Test Booklet Series

A

Test Booklet No.

Test Booklet for the Post of

Assistant Professor Chemistry

Name of Applicant ..... Answer Sheet No. .....

Applicant ID/Roll No. : ..... Signature of Applicant : .....

Date of Examination: .....

Signature of the Invigilator(s)

1. .....

Time of Examination : .....

2. .....

Duration : 90 Minutes] **[Maximum Marks : 50**

IMPORTANT INSTRUCTIONS

(i) The question paper is in the form of Test-Booklet containing **50 (Fifty)** questions. All questions are compulsory. Each question carries four answers marked (A), (B), (C) and (D), out of which only one is correct. Choose the correct option or the most appropriate option.

(ii) On receipt of the Test-Booklet (Question Paper), the candidate should immediately check it and ensure that it contains all the pages, i.e., **50** questions. Discrepancy, if any, should be reported by the candidate to the invigilator immediately after receiving the Test-Booklet.

(iii) A separate Answer-Sheet is provided with the Test-Booklet/Question Paper. On this sheet there are **50** rows containing four circles each. One row pertains to one question.

(iv) The candidate should write his/her Application ID/Roll number at the places provided on the cover page of the Test-Booklet/Question Paper and on the Answer-Sheet and NOWHERE ELSE.

(v) No second Test-Booklet/Question Paper and Answer-Sheet will be given to a candidate. The candidates are advised to be careful in handling it and writing the answer on the Answer-Sheet.

(vi) For every correct answer of the question **One (1) mark will be awarded.** There will be negative marking and 1/4 (0.25) mark will be deducted for every incorrect answer.

(vii) Marking shall be done only on the basis of answers responded on the Answer-Sheet.

(viii) To mark the answer on the Answer-Sheet, candidate should **darken** the appropriate circle in the row of each question with Blue or Black pen.

(ix) For each question only **one** circle should be **darkened** as a mark of the answer adopted by the candidate. If more than one circle for the question are found darkened or with one black circle any other circle carries any mark, the answer will be treated as incorrect.

(x) The candidates should not remove any paper from the Test-Booklet/Question Paper. Attempting to remove any paper shall be liable to be punished for use of unfair means.

(xi) Rough work may be done on the blank space provided in the Test-Booklet/Question Paper only.

(xii) *Mobile phones (even in Switch-off mode) and such other communication/programmable devices are not allowed inside the examination hall.*

(xiii) No candidate shall be permitted to leave the examination hall before the expiry of the time.

DO NOT OPEN THIS QUESTION BOOKLET UNTIL ASKED TO DO SO.

LIST OF THE ATOMIC WEIGHTS OF THE ELEMENTS

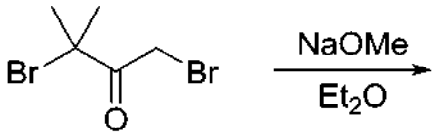
Element	Symbol	Atomic Number	Atomic Weight	Element	Symbol	Atomic Number	Atomic Weight
Actinium	Ac	89	(227)	Mercury	Hg	80	200.59
Aluminium	Al	13	26.98	Molybdenum	Mo	42	95.94
Americium	Am	95	(243)	Neodymium	Nd	60	144.24
Antimony	Sb	51	121.75	Neon	Ne	10	20.183
Argon	Ar	18	39.948	Neptunium	Np	93	(237)
Arsenic	As	33	74.92	Nickel	Ni	28	58.71
Astatine	At	85	(210)	Niobium	Nb	41	92.91
Barium	Ba	56	137.34	Nitrogen	N	7	14.007
Berkelium	Bk	97	(249)	Nobelium	No	102	(253)
Beryllium	Be	4	9.012	Osmium	Os	76	190.2
Bismuth	Bi	83	208.98	Oxygen	O	8	15.9994
Boron	B	5	10.81	Palladium	Pd	46	106.4
Bromine	Br	35	79.909	Phosphorus	P	15	30.974
Cadmium	Cd	48	112.40	Platinum	Pt	78	195.09
Calcium	Ca	20	40.08	Plutonium	Pu	94	(242)
Californium	Cf	98	(251)	Polonium	Po	84	(210)
Carbon	C	6	12.011	Potassium	K	19	39.102
Cerium	Ce	58	140.12	Praseodymium	Pr	59	140.91
Cesium	Cs	55	132.91	Promethium	Pm	61	(147)
Chlorine	Cl	17	35.453	Protactinium	Pa	91	(231)
Chromium	Cr	24	52.00	Radium	Ra	88	(226)
Cobalt	Co	27	58.93	Radon	Rn	86	(222)
Copper	Cu	29	63.54	Rhenium	Re	75	186.23
Curium	Cm	96	(247)	Rhodium	Rh	45	102.91
Dysprosium	Dy	66	162.50	Rubidium	Rb	37	85.47
Einsteinium	Es	99	(254)	Ruthenium	Ru	44	101.1
Erbium	Er	68	167.26	Samarium	Sm	62	150.35
Europium	Eu	63	151.96	Scandium	Sc	21	44.96
Fermium	Fm	100	(253)	Selenium	Se	34	78.96
Fluorine	F	9	19.00	Silicon	Si	14	28.09
Francium	Fr	87	(223)	Silver	Ag	47	107.870
Gadolinium	Gd	64	157.25	Sodium	Na	11	22.9898
Gallium	Ga	31	69.72	Strontium	Sr	38	87.62
Germanium	Ge	32	72.59	Sulfur	S	16	32.064
Gold	Au	79	196.97	Tantalum	Ta	73	180.95
Hafnium	Hf	72	178.49	Technetium	Tc	43	(99)
Helium	He	2	4.003	Tellurium	Te	52	127.60
Holmium	Ho	67	164.93	Terbium	Tb	65	158.92
Hydrogen	H	1	1.0080	Thallium	Tl	81	204.37
Indium	In	49	114.82	Thorium	Th	90	232.04
Iodine	I	53	126.90	Thulium	Tm	69	168.93
Iridium	Ir	77	192.2	Tin	Sn	50	118.69
Iron	Fe	26	55.85	Titanium	Ti	22	47.90
Krypton	Kr	36	83.80	Tungsten	W	74	183.85
Lanthanum	La	57	138.91	Uranium	U	92	238.03
Lawrencium	Lr	103	(257)	Vanadium	V	23	50.94
Lead	Pb	82	207.19	Xenon	Xe	54	131.30
Lithium	Li	3	6.939	Ytterbium	Yb	70	173.04
Lutetium	Lu	71	174.97	Yttrium	Y	39	88.91
Magnesium	Mg	12	24.312	Zinc	Zn	30	65.37
Manganese	Mn	25	54.94	Zirconium	Zr	40	91.22
Mendelevium	Md	101	(256)				

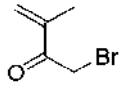
*Based on mass of C^{12} at 12.000... . The ratio of these weights of those on the order chemical scale (in which oxygen of natural isotopic composition was assigned a mass of 16.0000...) is 1.000050. (Values in parentheses represent the most stable known isotopes)

USEFUL FUNDAMAENTAL CONSTANTS

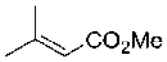
m	Mass of electron	9.11×10^{-31}kg
h	Planck's constant	$6.63 \times 10^{-34} J\ sec$
e	Charge of electron	$1.6 \times 10^{-19} C$
k	Boltzmann constant	$1.38 \times 10^{-23} J/K$
c	Velocity of Light	$3.0 \times 10^{8} m/sec$
leV	1.6×10^{-19}J	
amu	1.67×10^{-27}kg	
G	$6.67 \times 10^{-11} Nm^2 kg^{-3}$	
R_y	Rydberg constant	$1.097 \times 10^{7} m^{-1}$
N_A	Avogadro's number	$6.022 \times 10^{23} mole^{-1}$
ε_o	$8.854 \times 10^{-12} Fm^{-1}$	
μ_o	$4\pi \times 10^{-7} Hm^{-1}$	
R	Molar Gas constant	$8.314 J K^{-1} mole^{-1}$

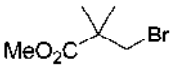
1. The major product formed in the following reaction is



(A) 

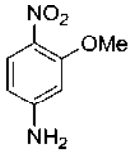
(B) 

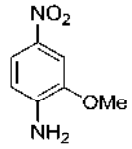
(C) 

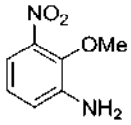
(D) 

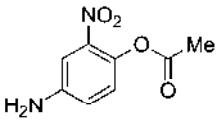
2. The structure of the compound that matches the ^1H NMR data given below is

^1H NMR (DMSO-d_6) : δ 7.75 (dd, J = 8.8, 2.4 Hz, 1H), 7.58 (d, J = 2.4 Hz, 1H), 6.70 (d, J = 8.8 Hz, 1H), 6.50 (broad s, 2H), 3.80 (s, 3H).

(A) 

(B) 

(C) 

(D) 

3. In the mass spectrum of 1,2-dichloroethane, approximate ratio of peaks at m/z values 98, 100, 102 will be

(A) 3:1:1 (B) 9:6:1

(C) 1:1:2 (D) 1:2:1

4. The correct statement among the following is

(A) N_2 has higher bond order than N_2^+ and hence has larger bond length compared to N_2^+

(B) N_2^+ has higher bond order than N_2 and hence has larger bond length compared to N_2

(C) N_2 has higher bond order than N_2^+ and hence has higher dissociation energy compared to N_2^+

(D) N_2 has lower bond order than N_2^+ and hence has lower dissociation energy compared to N_2^+ energy

5. Identify radioactive capture from the following nuclear reactions

(A) ^{9}Be (γ, n) ^{8}Be

(B) ^{23}Na (n, γ) ^{24}Na

(C) ^{63}Cu (p, p 3n 9α) ^{24}Na

(D) ^{107}Ag (n, n) ^{107}Ag

6. The approximate positions of ν_{CO} bands (cm^{-1}) in the solid-state infrared spectrum and the Fe–Fe bond order in $[Fe(\eta^5\text{–}C_5H_5)(\mu\text{–}CO)(CO)]_2$ (non-centrosymmetric) respectively, are

(A) (2020, 1980, 1800) and one

(B) (2020, 1980, 1800) and two

(C) (2020, 1980) and one

(D) (2143) and one

7. According to the transition state theory, one of the vibrations in the activated complex is a loose vibration. The partition function for this loose vibration is equal to (k_B is the Boltzmann's constant and h is the Planck's constant)

(A) $\frac{k_BT}{h}$

(B) $\frac{h\nu}{k_BT}$

(C) k_BT

(D) $\frac{k_BT}{h\nu}$

8. Stability of lyophobic dispersions is determined by

(A) inter-particle electric double layer repulsion and intra-particle van der Waals attraction

(B) inter-particle electric double layer attraction and intra-particle van der Waals repulsion

(C) inter-particle excluded volume repulsion and intra-particle van der Waals attraction

(D) inter-particle excluded volume attraction and intra-particle van der Waals repulsion

9. The irreducible representations of C_{2h} are A_g, B_g A_u and B_u. The Raman active modes of *trans*-1,3-butadiene belong to the irreducible representations

(A) A_g and B_g

(B) A_g and A_u

(C) A_u and B_g

(C) B_g and B_u

10. The average end-to-end distance of a random coil polymer of 10^6 monomers (in units of segment length) is

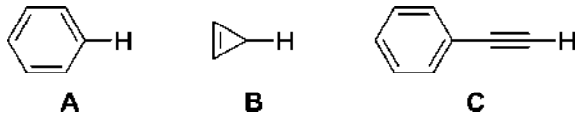
(A) 10^6

(B) 10^5

(C) 10^4

(D) 10^3

11. The correct order of the bond dissociation energies for the indicated C–H bond in following compounds is



A B C

(A) C > B > A (B) A > B > C

(C) A > C > B (D) C > A > B

12. Correct characteristics of the functional groups of adenine in DNA base pair are

(A) N(3) is a hydrogen bond acceptor and $C(6)NH_2$ is a hydrogen bond donor

(B) N(1) is a hydrogen bond acceptor and $C(6)NH_2$ is a hydrogen bond donor

(C) Both N(3) and $C(6)NH_2$ are hydrogen bond acceptors

(D) Both N(1) and $C(6)NH_2$ are hydrogen bond acceptors

13. ^{1}H NMR spectrum of an organic compound recorded on a 500 MHz spectrometer showed a quartet with line positions at 1759, 1753, 1747, 1741 Hz. Chemical shift (δ) and coupling constant (Hz) of the quartet are

(A) 3.5 ppm, 6 Hz (B) 3.5 ppm, 12 Hz

(C) 3.6 ppm, 6 Hz (D) 3.6 ppm, 12 Hz

14. In a direct isotopic dilution method for determination of phosphate, 2 mg of $^{32}PO_4^{3-}$ (specific activity 3100 disintegration s^{-1} mg^{-1}) was added to 1 g of a sample solution. The 30 mg of phosphate isolated from it has an overall activity of 3000 disintegration s^{-1}. The % mass of PO_4^{3-} in the sample is

(A) 30 (B) 6

(C) 9 (D) 15

15. Consider the following statements for $[FeO_4]^{4-}$.

(a) It is paramagnetic

(b) It has T_d symmetry

(c) Adopts distorted square planar geometry

(d) Shows approximately D_{2d} symmetry

The correct answer is

(A) (a), (b) and (c)

(B) (a), (c) and (d)

(C) (a) and (d)

(D) (a) and (b)

16. The spectroscopic ground state term symbols for the octahedral aqua complexes of Mn(II), Cr(III) and Cu(II), respectively, are

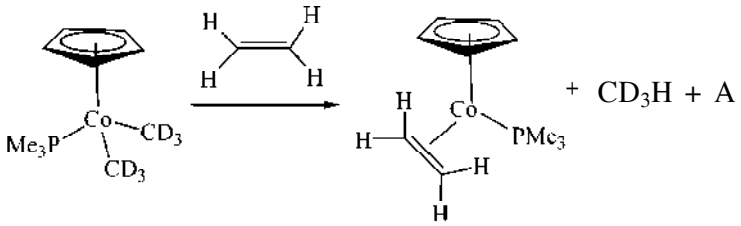
(A) ^2H, ^4F and ^2D

(B) ^6S, ^4F and ^2D

(C) ^2H, ^2H and ^2D

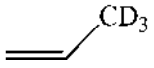
(C) ^6S, ^4F and ^2P

17. Product **A** in the following reaction is



(A) $D_2C{=}CD_2$

(B) $D_3C{-}{-}CD_3$

(C) 

(D) $H_2C{=}CD_2$

18. The spatial part of an excited state $b^3\Sigma_u^+$ of hydrogen molecule is proportional to $[1\sigma_g(1)1\sigma_u(2) - 1\sigma_g(2)1\sigma_u(1)]$. Using *LCAO – MO* expansion of $1\sigma_g$ and $1\sigma_u$ in terms of 1*s*-atomic orbitals, one can infer that this wavefunction has

(A) only ionic parts

(B) only covalent parts

(C) both ionic and covalent parts

(D) neither ionic nor covalent parts

19. The pair of symmetry point groups that are associated with only polar molecules is

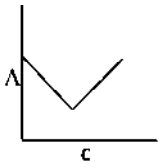
(A) C_{2v}, $D_{\infty h}$

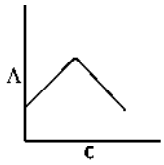
(B) C_{3v}, C_{2h}

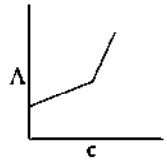
(C) C_{2h}, T_d

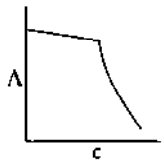
(D) C_{2v}, $C_{\infty v}$

20. The molar conductivity (Λ) vs. concentration (c) plot of sodium dodecylsulfate in water is expected to look like

(A) 

(B) 

(C) 

(D) 

21. The $\sin^2\theta$ values obtained from X-ray powder diffraction pattern of a solid are $2x$, $4x$, $6x$, $8x$ where x is equal to 0.06. The wavelength of X-ray used to obtain this pattern is 1.54 Å. The unit cell and the unit cell length, respectively, are

(A) BCC, 3.146 Å

(B) FCC, 3.146 Å

(C) SCC, 6.281 Å

(D) BCC, 1.544 Å

22. The correct order of intensity of the d-d transitions in the complexes of a 3d transition metal ion M^{2+} is

(A) *cis*-$[M(H_2O)_4Cl_2]$ > *trans*-$[M(H_2O)_4Cl_2]$ > $[M(H_2O)_6]^{2+}$

(B) $[M(H_2O)_6]^{2+}$ > *cis*-$[M(H_2O)_4Cl_2]$ > *trans*-$[M(H_2O)_4Cl_2]$

(C) *trans*-$[M(H_2O)_4Cl_2]$ > *cis*-$[M(H_2O)_4Cl_2]$ > $[M(H_2O)_6]^{2+}$

(D) $[M(H_2O)_6]^{2+}$ > *cis*-$[M(H_2O)_4Cl_2]$ $\approx$ *trans*-$[M(H_2O)_4Cl_2]$

23. B_2H_6 reacts with

(a) water to give boric acid and H_2

(b) oxygen to give B_2O_3 and H_2

(c) water to give boric acid and H_2O

(d) oxygen to give B_2O_3 and H_2O

Correct statements from the above are :

(A) (a) and (b)

(B) (a) and (d)

(C) (b) and (c)

(D) (b) and (d)

24. A solid sample to $Na[Fe(EDTA)(H_2O)_6]$ (X) showed 5.6% weight loss at 120ºC in a thermogravimetric experiment. Identify the complex left after this weight loss.

(A) $Na[Fe(EDTA)(H_2O)]$

(B) Na[Fe(EDTA)]

(C) $Na[Fe(EDTA)(H_2O)_2]$

(D) $na[Fe(EDTA)(H_2O)_3]$

25. One of the Hückel molecular orbitals of 1,3-butadiene is

$$\phi = 0.60\chi_1 + 0.37\chi_2 - 0.37\chi_3 - 0.60\chi_4$$

The energy of this orbital in terms of the coulomb (α) and resonance (β) integrals is :

(A) $\alpha + 1.62\beta$

(B) $\alpha + 0.62\beta$

(C) $\alpha - 0.62\beta$

(D) $\alpha - 1.62\beta$

26. The third and fourth lines in the rotational Raman spectrum of CO are separated by 8 cm^{-1}. The CO bond length is given by :

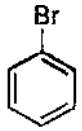
(A) $\sqrt{\frac{h}{16\pi^2\mu c}}$

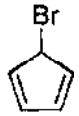
(B) $\sqrt{\frac{3h}{32\pi^2\mu c}}$

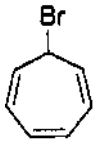
(C) $\sqrt{\frac{h}{32\pi^2\mu c}}$

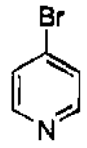
(D) $\sqrt{\frac{5h}{32\pi^2\mu c}}$

27. The compound that gives precipitate on warming with aqueous $AgNO_3$ is

(A) 

(B) 

(C) 

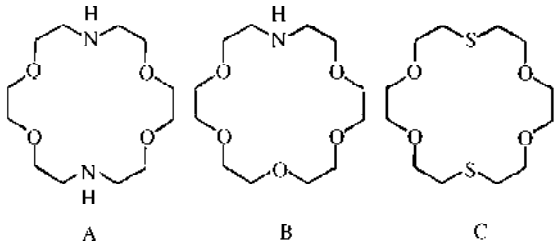
(D) 

28. Number of signals in the $^{13}C\{^1H\}$ NMR spectrum of (R)-4-methylpentan-2-ol are

(A) 3 (B) 4

(C) 5 (D) 6

29. The magnitude of the stability constants for K+ ion complexes of the following supra-molecular hosts follows the order.



(A) B > A > C (B) C > A > B

(C) A > B > C (D) C > B > A

30. The geometries of $[Br_3]^+$ and $[I_5]^+$ respectively, are

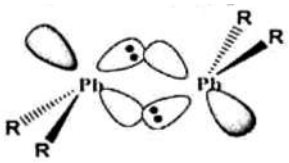
(A) trigonal and tetrahedral

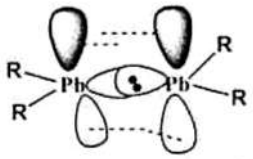
(B) tetrahederal and trigonal bipyramidal

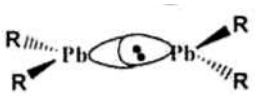
(C) tetrahedral and tetrahedral

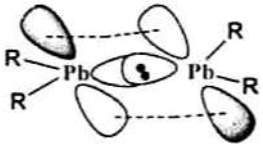
(D) linear and trigonal pyramidal

31. Considering the inert pair effect on lead, the most probable structure of PbR_2 [R = 2,6–C_6H_3 (2,6–'$Pr_2C_6H_3)_2$] is

(A) 

(B) 

(C) 

(D) 

32. Among the complexes, $K_4[Cr(CN)_6]$ (**A**), $K_4[Fe(CN)_6]$ (**B**), $K_3[Co(CN)_6]$ (**C**), and $K_4[Mn(CN)_6]$ (**D**), Jahn-Teller distortion is expected in

(A) **A**, **B** and **C**

(B) **B**, **C** and **D**

(C) **A** and **D**

(D) **B** and **C**

33. In *vitro* reaction of an excess of O_2 with free heme B in aqueous medium the end product is

(A) hematin

(B) [O_2^-–Fe(III)-protoporphyrin-IX]

(C) heme B(O_2)

(D) oxoferrylprotoporphyrin-IX cation radical

34. $(R_3Ge)_2$ on photolysis gives a radical which shows ESR spectrum. The ESR signals carrying the signature of ^{73}Ge (I = 9/2) are in terms of

(A) Nine lines

(B) Ten lines

(C) Two lines

(D) One line

35. Consider the following statements for octahedral complexes, (a) $[CrF_6]^{3-}$, (b) $[Cr(ox)_3]^{3-}$ and (c) $[Cr(en)_3]^{3+}$:

(a) their $d \rightarrow d$ transitions are at 14900, 17500 and 21800 cm^{-1}, respectively

(b) their spin-only magnetic moments are same

(c) two of them have optical isomers

(d) all of them show Jahn-Teller distortion

The correct statements are

(A) A, B, and C

(B) A, C, and D

(C) B, C, and D

(D) B and D

36. Addition on $NabH_4$ to $[(\eta^5\text{-Cp})Fe(\eta^6\text{-}C_6H_6]^+$ will give

(A) $[(\eta^5\text{-Cp})Fe(H)_2]^-$

(B) $[(\eta^5\text{-Cp})Fe(H)(\eta^6\text{-}C_6H_6)]$

(C) $[(\eta^5\text{-Cp})Fe(\eta^6\text{-}C_6H_6)]$

(D) $[(\eta^5\text{-Cp})Fe(\eta^5\text{-}C_6H_7)]$

37. In an enzyme-catalysed reaction

$$E + S \underset{k_{-1}}{\overset{k_1}{\rightleftharpoons}} ES \xrightarrow{k_2} E + P$$

$k_2 = 3.42 \times 10^4\ s^{-1}$. If $[E]_0 = 1 \times 10^{-2}$ mol dm^{-3}, the magnitude of maximum velocity and turn over number using Michaelis-Menten kinetics are

(A) 3.42×10^2 mol $dm^{-3}\ s^{-1}$; $3.42 \times 10^4\ s^{-1}$

(B) 3.42×10^6 mol $dm^{-3}\ s^{-1}$; $3.42 \times 10^4\ s^{-1}$

(C) 3.42×10^4 mol $dm^{-3}\ s^{-1}$; $3.42 \times 10^6\ s^{-1}$

(D) 3.42×10^4 mol $dm^{-3}\ s^{-1}$; $3.42 \times 10^2\ s^{-1}$

38. The fugacity of a real gas is less than the pressure (P) of an ideal gas at the same temperature (T) only when (T_b is the boyle temperature of the real gas)

(A) high P, $T < T_b$

(B) low P, $T < T_b$

(C) high P, $T > T_b$

(D) low P, $T > T_b$

39. Consider a system of three particles which can occupy energy levels with energy 0, ε and 2ε, such that the total energy E = 4ε. Cases A, B and C correspond to spin 1/2 fermions, spin 0 bosons, and classically distinguishable particles, respectively. The correct ordering of entropy is

(A) $S_A > S_B > S_C$ (B) $S_B > S_A > S_C$

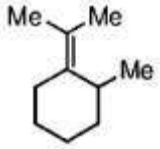
(C) $S_C > S_B > S_A$ (D) $S_C > S_A > S_B$

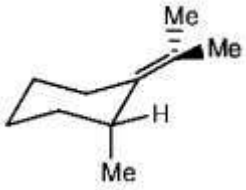
40. Give a trial wave function $\psi_t = C_1\phi_1 + C_2\phi_2$, and the Hamiltonian matrix elements, $\int \phi_1^* H\phi_1 dv = 0$, $\int \phi_1^* H\phi_2 dv = 2.5$, $\int \phi_2^* H\phi_2 dv = 12.0$, the variationally determined ground state energy is

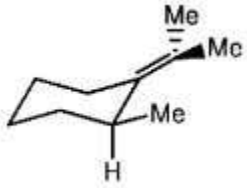
(A) –0.52 (B) –0.50

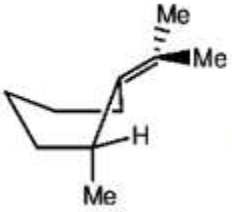
(C) 12.50 (D) 12.52

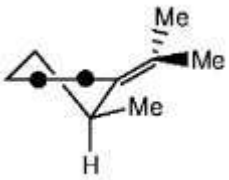
41. The most stable conformation for the following compound is



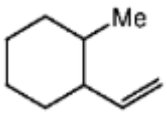
(A) 

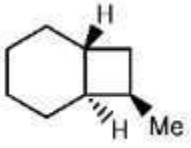
(B) 

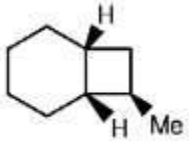
(C) 

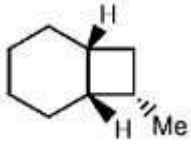
(D) 

42. The major product formed in the following reaction is

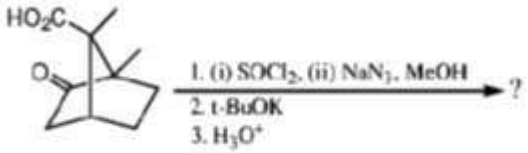
(A) 

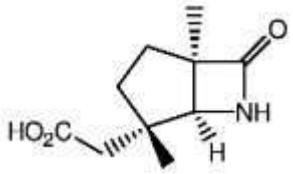
(B) 

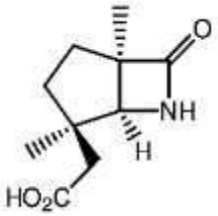
(C) 

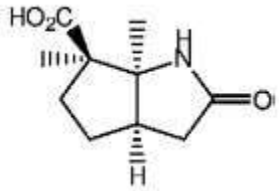
(D) 

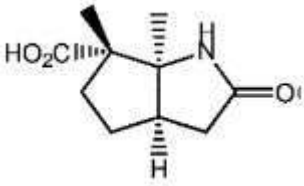
43. The major product formed in the following reaction sequence is



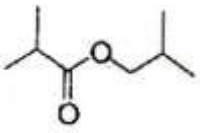
(A) 

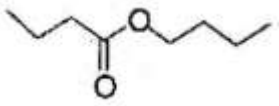
(B) 

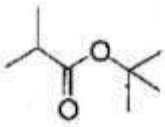
(C) 

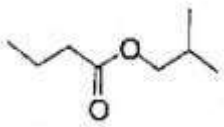
(D) 

44. An organic compound A($C_8H_{16}O_2$) on treatment with an excess of methylmagnesium chloride generated two alcohols B and C, whereas reaction of A with lithium aluminium hydride generated only a single alcohol C. Compound B on treatment with an acid yielded on olefin (C_6H_{12}), which exhibited only a singlet at δ 1.6 ppm in the ^1H NMR spectrum. The compound A is

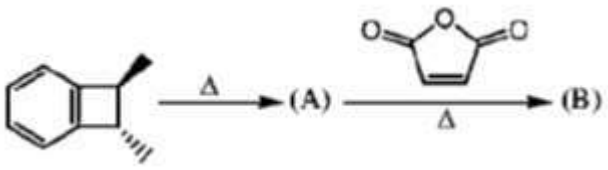
(A) 

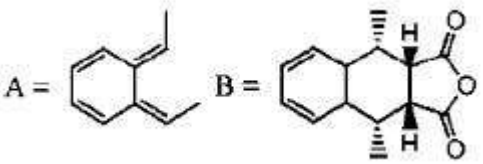
(B) 

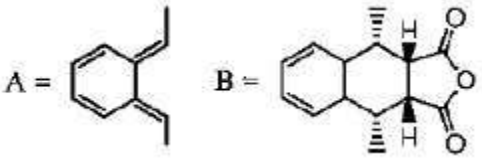
(C) 

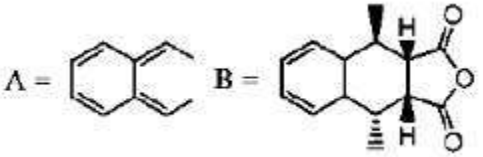
(D) 

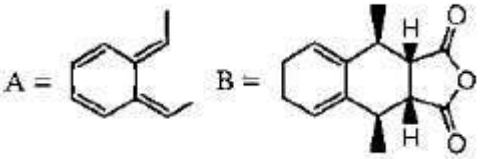
45. The major products A and B in the following reaction sequence are



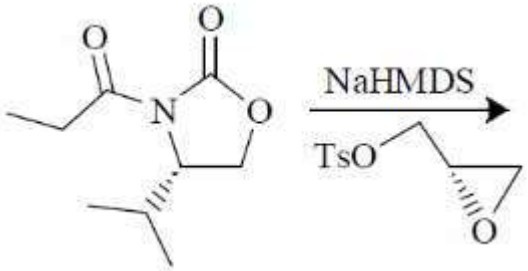
(A) 

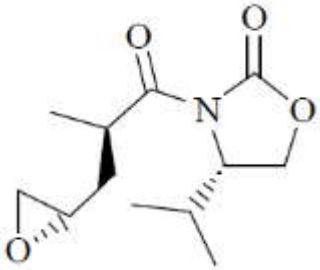
(B) 

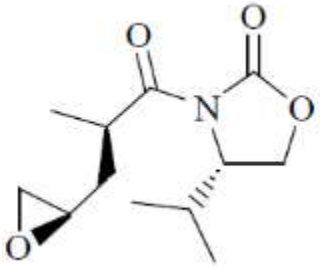
(C) 

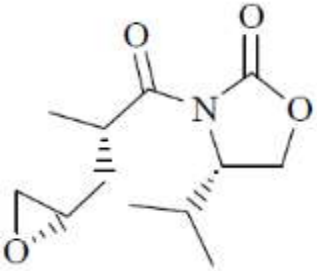
(D) 

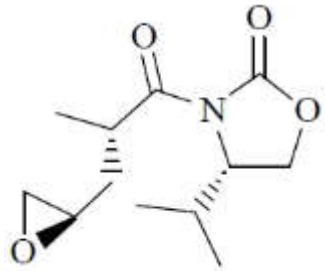
46. The major product formed in the following reaction is



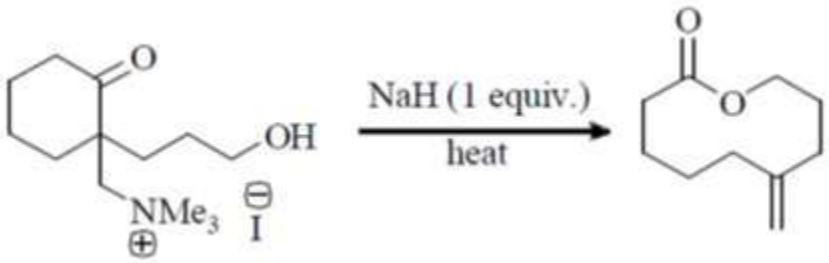
(A) 

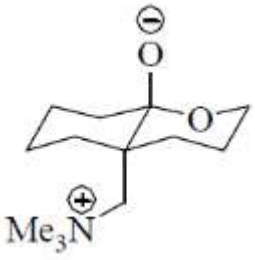
(B) 

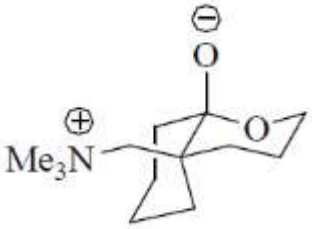
(C) 

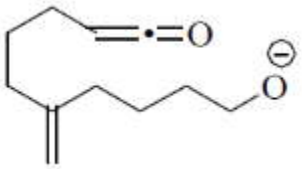
(D) 

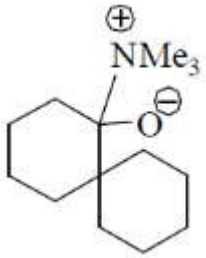
47. The correct structure of the intermediate, which leads to the product in the following reaction is



(A) 

(B) 

(C) 

(D) 

48. What is used to carry out the following conversion?

(A) hydroboration oxidation followed by Jones oxidation

(B) Wacker oxidation followed by haloform reaction

(C) oxymercuration-determination followed by Jones oxidation

(D) ozonolysis followed by haloform reaction

49. Which is NOT a physical property of alcohols or phenols?

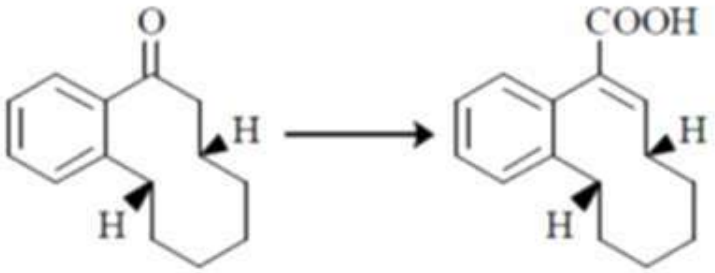
(A) Phenols are generally only slightly soluble in water.

(B) The solubilities of normal primary alcohols in water decrease with increasing molecular weight.

(C) The hydroxyl group of an alcohol is nonpolar.

(D) Due to hydrogen bonding, boiling points of alcohols are much higher than those of corresponding alkanes.

50. The correct combination of reagents of effect the following conversion is



(A) (i) $Ph_3P^+CH_2OMeCL^-$, BuLi, (ii) H_3O^+, Jones' reagent

(B) (i) H_2N-NHTs; (ii) BuLi (2 equiv); (iii) DMF

(C) (i) H_2N-NHTs; (ii) BuLi (2 equiv); (iii) CO_2

(D) (i) $ClCH_2CO_2Et$, LDA; (ii) BF_3. OEt_2; (iii) DMSO, $(COCl)_2$, Et_3N, -78ºC to rt.

ROUGH WORK

ROUGH WORK