हमारा विश्वास...
हर एक विद्यार्थी है ख़ास

PAPER WITH ANSWER

JEE Advanced 2019

CHEMISTRY PAPER - 2

IIT/NIT | NEET/AIIMS | NTSE/IJSO/OLYMPIADS

कोटा का रिपिटर्स (12th पास) का सर्वश्रेष्ठ रिजल्ट देने वाला संस्थान

JEE ADVANCED 2018 RESULT

AIR 82
Sarthak Behera

AIR 120
Pankaj

AIR 146
Varun Goyal

AIR 148
Mukul Kumar

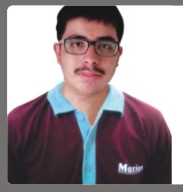
Total Selection
709/2084 = 34.02%

JEE MAIN 2019 RESULT

AIR 79
Shiv Kumar Modi

AIR 85
Anuj Chaudhary

AIR 96
Shubham Kumar



AIR 120
Eeshaan Jain

Students Qualified for JEE ADVANCED
2288/3316 = 68.99%

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CRITERIA FOR DIRECT ADMISSION IN STAR BATCHES

V STAR BATCH
XII Pass (JEE M+A)

ELIGIBILITY

- JEE Main'19 %tile > 98%tile
- JEE Advanced'19 Rank (Gen.) < 15,000

J STAR BATCH
XII Pass (NEET/AIIMS)

ELIGIBILITY

- NEET'19 Score > 450 Marks
- AIIMS'19 %tile > 98%tile

P STAR BATCH
XI Moving (JEE M+A)

ELIGIBILITY

- NTSE Stage-1 Qualified or NTSE Score > 160
- 100 marks in Science or Maths in Board Exam

H STAR BATCH
XI Moving (NEET/AIIMS)

ELIGIBILITY

- NTSE Stage-1 Qualified or NTSE Score > 160
- 100 marks in Science or Maths in Board Exam

Scholarship Criteria

JEE Main Percentile	SCHOLARSHIP+ STIPEND
98 - 99	100%
Above 99	100% + ₹ 5000/ month

JEE Advanced Rank	SCHOLARSHIP+ STIPEND
10000-20000	100%
Under 10000	100% + ₹ 5000/ month

NEET 2019 Marks	SCHOLARSHIP+ STIPEND
450	100%
530-550	100% + ₹ 2000/ month
550-560	100% + ₹ 4000/month
560	100% + ₹ 5000/month

NTSE STAGE-1 2019 Marks	SCHOLARSHIP+ STIPEND
160-170	100% + ₹ 2000/ month
171-180	100% + ₹ 4000/month
180+	100% + ₹ 5000/month

FEATURES :

- Batch will be taught by NV Sir & HOD's Only.
- Weekly Quizes apart from regular test.
- Under direct guidance of NV Sir.
- Residential campus facility available.
- 20 CBT (Computer Based Test) for better practice.
- Permanent academic coordinator for personal academic requirement.
- Small batch with only selected student.
- All the top brands material will be discussed.

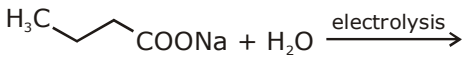
Section 1 (Maximum Marks : 32)

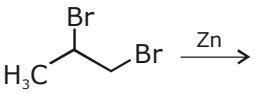
- This section contains **EIGHT (08)** questions.
- Each question has **FOUR** options. **ONE OR MORE THAN ONE** of these four option(s) is(are) correct answer(s).
- For each question, choose the option(s) corresponding to (all) the correct answer(s).
- Answer to each question will be evaluated according to the following marking scheme

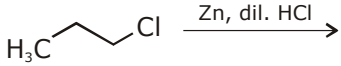
Full Marks	:	+4 If only (all) the correct option(s) is(are) chosen
Partial Marks	:	+3 If all the four options are correct but ONLY three options are chosen
Partial Marks	:	+2 If three or more options are correct but ONLY two options are chosen and both of which are correct;
Partial Marks	:	+1 If two or more options are correct but ONLY one option is chosen and it is a correct option
Zero Marks	:	0 If none of the options is chosen (i.e. the question is unanswered):
Negative Marks	:	−1 In all other cases

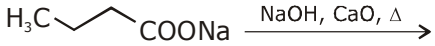
- For example, in a question, if (A), (B) and (D) are the ONLY three options corresponding to correct answers, then
  choosing ONLY (A), (B) and (D) will get +4 marks;
  choosing ONLY (A) and (B) will get +2 marks;
  choosing ONLY (A) and (D) will get +2 marks,
  choosing ONLY (B) and (D) will get +2 marks:
  choosing ONLY (A) will get +1 mark;
  choosing ONLY (B) will get +1 mark;
  choosing ONLY (D) will get +1 mark;
  choosing no option (i.e. the question is unanswered) will get 0 marks; and
  choosing any other combination of options will get −1 mark

1. Which of the following reactions produce(s) propane as a major product ?

(A) 

(B) 

(C) 

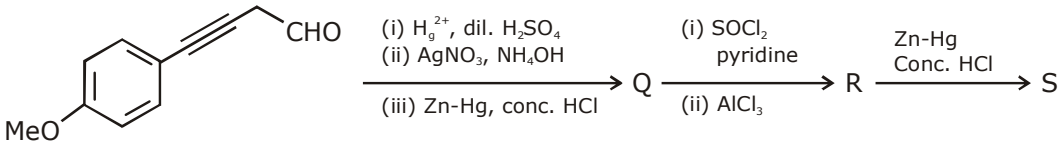
(D) 

Ans. **C,D**

2. With reference to aqua regia, choose the correct option(s)
(A) The yellow colour of aqua regia is due to the presence of NOCl and Cl_2
(B) Reaction of gold with aqua regia produces an anion having Au in +3 oxidation state
(C) Reaction of gold with aqua regia produces NO_2 in the absence of air
(D) Aqua regia is prepared by mixing conc. HCl and conc. HNO_3 in 3 : 1 (v/v) ratio

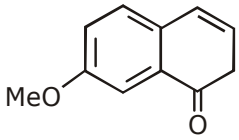
Ans. **A,B,D**

3. Choose the correct option(s) for the following reaction sequence

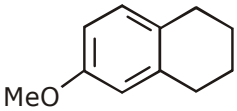


Consider Q, R and S as major products.

(A)

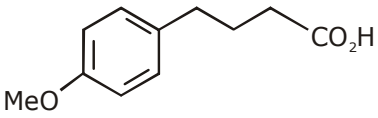


R

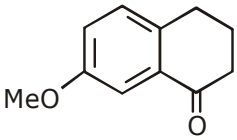


S

(B)

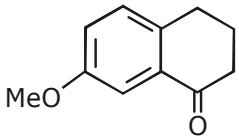


Q

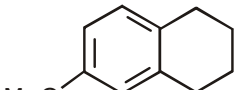


R

(C)

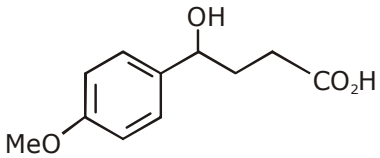


R

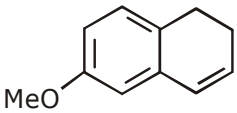


S

(D)



Q



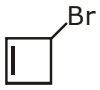
R

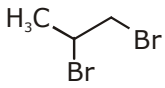
Ans. **B,C**

4. The ground state energy of hydrogen atom is −13.6 eV. Consider an electronic state ψ of He^+ whose energy, azimuthal quantum number and magnetic quantum number are −3.4 eV, 2 and 0, respectively. Which of the following statement(s) is(are) true for the state ψ?
(A) The nuclear charge experienced by the electron in this state is less than 2e, where e is the magnitude of the electronic charge
(B) It has 3 radial nodes
(C) It is a 4d state
(D) It has 2 angular nodes

Ans. **C or C, D**

5. Choose the correct option(s) that give(s) an aromatic compound as the major product

(A)  $\xrightarrow{NaOEt}$

(B)  $\xrightarrow[(iii)\ \text{red hot iron tube, 873 K}]{(i)\ \text{alc. KOH}\ (ii)\ NaNH_2}$

(C)  $\xrightarrow{NaOMe}$

(D)  + Cl_2 (excess) $\xrightarrow{UV,\ 500\ K}$

Ans. **B,C**

6. Consider the following reactions (unbalanced)
Zn + hot conc. $H_2SO_4 \rightarrow G + R + X$
Zn + conc. $NaOH \rightarrow T + Q$
$G + H_2S + NH_4OH \rightarrow Z$ (a precipitate) + X + Y
Choose the correct option(s)
(A) R is a V-shaped molecule (B) The oxidation state of Zn in T is +1
(C) Bond order of Q is 1 in its ground state (D) Z is dirty white in colour

Ans. **A,C,D**

7. Choose the correct option(s) from the following
(A) Teflon is prepared by heating tetrafluoroethene in presence of a persulphate catalyst at high pressure
(B) Natural rubber is polyisoprene containing trans alkene units
(C) Nylon-6 has amide linkages
(D) Cellulose has only α-D-glucose units that are joined by glycosidic linkages

Ans. **A,C**

8. The cyanide process of gold extraction involves leaching out gold from its ore with CN^- in the presence of Q in water to form R. Subsequently R is treated with T to obtain Au and Z. Choose the correct option(s)
(A) Z is $[Zn(CN)_4]^{2-}$ (B) R is $[Au(CN)_4]^-$ (C) T is Zn (D) Q is O_2

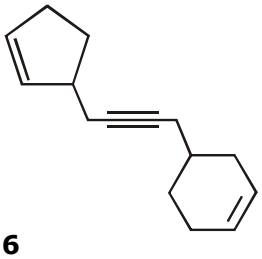
Ans. **A,C,D**

SECTION 2 (Maximum Marks: 18)

- This section contains SIX (06) questions The answer to each question is a NUMERICAL VALUE.
- For each question, enter the correct numerical value of the answer using the mouse and the on-screen virtual numeric keypad in the place designated to enter the answer. If the numerical value has more than two decimal places, truncate/round-off the value to TWO decimal places
- Answer to each question will be evaluated according to the following marking scheme:

Full Marks : +3 If ONLY the correct numerical value is entered;
Zero Marks : 0 In all other cases

1. Total number of hydroxyl groups present in a molecule of the major product P is .....

 $\xrightarrow[ii)\text{dil.}KMnO_4\ (\text{excess}), 273K]{i)H_2, Pd\text{–}BaSO_4, \text{quinoline}}$ P

Ans. **6**

2. Total number of cis N-Mn-Cl bond angles (that is, Mn-N and Mn-Cl bonds in cis positions) present in a molecule of cis-$[Mn(en)_2Cl_2]$ complex is ..... (en = $NH_2CH_2CH_2NH_2$)

Ans. **6**

3. The amount of water produced (in g) in the oxidation of 1 mole rhombic sulphur by conc. HNO_3 to a compound with the highest oxidation state of sulphur is .....
(Given data. Molar mass of water = 18 g mol^{-1})

Ans. **288**

4. The decomposition reaction $2N_2O_5(g) \xrightarrow{\Delta} 2N_2O_4(g) + O_2(g)$ is started in a closed cylinder under isothermal isochoric condition at an initial of 1 atm. After Y x 10^3 s, the pressure inside the cylinder is found to be 1.45 atm. If the rate constant of the reaction is 5 x 10^{-4} s^{-1}, assuming ideal gas behavior, the value of Y is .....

Ans. **2.3 or 4.6**

5. Total number of isomers, considering both structural and stereoisomers, of cyclic ethers with the molecular formula C_4H_8O is .....

Ans. **10**

6. The mole fraction of urea in an aqueous urea solution containing 900 g of water is 0.05. If the density of the solution is 1.2 g cm^{-3}, the molarity of urea solution is .....
(Given data: Molar masses of urea and water are 60 g mol^{-1} and 18 g mol^{-1}, respectively)

Ans. **2.98**

SECTION 3 (Maximum Marks: 12)

- This section contains Two (02) List-Match sets,
- Each List-Match set has Two (02) Multiple Choice Questions.
- Each List-Match set has two lists. List-I and List-II
- **List-I** has **Four** entries (I), (II), (III) and (IV) and List-II has six entries (P), (Q), (R), (S), (T) and (U).
- FOUR options are given in each Multiple Choice Question based on List-I and List-II and **ONLY ONE** of these four options satisfies the condition asked in the Multiple Choice Question.
- Answer to each question will be evaluated according to the following marking scheme:
  Full Marks : +3 If ONLY the option corresponding to the correct combination is chosen;
  Zero Marks : 0 If none of the options is chosen (i.e., the question is unanswered)
  Negative Marks : –1 In all other cases.

1. Answer is following by appropriately matching the lists based on the information given in the paragraph
Consider the Bohr's model of a one-electron atom where the electron moves around the nucleus. In the following, List-I contains some quantities for the n^{th} orbit of the atom and List-II contains options showing how they depend on n.

List - I	List - II
(I) Radius of the n^{th} orbit	(P) $\propto n^{-2}$
(II) Angular momentum of the electron in the n^{th} orbit	(Q) $\propto n^{-1}$
(III) Kinetic energy of the electron in the n^{th} orbit	(R) $\propto n^{0}$
(IV) Potential energy of the electron in the n^{th} orbit	(S) $\propto n^{1}$
	(T) $\propto n^{2}$
	(U) $\propto n^{1/2}$

Which of the following options has the correct combination considering List-I and List-II ?
(A) (II), (R) (B) (I), (P)
(C) (I), (T) (D) (II), (Q)

Ans. **C**

2. Answer is following by appropriately matching the lists based on the information given in the paragraph
Consider the Bohr's model of a one-electron atom where the electron moves around the nucleus. In the following, List-I contains some quantities for the n^{th} orbit of the atom and List-II contains options showing how they depend on n.

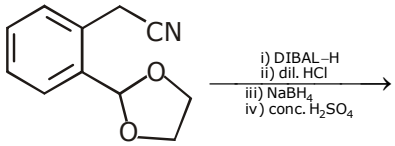
List - I	List - II
(I) Radius of the n^{th} orbit	(P) $\propto n^{-2}$
(II) Angular momentum of the electron in the n^{th} orbit	(Q) $\propto n^{-1}$
(III) Kinetic energy of the electron in the n^{th} orbit	(R) $\propto n^{0}$
(IV) Potential energy of the electron in the n^{th} orbit	(S) $\propto n^{1}$
	(T) $\propto n^{2}$
	(U) $\propto n^{1/2}$

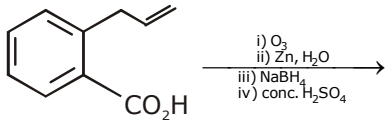
Which of the following options has the correct combination considering List-I and List-II ?
(A) (III), (P) (B) (IV), (Q) (C) (IV), (U) (D) (III), (S)

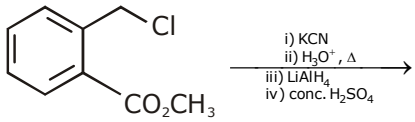
Ans. **A**

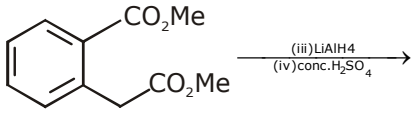
3. Answer is following by appropriately matching the lists based on the information given in the paragraph
List - I includes starting materials and reagents of selected chemical reactions. List - II gives structures of compounds that may be formed as intermediate products and/or final products from the reactions of List-I

List - I

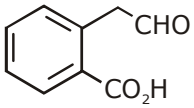
(I) 

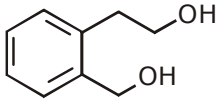
(II) 

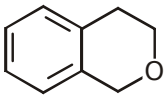
(III) 

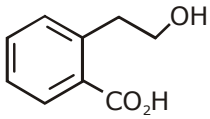
(IV) 

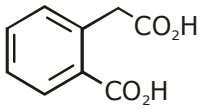
List - II

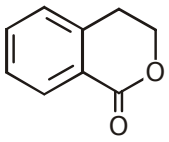
(P) 

(Q) 

(R) 

(S) 

(T) 

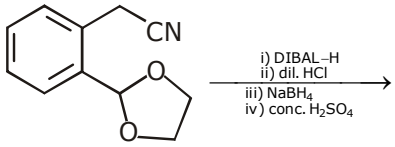
(U) 

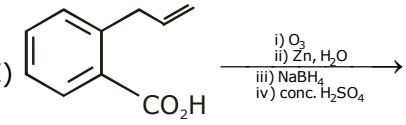
Which of the following options has correct combination considering List-I and List-II ?
(A) (III), (T), (U) (B) (IV), (Q), (U) (C) (III), (S), (R) (D) (IV), (Q), (R)

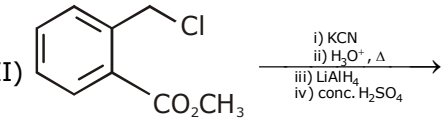
Ans. **D**

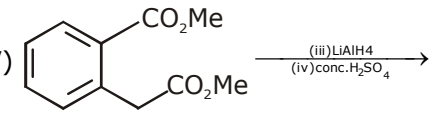
4. Answer is following by appropriately matching the lists based on the information given in the paragraph List - I includes starting materials and reagents of selected chemical reactions. List - II gives structures of compounds that may be formed as intermediate products and/or final products from the reactions of List-I

List - I

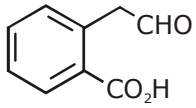
(I) 

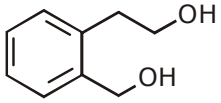
(II) 

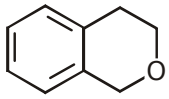
(III) 

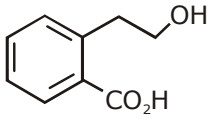
(IV) 

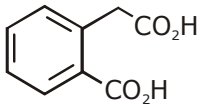
List - II

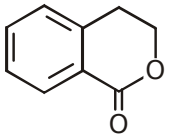
(P) 

(Q) 

(R) 

(S) 

(T) 

(U) 

(A) (I), (Q), (T), (U)
(B) (I), (S), (Q), (R)
(C) (II), (P), (S), (U)
(D) (II), (P), (S), (T)

Ans **C**

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95.5 To 96	₹ 65,250	₹ 65,250
95 To 95.5	₹ 72,500	₹ 72,500
93 To 95	₹ 87,000	₹ 87,000
90 To 93	₹ 1,01,500	₹ 94,250
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