

(6 pages)

1203/PC1

OCTOBER 2010

Paper I — ORGANIC CHEMISTRY

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

SECTION A — (20 × 1 = 20 marks)

Choose the correct answer :

- Stability of a carbanion is due to
 - conjugation of the unshared pair
 - increase in s-character
 - stabilisation by S or P
 - all of them
- The unsubstituted nitrene is produced by photolysis of
 - NH_3
 - N_2H_4
 - HN_3
 - All of them
- Water molecule possesses _____ axis of symmetry
 - C_2
 - C_3
 - C_4
 - C_6
- Mesotartaric acid has _____ of symmetry
 - centre
 - plane
 - axis
 - none
- The major product of reaction of an aldehyde or ketone with SeO_2 is
 - 1, 2-dicarbonyl
 - carboxylic acid
 - alcohol
 - none of them
- 1, 2-diols are formed from alkenes by reacting with
 - Per acids
 - LTA
 - SeO_2
 - None of them
- A nucleophilic synthon is furnished by
 - RCl
 - RLi
 - RCOOEt
 - None of them
- The synthetic equivalent for the synthon $(\text{CH}_3)_2\text{CH}-\overset{+}{\text{C}}\text{H}-\text{OH}$ is
 - $(\text{CH}_3)_2\text{CH}-\text{CO}-\text{CH}_3$
 - $(\text{CH}_3)_2\text{CH}-\text{CH}_2-\text{CH}_2\text{OH}$
 - $(\text{CH}_3)_2\text{CH}-\text{CH}_2-\text{CHO}$
 - None of them

9. An example for phenanthrene class of alkaloids is

- (a) papaverine (b) quinine
(c) morphine (d) nicotine

10. Maltose on acidic hydrolysis gives

- (a) glucose (b) fructose
(c) galactose (d) none of them

Say True or False :

11. The stability of benzyle cation is enhanced by resonance effect.

12. Acetylene molecule belongs to $D_{\infty h}$ point group.

13. The reaction of a ketone with a peroxy acid to give an ester is called fries rearrangement.

14. The fragments obtained from the disconnections are called intermediates.

15. The general formula for pentosans is $(C_5 H_6 O_3)_n$.

Fill in the blanks :

16. The evidence of acyl-oxygen fission in ester hydrolysis is established with _____ isotope.

17. Rotational axis with the highest value of n is called the _____

18. $Pb(OAC)_4$ brings about oxidative cleavage of _____

19. _____ synthon is generated from an acid chloride.

20. Diel's hydrocarbon is produced by the dehydrogenation of steroids with _____

SECTION B — (5 × 6 = 30 marks)

21. (a) Illustrate the use of kinetic evidence in deciding reaction mechanism.

Or

(b) Explain kinetic and thermodynamically controlled reactions.

22. (a) Write a note on rotation-reflection axis of symmetry.

Or

(b) Explain threo and erythro forms with suitable examples.

