. The correct order for the X–H bond dissociation energies (BDE) in the following compounds is:

[CSIR NET DEC – 2024]

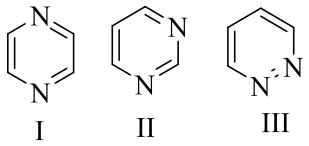
1. $Me_3Si-H > Me_3C-H > Me_3Sn-H$
2. $Me_3C-H > Me_3Si-H > Me_3Sn-H$
3. $Me_3C-H > Me_3Sn-H > Me_3Si-H$
4. $Me_3Sn-H > Me_3C-H > Me_3Si-H$

34. The correct option for the pKa of following pairs of compounds is **[CSIR NET DEC – 2024]**



1. I > II and III > IV 2. I > II and IV> III 3. II > I and III > IV 4. II > I and IV > III

35. The correct order of basicity for the following compounds is **[CSIR NET JUNE – 2025]**



I II III

1. I > III > II 2. II > I > III 3. III > I > II 4. III > II > I

ANSWER KEY

1	2	3	4	5	6	7	8	9	10
1	3	3	3	4	1	3	3	2	1
11	12	13	14	15	16	17	18	19	20
2	3	4	3	2	4	3	4	1	4
21	22	23	24	25	26	27	28	29	30
1	4	2	1	4	1	4	4	4	1
31	32	33	34	35					
4	2	2	1	4					

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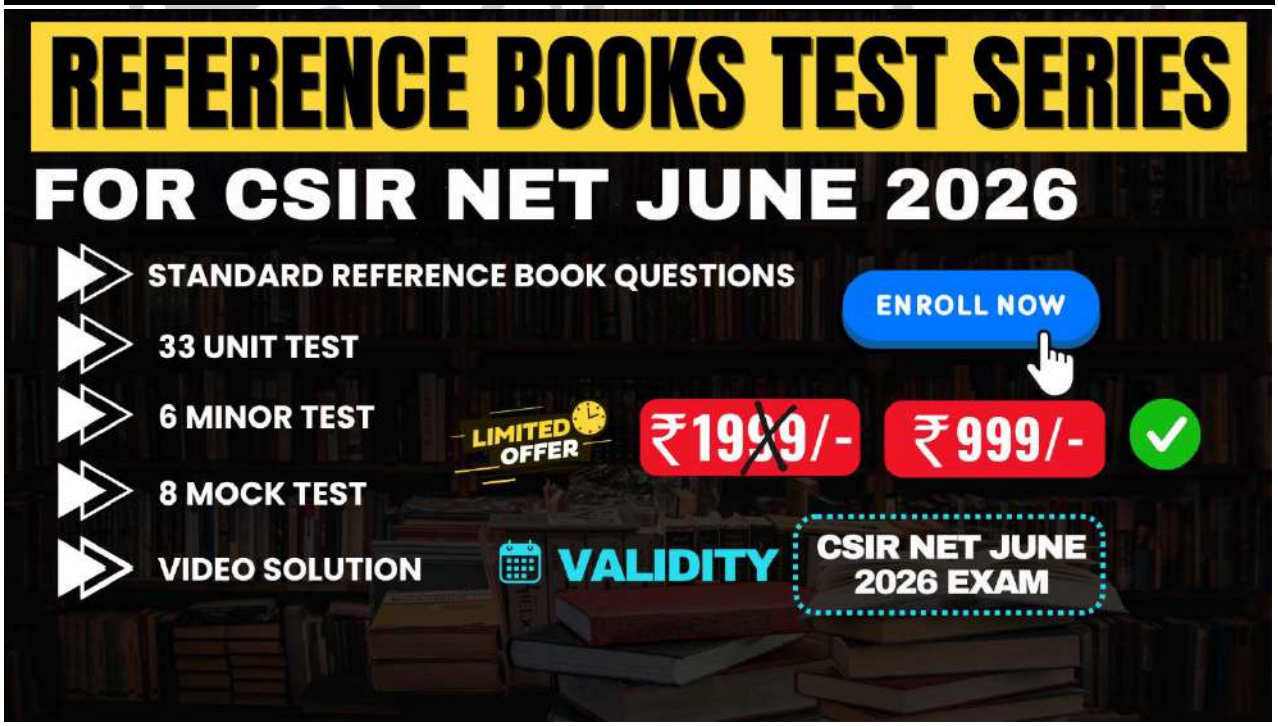
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