

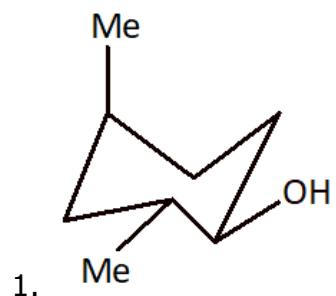
Chemical Science

Dec 2023

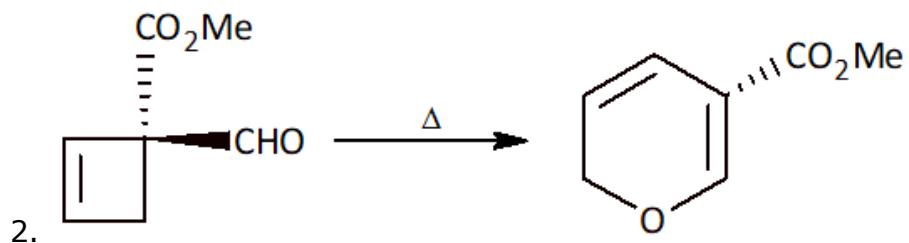
Memory Based Question



Memory Based Questions



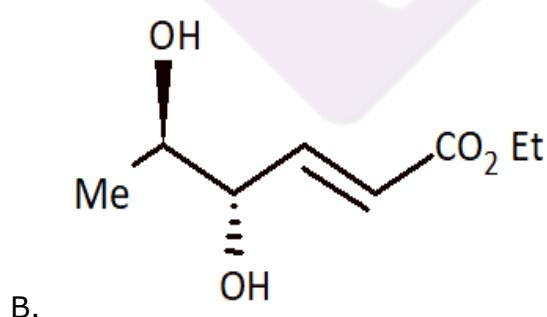
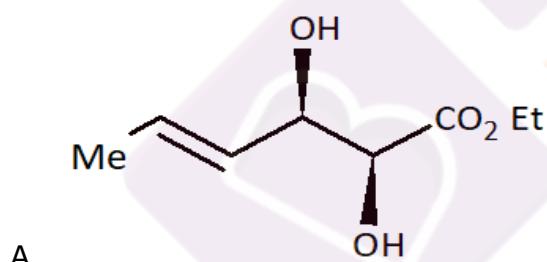
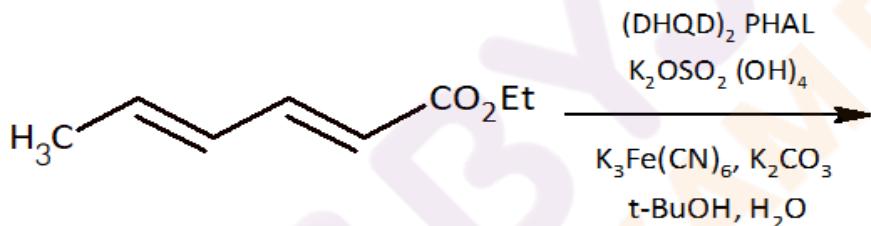
- A.
- B.
- C.
- D.

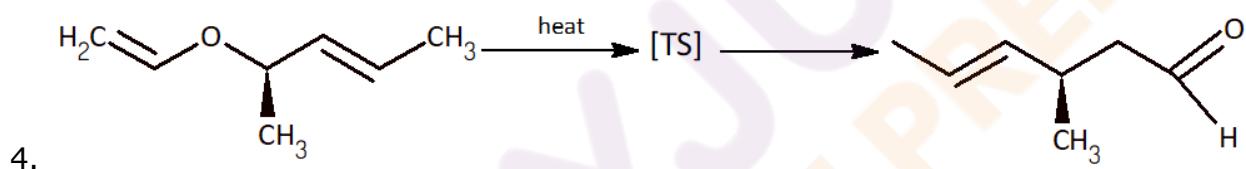
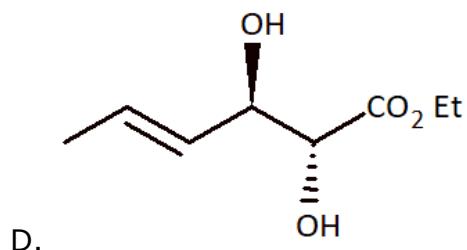
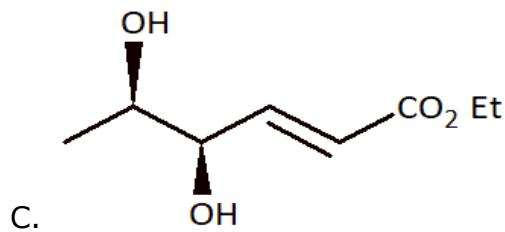


1. $4e^-$ con electrocyclic reaction
2. $6e^-$ disrotatory electrocyclic reaction
3. $[2 + 2]$ cycloreversion
4. $[4 + 2]$ cyclo addition

- A. 1 & 2
- B. 1 & 3
- C. 2 & 4
- D. 3 & 4

3. The product of the reaction is





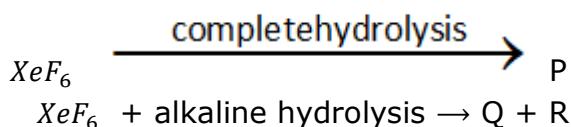
5. Difference between second ionization energy?

- A. Li/Na
- B. Be/Mg
- C. B/AL
- D. N/P

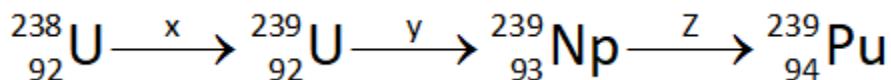
6. Match the following:

Complex	Energies
$[\text{TiF}_6]^{3+}$	9400 cm^{-1}
Mn^{2+}	24000 cm^{-1}
$[\text{Fe}(\text{H}_2\text{O})_6]^{2+}$	21000 cm^{-1}
$[\text{Co}(-)_6]^{3+}$	17000 cm^{-1}

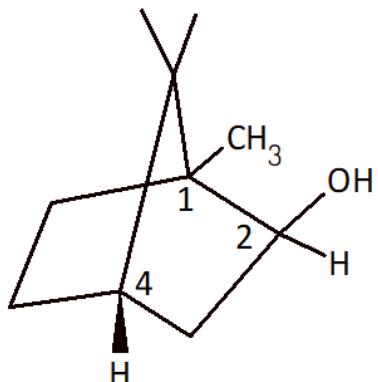
7. Find P, Q and R



8. X, y and Z are



9. The configuration at the mentioned points is



10. Micelle formation is above to Critical Micelle Concentration (CMC)

Micelle formation is above kraft temperature

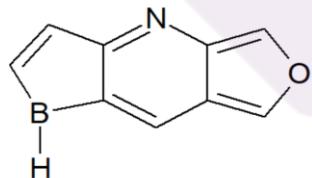
- i) true
- ii) Both true
- iii) i true & ii wrong

11. The number of signals given by P₄S₃ in the ³¹P-NMR spectrum.

12. The allowed transitions among the following are

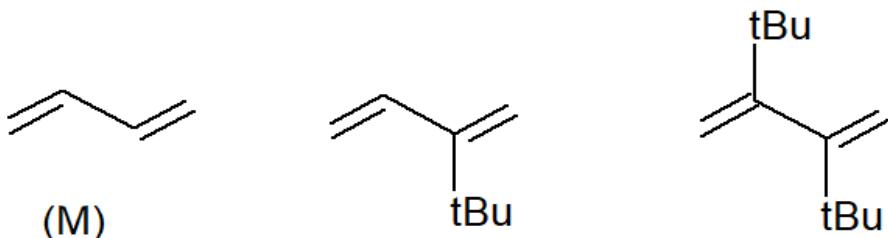
- A. ¹S → ⁵S
- B. ³P → ¹D
- C. ¹S → ¹D
- D. ³D → ³P

13. The given structure is



- A. Aromatic
- B. Antiaromatic
- C. Homo aromatic
- D. Non aromatic

14. The correct order of reactivity of dienes with maleic anhydride is



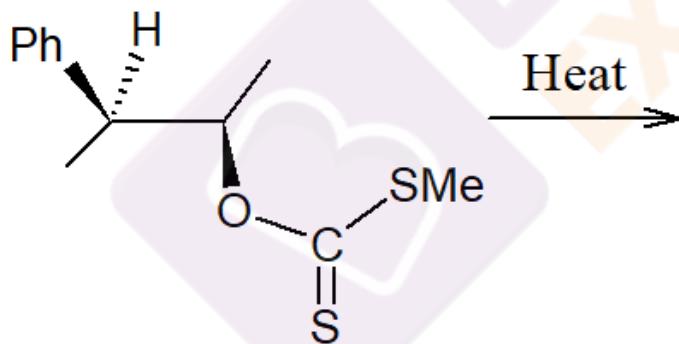
1. M > N > O
2. N > M > O
3. N > O > M
4. O > N > M

15. Magnetic moment (B.M.) for the ground state of a f^{13} ion is

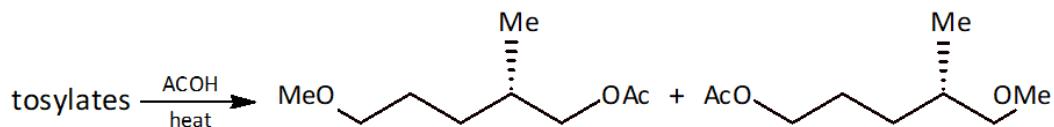
16. The value of X is - $\left(\frac{\delta S}{\delta P}\right)_T = \frac{1}{T} \left[X + \left(\frac{\delta H}{\delta P}\right)_T \right]$

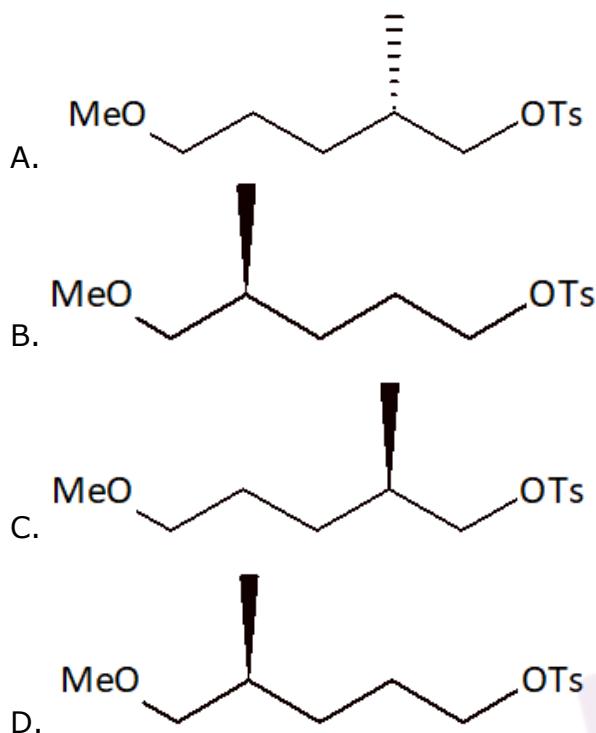
- A. S
- B. V
- C. C_p
- D. - V

17. The product of the reaction is



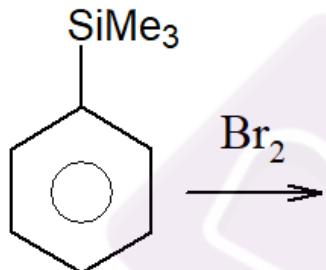
18. Tosylates that on solvolysis mixture



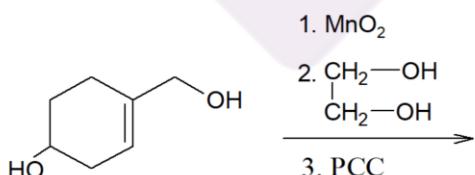


19. The number of octahedral and tetrahedral voids in FCC are

20. The product formed in the following reaction is



21. The product formed in the following reaction is



22. Why Eu^{+3} shows deviation?

- A. large spin orbit coupling constant
- B. large population in ground and excited state
- C. Large orbital momentum contribution
- D. due to f-d mixing

23. The geometry of FCIO and IOF_5 will be

24. Shape of SeF_4 and BrF_4^-

25. The expected number of ^{19}F NMR spectral lines, including satellites, for $[\text{XeF}_5]^-$ is Abundance of ^{129}Xe ($I = 1/2$) = 26.5%]

26. $\text{Cr}_2(\text{Cl}_9)^{3-}$ & $\text{W}_2(\text{Cl}_9)^{3-}$

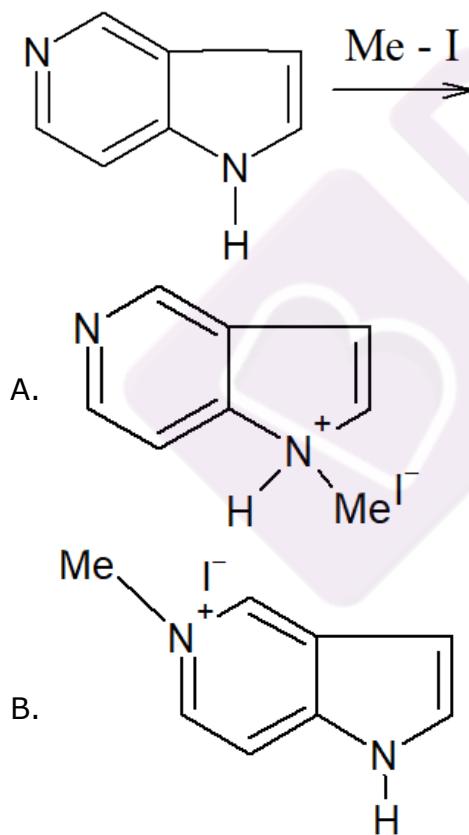
Magnetic nature: paramagnetic or diamagnetic

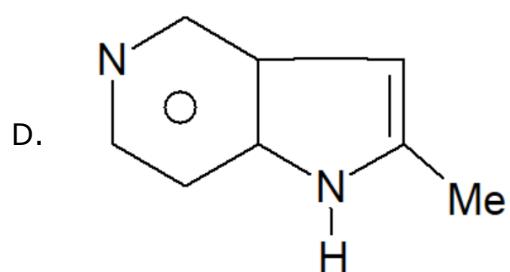
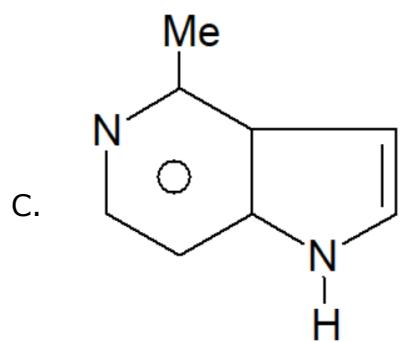
Metal-Metal bond distance

27. $\text{Cp}_3\text{M}_3\text{NO}_3$ has 48 electron complex excluding M-M bond find the possible metal

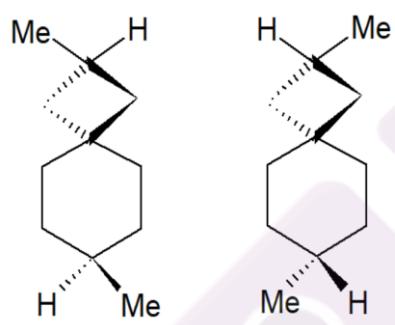
- A. Fe
- B. Mn
- C. Cr
- D. V

28. The product of the reaction is





29.



- A. Enantiomers
- B. Diastereomers
- C. Homomers
- D. Conformational

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