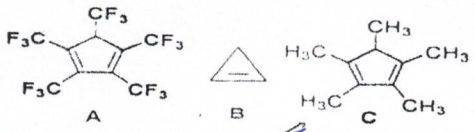
Admn. No:	*Section:*	*Name:*

Answer all the questions by tick (√) the appropriate box or write in the specified place.

1 The correct order of acidity of the following compound A-C



A B C

	B > C > A		C > B > A	√	A > C > B		A > B > C

2 What will be the degrees of freedom for the following equilibria?

$$N_2O_4\ (g) \leftrightarrow 2NO_2\ (g)$$

	0		1	√	2		3

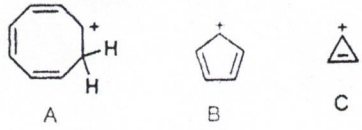
3 The $E^0_{M+3/M+2}$ values for Cr, Mn, Fe and Co are -0.41, + 1.57, + 0.77. +1.97 V respectively at 298 K. For which one of these metals the change in oxidation state from +2 to +3 is easiest?

√	Cr		Co		Fe		Mn

4 What will be the number of components for pure partly frozen acetic acid

√	1		2		3		4

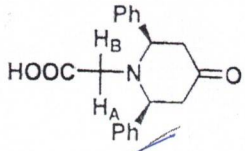
5 Among the carbocations given below



A B C

√	**A** is homoaromatic, **B** is antiaromatic and **C** is aromatic		A is antiaromatic, **B** is aromatic, C is homoaromatic
	A is aromatic, **B** is antiaromatic and **C** is homoaromatic		A is homoaromatic, **B** is aromatic and **C** is antiaromatic

6 In the compound given below, the hydrogen marked A and B are:



	Homotopic		Isotopic	√	Enantiotopic		Diastereotopic

7 The spin only magnetic moment of the complex $K_4[Fe(x)_6]$ is 4.9 BM (X is uni-negative monodentate ligand). Which of the following statement(s) is/are correct

√	The complex will undergoes John-Teller distortion		'X' is a strong field ligand		The complex is a low-spin complex		CFSE = -0.4Δo + P

8 Which of the following is/are correct

√	$\bar{\nu} = \frac{1}{2\pi}\sqrt{\frac{K}{\mu}}$		$\nu = \frac{1}{2\pi c}\sqrt{\frac{K}{\mu}}$		$\bar{\nu} = \frac{1}{2\pi}\sqrt{\frac{K}{\mu}}$		$\bar{\nu} = \frac{1}{2\pi c}\sqrt{\frac{\mu}{K}}$

9 The complex $[Co(X)_6]Cl_3$ (X is a neutral monodentate ligand) does not show any John-Teller distortion. Calculate the CFSE of the molecule

$$CFSE = -2.4\Delta_o + 2P$$

10 The rotation of an optically pure compound of 100 mg in 1 mL of water and measured in a quartz tube of 5 cm was (−3°). Calculate the Specific rotation of the compound.

$$[\alpha]_{sp} = \frac{[\alpha]_{obs}}{C(g/ml) \times l(dm)} = \frac{-3^\circ}{0.1 \times 0.5} = \boxed{-60^\circ}\ ans$$

$C = 100mg/1mL = 0.1g/mL$; $l = 5cm = 0.5\,dm$