

KITEE 2013 (Ph.D *Chemistry*)

1. A disaccharide that will not give Benedict's test and will not form osazone is
(A) Maltose (B) Lactose (C) Cellobiose (D) Sucrose
2. The bond that gives the most intense band in the infrared spectrum for its stretching vibration is
(A) C—H (B) N—H (C) O—H (D) S—H

3. For a reaction involving two steps given below



assume that the first step attains equilibrium rapidly. The rate of formation of **P** is proportional to

- (A) $[G]^{1/2}$ (B) $[G]$ (C) $[G]^2$ (D) $[G]^{3/2}$
4. The enthalpies of hydration of Ca^{2+} , Mn^{2+} and Zn^{2+} follow the order
(A) $\text{Mn}^{2+} > \text{Ca}^{2+} > \text{Zn}^{2+}$
(B) $\text{Zn}^{2+} > \text{Ca}^{2+} > \text{Mn}^{2+}$
(C) $\text{Mn}^{2+} > \text{Zn}^{2+} > \text{Ca}^{2+}$
(D) $\text{Zn}^{2+} > \text{Mn}^{2+} > \text{Ca}^{2+}$
 5. The number of terminal carbonyl groups present in $\text{Fe}_2(\text{CO})_9$ is
(A) 2 (B) 5 (C) 6 (D) 3
 6. Among the following substituted silanes, the one that gives cross-linked silicone polymer upon hydrolysis is
(A) $(\text{CH}_3)_4\text{Si}$ (B) CH_3SiCl_3 (C) $(\text{CH}_3)_2\text{SiCl}_2$ (D) $(\text{CH}_3)_3\text{SiCl}$
 7. Among the following donors, the one that forms most stable adduct with the Lewis acid $\text{B}(\text{CH}_3)_3$ is
(A) 4-methylpyridine
(B) 2,6-dimethylpyridine
(C) 4-nitropyridine
(D) 2,6-di-*tert*-butylpyridine
 8. The IUPAC nomenclature of $\text{Na}[\text{PCl}_6]$ is
(A) sodium hexachlorophosphine(V)
(B) sodium hexachlorophosphate(V)
(C) sodium hexachlorophosphine
(D) sodium hexachlorophosphite(V)