

**B.A. / B.Sc. SEMESTER 1 EXAMINATION, 2020**  
**FAKIR CHAND COLLEGE CENTRE (551)**

**INSTRUCTIONS FOR CANDIDATES**

**READ ALL THE INSTRUCTIONS CAREFULLY BEFORE WRITING ANSWERS**

1. Total **TIME OF EXAMINATION: 1 HOURS (30 Mins. For Each Paper)**
2. **A) Question Paper Comprises Of TWO Separate Questions – [CC1A+CC1B] (10 Marks) And [CC2A+CC2B] (10 Marks).**  
**B) CANDIDATES MUST HAVE TO ANSWER CC1A, CC2A AND CC(1B+2B) SEPARATELY IN THREE SEPARATE PAGES [EACH IN A A4-SIZED PLAIN PAPER].**  
**C) ON EACH PAPER CLEARLY MENTION ROLL NO., UNIVERSITY REG. NO. AND PAPER NO. ON TOP OF THE PAGE AND THEN BELOW WRITE ONLY THE CHOSEN OPTIONS AGAINST CORRESPONDING QUESTION NUMBERS (For Example, If Option ‘A’ Is Correct For Q.1 Then Write Q.1 – A)].**  
**D) Then Candidates Have To Prepare THREE SEPARATE PDF FILES By Scanning Each Of The Three Answer Scripts Clearly [Give File Names As ‘University Roll No.(Paper No.)’ Format (Like 203551-XX-XXXX(CC1A), 203551-XX-XXXX(CC2A) And 203551-XX-XXXX(CC1B+CC2B)]**  
**E) Finally, Upload The Three Files One By One In The Stipulated Places Of The Google Form Before Submission Of The Form.**
3. Use **ONLY BLACK INK** For Writing Your Answers
4. Give **AT LEAST 1CM MARGINS** In All The Four Sides Of Each Page

**2020**  
**B.A. /B.Sc. Semester 1 Examination**  
**University of Calcutta**  
**CHEMISTRY – HONOURS**  
**INTERNAL**  
**Paper: CC (1A+1B)**

**F.M. 10**

**FAKIR CHAND COLLEGE CENTRE (551)**

**CC1A**

**Choose The Correct Answer:**

**1x7=7**

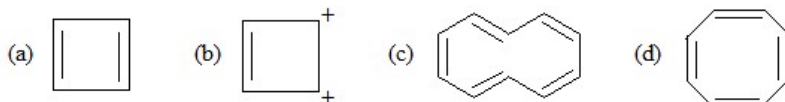
- The solubility of  $\text{Ca}_3(\text{PO}_4)_2$  in water is  $y$  mol/L. Its solubility product is:  
 (a)  $6y^2$  (b)  $36y^4$  (c)  $64y^5$  (d)  $108y^5$
- A weak acid HX has the dissociation constant  $1 \times 10^{-5}$  M. It forms a salt NaX on reaction with alkali. The degree of hydrolysis of 0.1 M solution of NaX is  
 (a) 0.0001% (b) 0.01% (c) 0.1% (d) 0.15%
- $\text{NH}_4\text{Cl}$  is acidic, because  
 (a) On hydrolysis  $\text{NH}_4\text{Cl}$  gives weak base,  $\text{NH}_4\text{OH}$  and strong acid  $\text{HCl}$  (b) Nitrogen donates a pair of electrons  
 (c) It is a salt of weak acid and strong base (d) On hydrolysis  $\text{NH}_4\text{Cl}$  gives strong base and weak acid
- Which of the following sets of quantum numbers represents the highest energy of an atom?  
 (a)  $n = 3, l = 0, m = 0, s = +\frac{1}{2}$  (b)  $n = 3, l = 1, m = 1, s = +\frac{1}{2}$   
 (c)  $n = 3, l = 2, m = 1, s = +\frac{1}{2}$  (d)  $n = 4, l = 0, m = 0, s = +\frac{1}{2}$
- The electronic configuration for oxygen is written as  $1s^2 2s^2 2p^4$ . Which rule will this configuration be violating  
 (a) Aufbau's principle (b) Hund's principle (c) Pauli's exclusion principle (d) None of them
- A solution contains  $\text{Fe}^{2+}$ ,  $\text{Fe}^{3+}$  and  $\text{I}^-$  ions. This solution was treated with iodine at  $35^\circ\text{C}$ .  $E^\circ$  for  $\text{Fe}^{3+}/\text{Fe}^{2+}$  is 0.77V and  $E^\circ$  for  $\text{I}_2/2\text{I}^-$  = 0.536V. The favourable redox reaction is  
 (a)  $\text{I}_2$  will be reduced to  $\text{I}^-$  (b) there will be no redox reaction  
 (c)  $\text{I}^-$  will be oxidised to  $\text{I}_2$  (d)  $\text{Fe}^{2+}$  will be oxidised to  $\text{Fe}^{3+}$
- $\text{C}_2\text{H}_6(\text{g}) + n\text{O}_2 \rightarrow \text{CO}_2(\text{g}) + \text{H}_2\text{O}(\text{l})$ , the ratio of coefficients of  $\text{CO}_2$  and  $\text{H}_2\text{O}$  is  
 (a) 1:1 (b) 2:3 (c) 3:2 (d) 1:3

**CC1B**

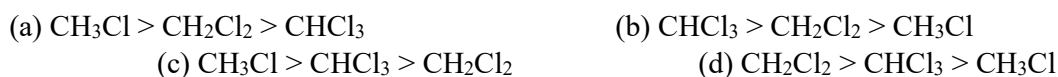
**Choose The Correct Answer:**

**1x3=3**

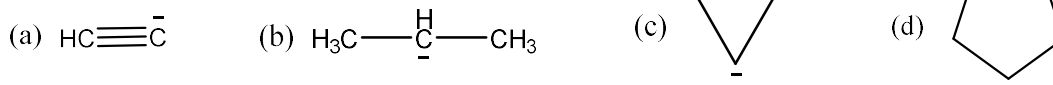
8. Identify the aromatic compound-



9. Which is the correct order of dipole moment of the following compounds



10. Identify the most stable carbanion -



2020  
B.A. /B.Sc. Semester 1 Examination  
University of Calcutta  
CHEMISTRY – HONOURS  
INTERNAL  
Paper: CC(2A+2B)  
F.M. 10

FAKIR CHAND COLLEGE CENTRE (551)

**CC2A**

**Choose The Correct Answer:**

**1x7=7**

- The compressibility factor of an ideal gas is  
a) 0                      b)  $\infty$                       c) 1                      d)  $>1$
- The mean translational K.E. per molecule of an ideal gas is  
a)  $3/2 k_B T$     b)  $1/2 k_B T$     c)  $k_B T$                       d)  $2/3 k_B T$
- According to Equipartition principle, the predicted high temperature limiting value of the molar heat capacity at constant volume for  $C_2H_2$  is  
a) 5.5 R                      b) 6.0 R                      c) 9.0 R                      d) 9.5 R
- What is the dimension of coefficient of Viscosity,  $\eta$ ?  
a)  $M L^{-2} T^{-1}$     b)  $M L^{-1} T^{-1}$     c)  $M^{-1} L T^{-1}$     d)  $M L^{-1} T^2$
- For an enzyme catalyzed reaction, at large substrate concentration the rate of the reaction with respect to the substrate is  
a) 1<sup>st</sup> order    b) 2<sup>nd</sup> order    c) zero order    d) can't be determined precisely
- For a first order reaction of the type:  $A \rightarrow P$  in time 't', which of the following plots will be linear and pass through the origin  
a)  $[A]$  vs t    b)  $\ln \left( \frac{[A]_0}{[A]_t} \right)$  vs t                      c)  $[A]$  vs  $1/t$                       d)  $\frac{1}{[A]_t}$  vs t
- For enzyme catalysed reaction adopting Michaelis-Menten equation, at high substrate concentration, the rate of the reaction with respect to substrate concentration is  
a) 0                      b) 1                      c) 2                      d)  $1/2$

**CC2B**

**Choose The Correct Answer:**

**1x3=3**

- Total number of stereo isomers for the molecule  $HOH_2C-CH(OH)-CH(OH)-CHO$  are  
a) 2                      b) 3                      c) 4                      d) 5

- Absolute configuration of the molecule  $\begin{array}{c} \text{CHO} \\ | \\ \text{H} - \text{C} - \text{OH} \\ | \\ \text{CH}_2\text{OH} \end{array}$  is  
a) R                      b) S                      c) D                      d) L

- Optically active molecules are capable to rotate –  
a) Plane of plane polarised monochromatic light    b) plane polarised monochromatic light  
c) Plane of polarised monochromatic light                      d) Plane of plane monochromatic light