Examination: Ph.D. Chemistry	
Section 1 - Section 1	
Question No.1	4.00 Bookmark
Find out the missing term:	
1, 2, 3, 6, 11, 20, 37, 68, ?	
Question No.2	4.00
Obtain the missing term.	Bookmark
300, 296, 287, 271, ? , 210 © 246 © 250	
C 244 C None of the above	
Question No.3	4.00
If the pressure p (system) is greater than the p (surroundings), then internal energy of the system increases work is done on the system by the surroundings work done on the system by the surroundings is equal to the work done on the surroundings by t system work is done on the surroundings by the system	Bookmark □
Question No.4	4.00
The general formula of a spinel is, AB ₂ O ₄ , where A is a divalent and B is a trivalent cation. Then Fe ₃ O ₄ on inverse spinel and a mixed spinel on a spinel a normal spinel	Bookmark
Question No.5	4.00
The point group for chair form of cyclohexane is:- $ ^{\circ} D_{3d} $ $ ^{\circ} C_{2h} $ $ ^{\circ} C_{2v} $ $ ^{\circ} $	Bookmark □

ı

. The major products, X and Y in the following reaction sequences are

$$\begin{array}{c|c}
O & & \\
\hline
 & PdCl_2, CuCl \\
\hline
 & O_2, H_2O, DMF
\end{array}$$

$$\begin{array}{c}
X & & H_2SO_4 \\
\hline
\end{array}$$

Question No.7 4.00

Bookmark \square

The calculated magnetic moment of Cr²⁺ ion in a weak field is:-

- C 4.12 BM
- C 4.90 BM
- C 7.18 BM
- C 2.80 BM

Question No.8 4.00

	Bookmark
The major product obtained in the following reaction is	
H ₂ SO ₄	
°	
°	
°	
Question No.9	4.00
The pair of lanthanides with the highest third-ionization energy is	Bookmark
© Eu, Gd	
© Eu, Yb © Lu, Yb	
O Dy, Yb	
Question No.10	4.00
	Bookmark [
Based on the given information, answer the following question. 1. Six friends P,Q,R,S,T and U are memebers of a club and play different games of Football, Cricket,	Bookmark
Based on the given information, answer the following question. 1. Six friends P,Q,R,S,T and U are memebers of a club and play different games of Football, Cricket, Basketball, Badminton and Volleyball	Bookmark
Based on the given information, answer the following question. 1. Six friends P,Q,R,S,T and U are memebers of a club and play different games of Football, Cricket, Basketball, Badminton and Volleyball 2. T who is taller than P and S plays Tennis. 3. The tallest among them plays Basketball.	Bookmark
Based on the given information, answer the following question. 1. Six friends P,Q,R,S,T and U are memebers of a club and play different games of Football, Cricket, Basketball, Badminton and Volleyball 2. T who is taller than P and S plays Tennis.	Bookmark
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Bookmark |

Arrange the following in the increasing rate of acetolysis reaction

(A

(B)

(C)

- (B) > (A) > (C)
- (C) > (B) > (C)
- (A) > (B) > (C)
- \circ (C) > (A) > (B)

Question No.12

4.00

Bookmark

Which of the following is an arachno borane?

- [B₆H₁₂]
- [B₅H₉]
- \circ [B₂H₆]
- $^{\circ}$ [B₆H₆]²-

Question No.13

4.00

Bookmark [

Choose the correct meaning of the italicized idiom.

Sheela's work seems to be a Penelope's web.

- Endless
- O Difficult
- C Declining
- In her best form

Question No.14

4.00

Bookmark □

Which of the following is not a Van der Waal force?

- C Dipole induced- dipole force
- C London dispersion force
- Hydrogen bonding
- C Dipole -dipole interaction

Question No.15

4.00

Bookmark \square

Statements: Some bats are snakes, No snake is dangerous

Conclusion:

I. Some dangerous animals are snakes

- II. Some bats are not dangerous.
 - C If only conclusion II follows
 - If either I or II follows
 - O If neither I nor II follows
 - C If only conclusion I follows

Question No.16

4.00

Bookmark |

Choose the correct meaning of the italicized idiom.

Anil got me into trouble by giving a false colour to my statement.
 ○ Giving good impression ○ Giving a wrong character
Colouring the sentence
○ Giving a wrong colour box
Question No.17 4.00
Boron nitride has a structure similar to
© Graphite
○ NaCl ○ Diamond
© Fullerene
Question No.18 4.00
Bookmark □
Among the following complexes
A. [Co(Ox) ₃] ³⁻ , B. trans-[CoCl ₂ (en) ₂] ⁺ , C. [Cr(EDTA)] ⁻ the chiral one(s) is/are,
○ A and C
C C and B
C A and B
C only
Question No.19 4.00
Rookmark □
Bookmark ☐ In a code language, 321 means "Hot Black Coffee", 536 means "Very Hot Summer", and 589 means "Summer
In a code language, 321 means "Hot Black Coffee", 536 means "Very Hot Summer", and 589 means "Summer and Winter". Which digit stands for "Very"?
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In a code language, 321 means "Hot Black Coffee", 536 means "Very Hot Summer", and 589 means "Summer and Winter". Which digit stands for "Very"? © 5 © 9
In a code language, 321 means "Hot Black Coffee", 536 means "Very Hot Summer", and 589 means "Summer and Winter". Which digit stands for "Very"? 5 9 3 6 Question No.20
In a code language, 321 means "Hot Black Coffee", 536 means "Very Hot Summer", and 589 means "Summer and Winter". Which digit stands for "Very"? 5 9 3 6 Question No.20 Bookmark When an aqueous solution of zinc sulphate is subjected to electrolysis, 280 ml of oxygen gas at STP is liberated
In a code language, 321 means "Hot Black Coffee", 536 means "Very Hot Summer", and 589 means "Summer and Winter". Which digit stands for "Very"? 5 9 3 6 Question No.20 4.00 Bookmark When an aqueous solution of zinc sulphate is subjected to electrolysis, 280 ml of oxygen gas at STP is liberated at anode. Calculate the quantity of electricity passed through the electrolyte
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In a code language, 321 means "Hot Black Coffee", 536 means "Very Hot Summer", and 589 means "Summer and Winter". Which digit stands for "Very"? 5 9 3 6 When an aqueous solution of zinc sulphate is subjected to electrolysis, 280 ml of oxygen gas at STP is liberated at anode. Calculate the quantity of electricity passed through the electrolyte 0.005 F 5 F 0.005 F
In a code language, 321 means "Hot Black Coffee", 536 means "Very Hot Summer", and 589 means "Summer and Winter". Which digit stands for "Very"? ○ 5 ○ 9 ○ 3 ○ 6 Question No.20 4.00 Bookmark □ When an aqueous solution of zinc sulphate is subjected to electrolysis, 280 ml of oxygen gas at STP is liberated at anode. Calculate the quantity of electricity passed through the electrolyte ○ 0.005 F ○ 5 F
In a code language, 321 means "Hot Black Coffee", 536 means "Very Hot Summer", and 589 means "Summer and Winter". Which digit stands for "Very"?
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In a code language, 321 means "Hot Black Coffee", 536 means "Very Hot Summer", and 589 means "Summer and Winter". Which digit stands for "Very"? C 5 C 9 C 3 C 6 Question No.20 4.00 Bookmark When an aqueous solution of zinc sulphate is subjected to electrolysis, 280 ml of oxygen gas at STP is liberated at anode. Calculate the quantity of electricity passed through the electrolyte C 0.005 F C 5 F C 0.05 F C 0.5 F C
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Question No.22	4.00 Bookmark □
The major product obtained in the following reaction is	
OMe (CH ₃) ₃ Cl AlCl ₃	
OMe	
OMe	
C C C C C C C C C C C C C C C C C C C	
C JOMe	
Question No.23	4.00
The violet colour of $[Ti(H_2O)_6]^{3+}$ is due to:-	Bookmark
ne metal to ligand charge transfer transition	
C d-d transition	
ligand to metal charge transfer transitionf-f transition	
Question No.24	4.00
The bonding pattern of M(CO)x complex can be explained using one the following methods: © 18 electron count	Bookmark □
© 16 electron count	
© DCD © VSEPR	

Question No.25 4.00

Bookmark 🗆

$$\begin{array}{c|c} & & & & & \\ & & & & \\ \text{Me}_3\text{N} & & & \\ & & & \\ \hline & & & \\ \hline & & \\ \hline & & \\ \hline \end{array}$$

- A phospholipid
- A protein
- A carbohydrate
- C A nucleic acid

Question No.26 4.00

Bookmark

Which of the following statements is true regarding the rate of hydrolysis of the following substrates:

ci~s~ci

H CI

H CI

- (ii) and (iv) faster than (i) and (iii)
- C (i) and (iii) faster than (ii) and (iv)
- C (i) and (ii) faster than (iii) and (iv)
- C (iii) and (iv) faster than (i) and (ii)

Question No.27 4.00

L2lr(CO)CI reaction with H2 is called:-

- oxidation reaction
- substitution reaction
- Sigma bond metathesis
- oxidative addition

Question No.28 4.00

Bookmark [

Bookmark [

Ramesh had a cold and couldn't go to the party, so I bought him a cake to make up for his___

- disappointment
 - C disgust

C depression C disillusion	
Question No.29 The reaction of Potassium phthalimide with Ethyl Chloroacetate followed by hydrolysis results in:	4.00 Bookmark □
 Question No.30 In perturbation theory, the ground state energy for constant perturbation is accurate from: Perturbation theory will not lead to meaningful solution. Energy is proportional to the order of the perturbation. Second order perturbation. First order perturbation. 	4.00 Bookmark □
Question No.31 The hydrolysis of t-bromobutane, C_4H_9Br , by hydroxide, OH-, ions in aqueous solution follows an S_N1 remechanism in which the rate-determining step is the loss of a bromide, Br-, ion, followed by rapid reach hydroxide ions. Which of the following rate laws is consistent with this mechanism? Calc Rate = $k[OH^-]$ Rate = $k[C_4H_9Br]$ Rate = $k[C_4H_9Br]$ Rate = $k[C_4H_9Br][OH^-]$	
Question No.32 The orange red colour of dichromate ions in solution is due to the Bent Cr-O-Cr bond Charge transfer transition d to d transition Dianionic charge	4.00 Bookmark □
Question No.33 Identify the correct match of amino acid to the characteristics of the amino acid described (a) Only standard amino acid whose side chain does not contain carbon (b) Only standard amino acid with a cyclic side chain	4.00 Bookmark ☐

(c) Univistandard amino acid that participates in disulfide b	าดทดร

- (d) Only standard amino acid with a methyl group attached to its alpha carbon atom
- (i) Alanine (ii) Glycine (iii) Proline (iv) Cysteine
 - (a) (ii); (b) (iii); (c) (iv); (d) (i)
 - (a) (iii); (b) (iv); (c) (i); (d) (ii)
 - O (a) (i); (b) (ii); (c) (iii); (d) (iv)
 - C (a) (iv); (b) (i); (c) (ii); (d) (iii)

Question No.34 4.00

Predict the geometry of a molecule in which the bonding may be described using the hydridization model as being made up of sp³ hybrid orbitals on the central atom:-

- octahedral
- C square planar
- trigonal bipyramidal
- tetrahedral

Question No.35 4.00

Bookmark [

Bookmark [

A compound with molecular formula $C_4H_6O_2$ shows band at 1770 cm⁻¹ in IR spectrum and peaks at 178, 68, 28 and 22 ppm in ¹³C NMR. The correct structure of the compound is



Question No.36 4.00

Bookmark [

Laporte selection rule does not affect

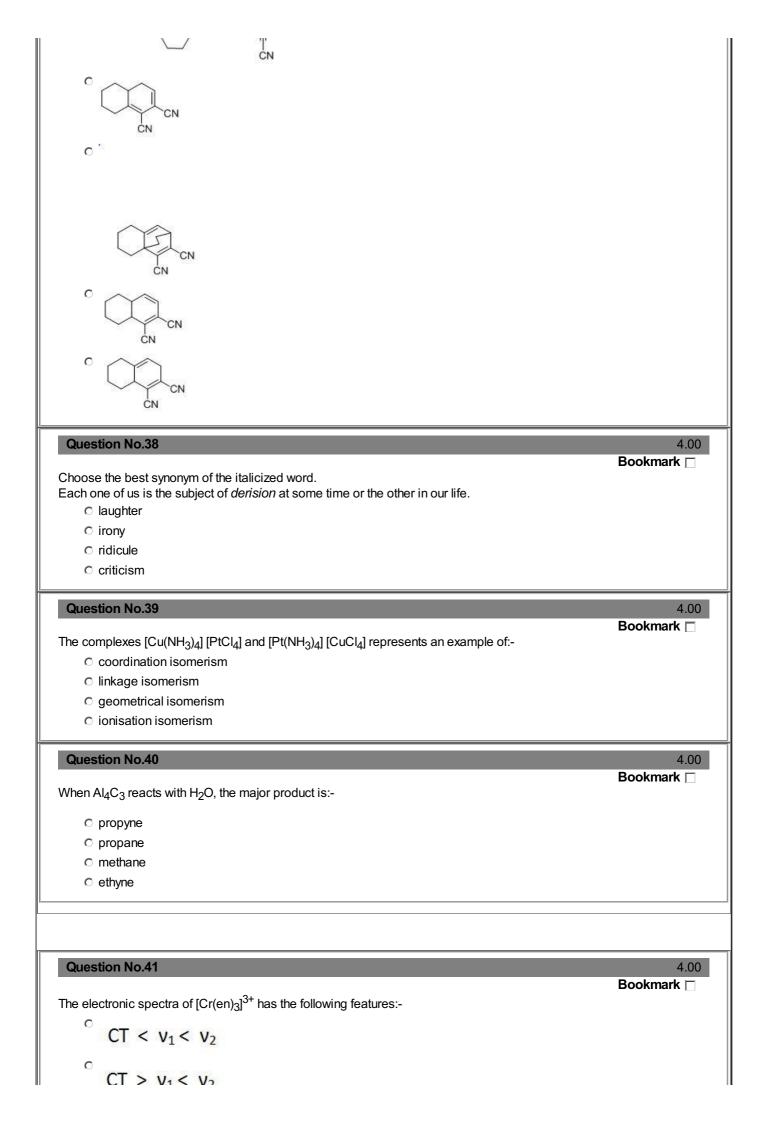
- Square planar geometry
- Tetrahedral geometry
- Octahedral geometry
- All of these

Question No.37 4.00

Bookmark [

Which of the following is the most likely product of the Diel's Alder reaction.



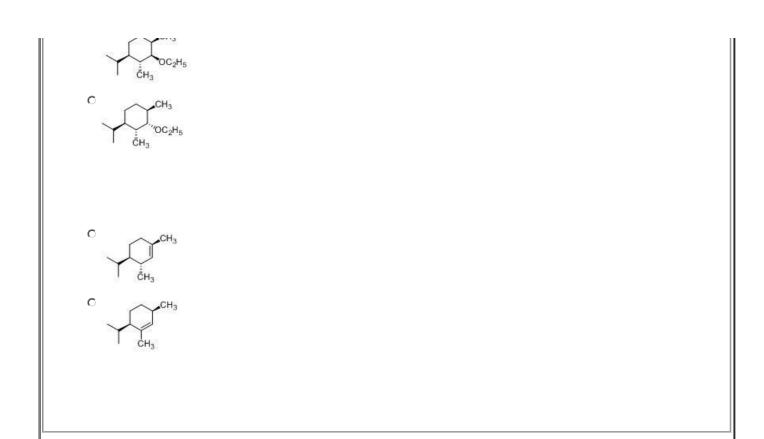


$^{\circ}$ CT < $v_1 > v_2$	
$^{\circ}$ CT > v_1 > v_2	
Question No.42	4.00
QUOSIIOTI ITO. 12	Bookmark □
The first step in the Wilkinson's catalytic cycle is:-	
© decomplexation	
○ PPh ₃ dissociation	
C CI dissociation	
○ oxidation	
Question No.43	4.00
Question No.43	4.00 Bookmark
The ordering of the occupied d-orbital energies in an octahedral complex on tetragonal elongation is e	
be:-	•
$^{\circ}$ dx ² -y ² > dz ² > dxy > dyz, dxz	
$^{\circ}$ dxy > dyz, dxz > dz ² > dx ² -y ²	
$^{\circ}$ dx ² -y ² > dxy > dz ² > dyz, dxz	
Question No.44	4.00
01 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Bookmark
Choose the missing term: 3F,6G,11I,18L,?	
© 27P	
C 27O	
C 28Q	
	4.00
C 28Q Question No.45	4.00 Bookmark
Question No.45 Which one of the following ground state term will not have Jahn-Teller distortion?	
Question No.45 Which one of the following ground state term will not have Jahn-Teller distortion? C 2T2g	
Question No.45 Which one of the following ground state term will not have Jahn-Teller distortion?	
Question No.45 Which one of the following ground state term will not have Jahn-Teller distortion? ² T _{2g} ² E _g (low spin)	
Question No.45 Which one of the following ground state term will not have Jahn-Teller distortion? C 2T2g C 2Eg (low spin) C 3T1g	
Question No.45 Which one of the following ground state term will not have Jahn-Teller distortion? ² T _{2g} ² E _g (low spin)	
Question No.45 Which one of the following ground state term will not have Jahn-Teller distortion? C 2T2g C 2Eg (low spin) C 3T1g	
Question No.45 Which one of the following ground state term will not have Jahn-Teller distortion? C 2T2g C 2Eg (low spin) C 3T1g	
Question No.45 Which one of the following ground state term will not have Jahn-Teller distortion? C 2T2g C 2Eg (low spin) C 3T1g	
	Bookmark 4.00
Question No.45 Which one of the following ground state term will not have Jahn-Teller distortion? C 2T _{2g} C 2E _g (low spin) C 3T _{1g} C 1A _{1g} (low spin)	Bookmark □
Question No.45 Which one of the following ground state term will not have Jahn-Teller distortion? C 2T2g C 2Eg (low spin) C 3T1g C 1A1g (low spin)	Bookmark 4.00
Question No.45 Which one of the following ground state term will not have Jahn-Teller distortion? ○ 2 _{T2g} ○ 2 _{Eg} (low spin) ○ 3 _{T1g} ○ 1 _{A1g} (low spin) Question No.46 Which of the following has zero crystal field stabilization energy in octahedral field? ○ Co ³⁺ (low spin)	Bookmark 4.00
Question No.45 Which one of the following ground state term will not have Jahn-Teller distortion? 2T2g 2Eg (low spin) 3T1g 1A1g (low spin) Coofficient No.46 Which of the following has zero crystal field stabilization energy in octahedral field? Coofficient No.46 Which of the following has zero crystal field stabilization energy in octahedral field? Fe3+ (low spin)	Bookmark 4.00
Question No.45 Which one of the following ground state term will not have Jahn-Teller distortion? C 2T2g C 2Eg (low spin) C 3T1g C 1A1g (low spin) Question No.46 Which of the following has zero crystal field stabilization energy in octahedral field? C Co ³⁺ (low spin)	Bookmark 4.00

Question No.47	4.00 Bookmark
The coenzyme that is involved in the reduction of a double bond in fatty acid biosynthesis is:- © Pyridoxa	DOOKINGIN _
© FADH ₂	
© Biotin	
© NADH	
Question No.48	4.00 Bookmark □
Identify the underlined part of speech:	BOOKIIIAIK [
Sorry, I don't know any <u>foreign</u> languages	
O adjective	
© pronoun	
○ noun ○ adverb	
€ auveib	
Question No.49	4.00
The spectroscopic ground state term symbolsfor the octahedral aqua complexes of Mn(II), Cr(III) and Cu	Bookmark □
respectively, are	(11),
[©] ² H, ² H and ² D	
[©] ² H, ⁴ F and ² D	
^C ⁶ S, ⁴ F and ² P	
^C ⁶ S, ⁴ F and ² D	
Question No.50	4.00
	4.00 Bookmark
Good restaurants serving pure vegetarian food are very hard to	
Good restaurants serving pure vegetarian food are very hard to © come by	
Good restaurants serving pure vegetarian food are very hard to come by get in	
Good restaurants serving pure vegetarian food are very hard to come by get in take to	
Good restaurants serving pure vegetarian food are very hard to come by get in take to	
Good restaurants serving pure vegetarian food are very hard to come by get in take to	
Good restaurants serving pure vegetarian food are very hard to come by get in take to	
Good restaurants serving pure vegetarian food are very hard to come by get in take to	
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Good restaurants serving pure vegetarian food are very hard to come by get in take to	
Good restaurants serving pure vegetarian food are very hard to come by get in take to	
Good restaurants serving pure vegetarian food are very hard to come by get in take to	
Good restaurants serving pure vegetarian food are very hard to come by get in take to go through Question No.51	Bookmark 4.00
Good restaurants serving pure vegetarian food are very hard to come by get in take to go through Question No.51	Bookmark
Good restaurants serving pure vegetarian food are very hard to come by get in take to go through Question No.51	Bookmark 4.00
Good restaurants serving pure vegetarian food are very hard to come by get in take to go through Question No.51	Bookmark 4.00

O

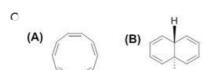
∼ •CH₂



Question No.52 4.00

Bookmark

Identify the correct answers





Question No.53 4.00

Bookmark [

The number of bridging ligand(s) and metal metal bond(s) present in the complex

 $[Ru_2(\eta^5-Cp)_2(CO)_2(Ph_2PCH_2PPh_2)] \ (obeys\ 18\text{-electron rule})\ respectively\ are$

- © 0 and 1
- O 3 and 1
- C 1 and 2
- C 2 and 1

Question No.54 4.00

Bookmark

The following scheme shows a mechanism for the α -bromination of a methyl ketone with bromine in ethanoic acid. In which stage do the curly arrows wrongly show the flow of electrons?

(1)	(2)	(3)	(4)	
			O	
		——) – HBr	► D CH Br	
		-1101	n Ch₂br	
C Stage 4				
○ Stage 1				
○ Stage 3				
○ Stage 2				
Overetion No FF				4.00
Question No.55				4.00 Bookmark □
A	DODLON: DOO - CON	- - - - - - - - - -		
· ·		i, the set of ligands v	with good π-acceptor nature a	re:-
© RO ⁻ , RCO ²⁻ , As	sMe ₃			
^C RO ⁻ , RCO ₂ ⁻ , SO	CN⁻			
_				
© RO ⁻ , ROR', RC	_			
^C AsMe ₃ , CN⁻, S	CN ⁻			
Question No.56				4.00
Question No.56				4.00 Bookmark □
	;-			4.00 Bookmark □
Fe(CO) ₄ is isolobal to:	;-			
Fe(CO) ₄ is isolobal to:	:-			
Fe(CO) ₄ is isolobal to: © Mn(CO) ₄ © Ru(CO) ₄	;-			
Fe(CO) ₄ is isolobal to: Mn(CO) ₄ Ru(CO) ₄ Cu(CO) ₄	:-			
Fe(CO) ₄ is isolobal to: © Mn(CO) ₄ © Ru(CO) ₄	:-			
Fe(CO) ₄ is isolobal to: Mn(CO) ₄ Ru(CO) ₄ Cu(CO) ₄ Cr(CO) ₄	;-			Bookmark □
Fe(CO) ₄ is isolobal to: Mn(CO) ₄ Ru(CO) ₄ Cu(CO) ₄	:-			Bookmark ☐
Fe(CO) ₄ is isolobal to: Mn(CO) ₄ Ru(CO) ₄ Cu(CO) ₄ Cr(CO) ₄				Bookmark □
Fe(CO) ₄ is isolobal to: Mn(CO) ₄ Ru(CO) ₄ Cu(CO) ₄ Cr(CO) ₄ Question No.57 Which of the following in	is true for melting?			Bookmark ☐
Fe(CO) ₄ is isolobal to: Mn(CO) ₄ Ru(CO) ₄ Cu(CO) ₄ Cr(CO) ₄ Question No.57 Which of the following in exothermic pro-	is true for melting?			Bookmark ☐
Fe(CO) ₄ is isolobal to: Mn(CO) ₄ Ru(CO) ₄ Cu(CO) ₄ Cr(CO) ₄ Question No.57 Which of the following in exothermic pro- irreversible pro	is true for melting?			Bookmark ☐
Fe(CO) ₄ is isolobal to: Mn(CO) ₄ Ru(CO) ₄ Cu(CO) ₄ Cr(CO) ₄ Cr(CO) ₄ Question No.57 Which of the following in exothermic processible process	is true for melting?			Bookmark ☐
Fe(CO) ₄ is isolobal to: Mn(CO) ₄ Ru(CO) ₄ Cu(CO) ₄ Cr(CO) ₄ Question No.57 Which of the following in exothermic pro- irreversible pro	is true for melting?			Bookmark ☐
Fe(CO) ₄ is isolobal to: Mn(CO) ₄ Ru(CO) ₄ Cu(CO) ₄ Cr(CO) ₄ Cr(CO) ₄ Question No.57 Which of the following in exothermic processible process	is true for melting?			Bookmark ☐
Fe(CO) ₄ is isolobal to: Mn(CO) ₄ Ru(CO) ₄ Cu(CO) ₄ Cr(CO) ₄ Cr(CO) ₄ Question No.57 Which of the following in exothermic processible process	is true for melting?			Bookmark 4.00 Bookmark
Fe(CO) ₄ is isolobal to: Mn(CO) ₄ Ru(CO) ₄ Cu(CO) ₄ Cr(CO) ₄ Cr(CO) ₄ Question No.57 Which of the following in exothermic processible process	is true for melting?			Bookmark 4.00 Bookmark 4.00
Fe(CO) ₄ is isolobal to: Mn(CO) ₄ Ru(CO) ₄ Cu(CO) ₄ Cr(CO) ₄ Question No.57 Which of the following in exothermic proceed irreversible proceed endothermic proceed endothermic proceed in the second content of the se	is true for melting? ocess ocess rocess	1 T is colorless This	is due to greater energy requir	4.00 Bookmark □ 4.00 Bookmark □
Fe(CO) ₄ is isolobal to: Mn(CO) ₄ Ru(CO) ₄ Cu(CO) ₄ Cr(CO) ₄ Cr(CO) ₄ Question No.57 Which of the following in exothermic procent irreversible procent endothermic procent endothermic procent None of these Question No.58 [MnO ₄] is deep purple	is true for melting? acess acess access access		is due to greater energy require	4.00 Bookmark □ 4.00 Bookmark □
Fe(CO) ₄ is isolobal to: Mn(CO) ₄ Ru(CO) ₄ Cu(CO) ₄ Cr(CO) ₄ Cr(CO) ₄ Question No.57 Which of the following in exothermic procent irreversible procent endothermic en	is true for melting? ocess ocess rocess e in color whereas [ReO ₂	mpared to the Mn co	ompound	4.00 Bookmark □ 4.00 Bookmark □
Fe(CO) ₄ is isolobal to: Mn(CO) ₄ Ru(CO) ₄ Cu(CO) ₄ Cr(CO) ₄ Cr(CO) ₄ Question No.57 Which of the following in exothermic procend of the endothermic procend of these Question No.58 [MnO ₄] is deep purple coded transitions coded transitions	is true for melting? ocess ocess rocess e in color whereas [ReO ₂ in the Re compound co	mpared to the Mn compared to the Re co	ompound	4.00 Bookmark □ 4.00 Bookmark □
Fe(CO) ₄ is isolobal to: Mn(CO) ₄ Ru(CO) ₄ Cu(CO) ₄ Cr(CO) ₄ Cr(CO) ₄ Question No.57 Which of the following in exothermic procent irreversible procent endothermic endoth	is true for melting? ocess ocess rocess e in color whereas [ReO ₂ in the Re compound co in the Mn compound co	mpared to the Mn compared to the Re co	ompound	4.00 Bookmark □ 4.00 Bookmark □
Fe(CO) ₄ is isolobal to: Mn(CO) ₄ Ru(CO) ₄ Cu(CO) ₄ Cr(CO) ₄ Cr(CO) ₄ Question No.57 Which of the following in exothermic procent irreversible procent endothermic endoth	is true for melting? ocess ocess rocess e in color whereas [ReO ₂ in the Re compound co	mpared to the Mn compared to the Re co	ompound	4.00 Bookmark □ 4.00 Bookmark □
Fe(CO) ₄ is isolobal to: Mn(CO) ₄ Ru(CO) ₄ Cu(CO) ₄ Cr(CO) ₄ Cr(CO) ₄ Question No.57 Which of the following in exothermic procent irreversible procent endothermic endoth	is true for melting? ocess ocess rocess e in color whereas [ReO ₂ in the Re compound co in the Mn compound co	mpared to the Mn compared to the Re co	ompound	Bookmark ☐ 4.00 Bookmark ☐ 4.00 Bookmark ☐ red for
Fe(CO) ₄ is isolobal to: Mn(CO) ₄ Ru(CO) ₄ Cu(CO) ₄ Cr(CO) ₄ Cr(CO) ₄ Question No.57 Which of the following in exothermic procent irreversible procent endothermic endoth	is true for melting? ocess ocess rocess e in color whereas [ReO ₂ in the Re compound co in the Mn compound co	mpared to the Mn compared to the Re co	ompound	4.00 Bookmark □ 4.00 Bookmark □

Which is the enantiomer of the following molecule? CHO -он CH₂OH Question No.60 Bookmark [

4.00

The non-Planarity of Si2H4 is associated with:-

- Inert pair effect
- C Weak Si-H bonds
- Weak Si-Si pi bonds
- C Steric repulsion

Question No.61 4.00 Bookmark □

The numbers of radial nodes of 3d orbital is:-

- 02
- O 3
- 0 1
- \circ 0

Question No.62 4.00

Bookmark [

Which compound is different from the others?

Question No.63 4.00

Bookmark □

Based on the information given, answer the below question.

- 1. A,B,C,D,E and F are travelling in a bus.
- 2. There are two reporters, two mechanics, one photographer and one writer in the group.
- 3. Photographer A is married to D who is a reporter.
- 4. The writer is married to B who is of the same profession as that of F.
- 5. A,B,C,D are two married couples and no one in this belong to the same profession.
- 6. F is the brother of C.

How is C related to F?

- C Brother-in-law
- Cannot be determined
- Sister
- C Brother

Question No.64 4.00

Bookmark [

Choose the correct meaning of the italicized idiom.

He had great difficulty to save his bacon when he was blackmailed.

- Save pork
- Put bacon in the refrigerator
- C Escape death
- Threaten somebody

Question No.65 4.00

The most stable hydride of the following is

- NaH
- C LiH
- O KH
- C CsH

Question No.66 4.00

Bookmark |

Bookmark □

The product of the following reaction is:

- O (i) only
- a mixture of (i) and (ii)
- C (ii) only
- C a mixture of (iii) and (iv)

Question No.67

4.00

Bookmark [

Identify the correct product.

Question No.68 4.00

Bookmark [

It takes eight hours for a 600 km journey, if 120 km is done by train and the rest by car. It takes 20 minutes more, if 200 km is done by train and the rest by car. The ratio of the speed of the train to that of the cars is:

- O 1:2
- C 2:3
- C 3:4
- 0 1:4

Question No.69 4.00

Bookmark

The ground state term symbol for O₂²⁺ molecule is:-

O 2 П.

C 3Σ _q -	
° ₃∏″	
C 1Σ _α +	
Question No.70	4.00 Bookmark □
	BOOKIII IK
IUPAC nomenclature of the following compound is	
○ Bicyclo [4.2.0] octane	
© Bicyclo [4.2.2] octane	
© Bicyclo [6.2.0] octane © Bicyclo [6.2.2] octane	
Question No.71	4.00
Use molecular orbital theory to determine the bond order for the O_2^+ ion in its ground state:-	Bookmark □
© 2	
O 3	
° 2 1/2	
° 1½	
Question No 72	4.00
Question No.72	4.00 Bookmark □
Aluminum chloride melts at a much lower temperature than that of sodium chloride, because:-	
Aluminum chloride melts at a much lower temperature than that of sodium chloride, because: C aluminum chloride is polymeric	
Aluminum chloride melts at a much lower temperature than that of sodium chloride, because: C aluminum chloride is polymeric C aluminum chloride is dimeric	
Aluminum chloride melts at a much lower temperature than that of sodium chloride, because: aluminum chloride is polymeric aluminum chloride is dimeric Al-CI bond is highly covalent while NaCI is ionic	
Aluminum chloride melts at a much lower temperature than that of sodium chloride, because: aluminum chloride is polymeric aluminum chloride is dimeric Al-CI bond is highly covalent while NaCI is ionic	
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Aluminum chloride melts at a much lower temperature than that of sodium chloride, because: aluminum chloride is polymeric aluminum chloride is dimeric Al-CI bond is highly covalent while NaCI is ionic the Al-CI bond is more ionic than that of Na-CI	Bookmark □
Aluminum chloride melts at a much lower temperature than that of sodium chloride, because: aluminum chloride is polymeric aluminum chloride is dimeric Al-CI bond is highly covalent while NaCI is ionic the Al-CI bond is more ionic than that of Na-CI Question No.73 M(CH ₂ CHCH ₂) complex does not have interaction between:-	Bookmark 4.00
Aluminum chloride melts at a much lower temperature than that of sodium chloride, because: aluminum chloride is polymeric aluminum chloride is dimeric Al-CI bond is highly covalent while NaCI is ionic the Al-CI bond is more ionic than that of Na-CI Question No.73 M(CH ₂ CHCH ₂) complex does not have interaction between:- LGO with d _{xv} and d _x ² - _v ²	Bookmark 4.00
Aluminum chloride melts at a much lower temperature than that of sodium chloride, because: aluminum chloride is polymeric aluminum chloride is dimeric Al-CI bond is highly covalent while NaCI is ionic the Al-CI bond is more ionic than that of Na-CI Question No.73 M(CH ₂ CHCH ₂) complex does not have interaction between: LGO with d _{xv} and d _x ² - _v ² LGO with d _{xz} and d _{vz}	Bookmark 4.00
Aluminum chloride melts at a much lower temperature than that of sodium chloride, because:- aluminum chloride is polymeric aluminum chloride is dimeric Al-CI bond is highly covalent while NaCI is ionic the Al-CI bond is more ionic than that of Na-CI Question No.73 M(CH ₂ CHCH ₂) complex does not have interaction between:- LGO with d _{xy} and d _x ² - _y ² LGO with d _{xz} and d _{yz} LGO with d _{xz} and d _x ² - _y ²	Bookmark 4.00
Aluminum chloride melts at a much lower temperature than that of sodium chloride, because: aluminum chloride is polymeric aluminum chloride is dimeric Al-CI bond is highly covalent while NaCI is ionic the Al-CI bond is more ionic than that of Na-CI Question No.73 M(CH ₂ CHCH ₂) complex does not have interaction between: LGO with d _{xv} and d _x ² - _v ² LGO with d _{xz} and d _{vz}	Bookmark 4.00
Aluminum chloride melts at a much lower temperature than that of sodium chloride, because: © aluminum chloride is polymeric © aluminum chloride is dimeric © Al-Cl bond is highly covalent while NaCl is ionic © the Al-Cl bond is more ionic than that of Na-Cl Question No.73 M(CH ₂ CHCH ₂) complex does not have interaction between: © LGO with d_{xy} and $d_x^2 - v^2$ © LGO with d_{xz} and d_{yz} © LGO with d_{xz} and $d_z^2 - v^2$ © LGO with d_{xz} and $d_z^2 - v^2$ © LGO with d_{xz} and d_z^2	Bookmark ☐ 4.00 Bookmark ☐
Aluminum chloride melts at a much lower temperature than that of sodium chloride, because:- aluminum chloride is polymeric aluminum chloride is dimeric Al-CI bond is highly covalent while NaCI is ionic the Al-CI bond is more ionic than that of Na-CI Question No.73 M(CH ₂ CHCH ₂) complex does not have interaction between:- LGO with d _{xy} and d _x ² - _y ² LGO with d _{xz} and d _{yz} LGO with d _{xz} and d _x ² - _y ²	Bookmark 4.00

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0 0	
O 3 O 2	
Question No.75	4.00
	Bookmark
The number of chemical shift non equivalent protons expected in ${}^1 ext{H}$ NMR spectrum of $lpha$ -Pinene	
is	
\(\frac{1}{2}\)	
C 8	
C 9	
0.7	
O 10	
Question No.76	4.00
The attribution of VoE and VoO E represtively are	Bookmark □
The structures of XeF ₂ and XeO ₂ F ₂ respectively are © linear, square planar	
© bent, tetrahedral	
O linear, see-saw	
○ bent, see-saw	
Question No.77	4.00
Study the following information carefully and answer the question below it	Bookmark
The Director of an MBA college has decided that six guest lectures on the topics of Motivation, Decis Quality Circle, Assessment Centre, Leadership and Group Discussion are to be organised on each d Monday to Sunday. (i) One day there will be no lecture (Saturday is not that day), just before that day Group Discussion wi organised.	ay from
 (ii) Motivation should be organised immediately after Assessment Centre. (iii) Quality Circle should be organised on Wednesday and should not be followed by Group Discussion (iv) Decision Making should be organised on Friday and there should be a gap of two days between I and Group Discussion 	
How many lectures are organised between Motivation and Quality Circle? © Three	
# T	

Question No.78 4.00

Assertion: - India's president is appointed on a five-year term

Reason: -PratibhaPatil was appointed as India's first woman president in 2007

- A is true but R is false
- O Both A and R are true and R is not the correct explanation of A
- O Both A and R are true and R is the correct explanation of A
- C A is false but R is true

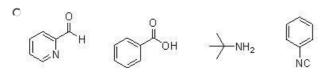
Question No.79 4.00

Bookmark

Bookmark |

Ugi four component reaction involves reaction between an aldehyde, amine, isocyanide and an acid. Based on the scheme given below identify the correct set building blocks to be used in Ugi reaction to obtain the compound shown in Fig,A:

$$R_1$$
 + R_2 NH_2 R_3 OH + R_4 $-NC$ R_4 R_4 R_4 R_4 R_4 R_4 R_4 R_4 R_4



Question No.80 4.00

Bookmark

The biological role of ferritin is:-

- o iron storage
- c electron transfer
- oxygen storage
- metal transport

Question No.81 4.00

Bookmark [

What is the symmetry of the antibonding molecular orbital formed by a linear combination of the p_x or p_y atomic orbitals in a homonuclear diatomic molecule?

- $\circ \ \pi_u$
- \circ σ_c
- O σ.,

Question No.82 4.00

Bookmark

H₂ and CO can be produced from one of the following reactions:-

- C H₂O reaction with CO₂
- H₂O reaction with C
- C H₂O reaction with Mn(CO)₆
- H₂O reaction with Na

Question No.83 4.00

Bookmark [

The higher stability of cis dichloro ethylene compared to its trans form is due to:-

- C Steric repulsion
- Inter-halogen attraction from weak interactions
- Hydrogen bonding
- Hyper-conjugation

Question No.84 4.00

Bookmark [

Based on the following reaction:

the product of the following reaction would be:



Question No.85 4.00

Bookmark

For a d⁹ ion the singly occupied orbital is:-

- a_{1g}
- b_{2g}
- e_g
- C b_{1g}

Question No.86 4.00

Bookmark |

Which of the following reactions will result in the formation of the product (P) given below:

Question No.87

4.00

Bookmark □

Reduction of $[Co(NH_3)_5CI]^{2+}$ by $[Cr(H_2O)_6]^{2+}$ is faster owing to:-

- no presence of CI-
- o presence of water
- presence of amine
- high oxidation state

Question No.88 4.00

Bookmark

The substitution reaction in $[Co(NH_3)_5Cl]^{2+}$ is faster in the presence of:

- OH-
- Pressure
- C Photo light
- Metal catalyst

Question No.89 4.00

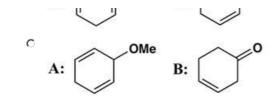
Bookmark [

Which combination of compounds in (A)-(D) identifies A and B in the following reaction sequence?

OMe
$$\begin{array}{c|c}
 & \text{Na, liq. NH}_3 \\
\hline
 & \text{EtOH, Et}_2O
\end{array}$$

$$\begin{array}{c}
 & A \\
\hline
 & \Delta
\end{array}$$

$$\begin{array}{c}
 & \text{HCI, H}_2O \\
 & \Delta
\end{array}$$
(at completion)

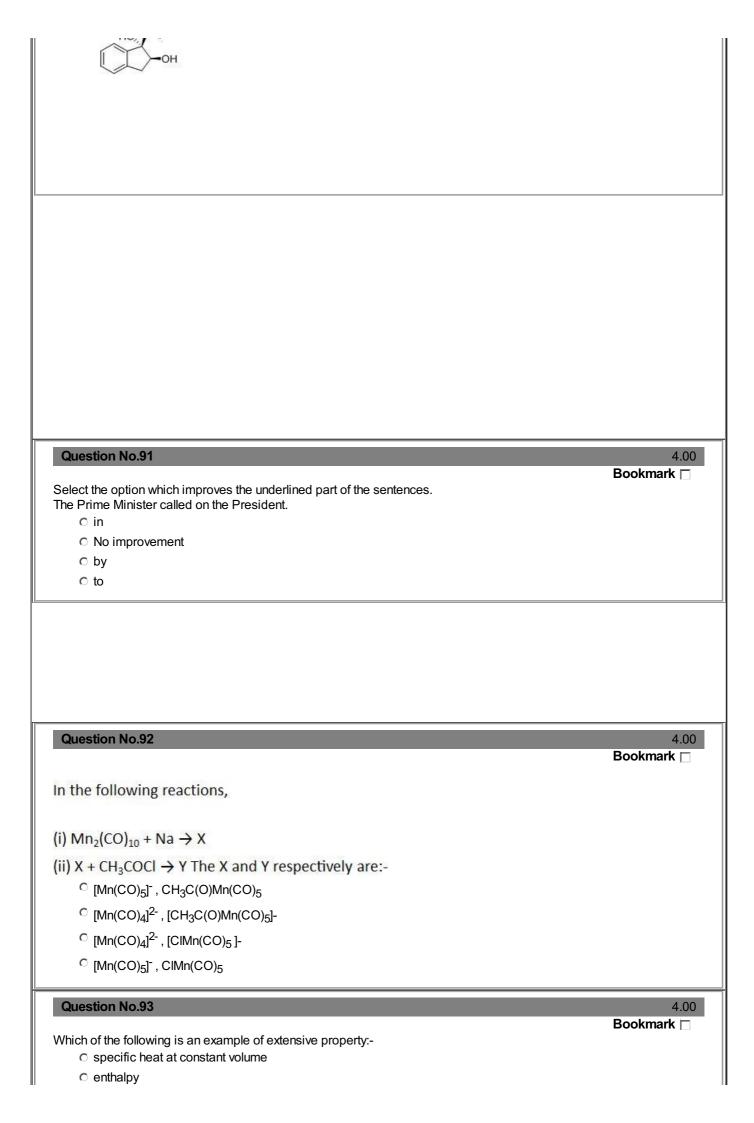


Question No.90 4.00

Bookmark

The major product formed in the following reaction is

C HO CH3



o pressure

c temperature

Question No.94

4.00 Bookmark

The number of normal modes of vibration in H_2S molecule is:-

- \circ 3
- 0 1
- 0 2
- 04

Question No.95

4.00

Bookmark 🗆

Huckel theory explains stability difference between:-

- Planar vs twisted bi-phenyl
- © Benzene vs Dewar benzene
- C Anthracene vs phenanthrene
- C s-cis vs s-transbuta-diene

Question No.96 4.00

Bookmark \square

The correct order of the rate constants for the following series of reactions $(Z = CF_3/CH_3/OCH_3)$ is

$$Z \xrightarrow{NO_2} Br + H - N \longrightarrow Z \xrightarrow{NO_2} N$$

- \circ OCH₃ > CF₃ > CH₃
- C CF₃ > CH₃ > OCH₃
- \circ CH₃> OCH₃ > CF₃
- C CF₃> OCH₃ > CH₃

4.00 **Question No.97** Bookmark □ Which of the following dimethylcyclobutane is chiral? C cis-1,2-dimethylcyclobutane rans-1,2-dimethylcyclobutane **Question No.98** 4.00 Bookmark | Cis-Pt(CI)₂(NH₃)₂ from one of the following complexes:-O PtCl₄ ○ Pt, NH₃ and Cl Pt(NH₃)₄ \circ Pt(NH₂)₄ **Question No.99** 4.00 Bookmark [(A) (B) (C) (D) \circ D ОВ \circ C \circ A **Question No.100** 4.00 Bookmark [Intermediate involved in the following reaction is

HO + CHCI₃ NaOH HO CHO

C CCI₄

C CCI₃

C CH₂CI₂

C CCI₂