TEST SERIES CSIR-UGC-NET/JRF Dec. 2016

BOOKLET SERIES E

Full Length Test – 2

Paper Code 01

Test Type: TEST SERIES

CHEMICAL SCIENCES

Duration: 3:00 Hours

Date: 10-12-2016
Maximum Marks: 200

Read the following instructions carefully:

* Single Paper Test is divided into three Parts.

Part - A: This part shall carry 20 questions. The candidate shall be required to answer any 15 questions. Each question shall be of **2 marks.**

Part - B: This part shall contain 50 questions. The candidate shall be required to answer any 35 questions. Each question shall be of 2 **Marks**.

Part - C: This part shall contain 75 questions. The candidate shall be required to answer any 25 questions. Each question shall be of **4 marks.**

* Darken the appropriate bubbles with HB pencil/Ball Pen to write your answer.

* There will be negative marking @25% for each wrong answer.

* The candidates shall be allowed to carry the Question Paper Booklet after completion of the exam.

* For rough work, blank sheet is attached at the end of test booklet.

CAREER ENDEAVOUR
Best Institute for IIT-JAM, NET & GATE

South Delhi Centre: 28-A/11, Jia Sarai, Near-IIT Hauz Khas, New Delhi-16
T : 011-26851008, 26861009

North Delhi Centre: 33-35, Mall Road, G.T.B. Nagar (Opp. Metro Gate No.3), Delhi-09
T : 011-65462244, 65662255
E : info@careerendeavour.com, W : www.careerendeavour.com

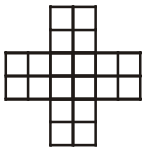
PART-A

1. If
$$\begin{array}{r} 2\ a \\ \times b\ 2 \\ \hline c\ 6 \\ 8\ 4 \\ \hline 8\ d\ 6 \\ \hline \end{array}$$
Here a, b, c and d are digits. Then $a + b =$
(a) 4 (b) 9 (c) 11 (d) 16

2. Find the height of a box of base area 24 cm × 48 cm, in which the longest stick that can be kept is 56 cm long.
(a) 8 cm (b) 32 cm (c) 37.5 cm (d) 16 cm

3. An infinite row of boxes is arranged. Each box has half the volume of the previous box. If the largest box has a volume of 20 cc, what is the total volume of all the boxes?
(a) Infinite (b) 400 cc (c) 40 cc (d) 80 cc

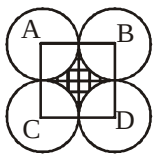
4. In each of the following groups of words is a hidden number, based on which you should arrange them in descending order. Pick the correct answer:
E. Papers I Xeroxed F. Wi-Fi veteran
G. Yourself ourselves H. Breaks even
(a) H, F, G, H (b) E, G, F, H (c) H, F, G, E (d) H, E, F, G

5. 
The number of squares in the above figure is
(a) 30 (b) 29 (c) 25 (d) 20

6. A shopkeeper purchases a product for Rs. 100 and sells it making a profit of 10%. The customer resells it to the same shopkeeper incurring a loss of 10%. In these dealing the shopkeeper makes
(a) no profit, no loss (b) Rs. 11 (c) Re. 1 (d) Rs. 20

7. A person walks downhill at 10 km/h, uphill at 6 km/h and on the plane at 7.5 km/h. If the person takes 3 hours to go from a place A to another place B, and 1 hour on the way back, the distance between A and B is
(a) 15 km
(b) 23.5 km
(c) 16 km
(d) Given data is insufficient to calculate the distance

8. Four circles of unit radius each are drawn such that each one touches two others and their centres lie on the vertices of a square. The area of the region enclosed between the circles is



(a) $\pi - 1$ (b) $\pi - 2$ (c) $3 - \pi$ (d) $4 - \pi$

9. An infinite number of identical circular discs each of radius $\frac{1}{2}$ are tightly packed such that the centres of the discs are at integer values of coordinates *x* and *y*. The ratio of the area of the uncovered patches to the total area is

(a) $1-\frac{\pi}{4}$ (b) $\frac{\pi}{4}$ (c) $1-\pi$ (d) π

10. Which of the following statements is logically incorrect?

(a) I always speak the truth (b) I occasionally lie

(c) I occasionally speak the truth (d) I always lie

11. The set of numbers (5, 6, 7, *m*, 6, 7, 8, *n*) has an arithmetic mean of 6 and mode (most frequently occurring number) of 7. Then $m \times n =$

(a) 18 (b) 35 (c) 28 (d) 14

12. A solid contains a spherical cavity. The cavity is filled with a liquid and includes a spherical bubble of gas. The radii of cavity and gas bubble are 2 mm and 1 mm, respectively. What proportion of the cavity is filled with liquid?

(a) $\frac{1}{8}$ (b) $\frac{3}{8}$ (c) $\frac{5}{8}$ (d) $\frac{7}{8}$

13. If $|4X-7|=5$ then the values of $2|X|-|-X|$ is:

(a) 2, 1/3 (b) 1/2, 3 (c) 3/2, 9 (d) 2/3, 9

14. What is the average of all multiples of 10 from 2 to 198?

(a) 90 (b) 100 (c) 110 (d) 120

15. The value of $\sqrt{12+\sqrt{12+\sqrt{12+.....}}}$ is

(a) 3.464 (b) 3.932 (c) 4.000 (d) 4.444

16. The total number of digits used in numbering the pages of a book having 366 pages, is:

(a) 732 (b) 990 (c) 1098 (d) 1305

17. On what dates of April, 2001 did Wednesday fall?

(a) 1st, 8th, 15th, 22nd, 29th (b) 2nd, 9th, 16th, 23rd, 30th

(c) 3rd, 10th, 17th, 24th (d) 4th, 11th, 18th, 25th

18. A man takes 5 hours 45 min. in walking to a certain place and riding back. He would have gained 2 hours by riding both ways. The time he would take to walk both ways, is:

(a) 3 hrs 45 min (b) 7 hrs 30 min

(c) 7 hrs 45 min (d) 11 hrs 45 min

19. A box contains 2 white balls, 3 black balls and 4 red balls. In how many ways can 3 balls be drawn from the box, if at least one black ball is to be included in the draw?

(a) 32 (b) 48 (c) 64 (d) 96

20. A man and his wife appear in an interview for two vacancies in the same post. The probability of husband's selection is (1/7) and the probability of wife's selection is (1/5). What is the probability that only one of them is selected?

(a) $\frac{4}{5}$ (b) $\frac{2}{7}$ (c) $\frac{8}{15}$ (d) $\frac{4}{7}$

PART-B

21. Which of the following iron complex exhibit most intense colour?
(a) $Fe\left[Fe(CN)_6\right]$ (b) $K_4\left[Fe(CN)_6\right]$ (c) $K_3\left[Fe(CN)_6\right]$ (d) $K\,Fe\left[Fe(CN)_6\right]$

22. In biological systems, the metal ion involve in the dioxygen transport besides Fe is
(a) Co (b) Zn (c) Cu (d) Mg

23. Uranium exhibits several oxidation states because
(a) it is an inner transition element (b) its atomic number is high
(c) 5f orbitals participate in bonding (d) it forms strong bonds with oxygen

24. The incorrect statement among the following that does not describes the property of lanthanides is
(a) lanthanides exhibit variable oxidation states either +2 and +3 or +3 or +3 and +4
(b) the magnetic moment increases with increase in number of unpaired electrons
(c) the coordination number of aquated lanthanides ion is usually 9
(d) the electrons transition occuring in Ce^{3+} is $4f \rightarrow 5d$

25. The lowest and highest energy orbitals in the square pyramidal complex are respectively
(a) $d_{x^2-y^2}$ and $d_{zx} = d_{yz}$ (b) d_{z^2} and $d_{yz} = d_{zx}$
(c) $d_{yz} = d_{zx}$ and d_{z^2} (d) $d_{yz} = d_{xz}$ and $d_{x^2-y^2}$

26. The ratio of a ground state energy of He^+ ion to that of Be^{3+} ion is
(a) 1 : 4 (b) 2 : 3 (c) 1 : 3 (d) 4 : 9

27. The appropriate colour for I_2^+, I_2 and Br_2^+ respectively are
(a) Blue, violet, red (b) Violet, red, blue (c) Red, violet, blue (d) Violet, blue, red

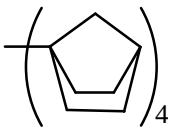
28. The number of B–B bonds in B_6H_{10} is
(a) 2 (b) 1 (c) 3 (d) 0

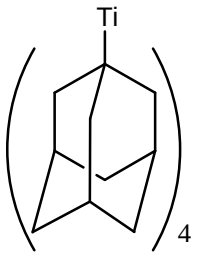
29. Correct sequence of Bond enthalpy is
(a) P–F > As–F > N–F (b) P–P > N–N > As–As
(c) N–H > As–H > P–H (d) N–O > P–O > As–O

30. The angle between the planes (1 0 0) and (1 1 0) is
(a) 30º (b) 45º (c) 60º (d) 90º

31. $Z_{effective}$ for 3d electron of Ti is
(a) 3.30 (b) 3.65 (c) 1.5 (d) 5

32. The organometallic complex having low thermal stability, high air and acid sensitivity is

(a) 

(b) 

(c) $[Cr(CH_2SiMe_3)_4]$ (d) $Ti(C_2H_5)_4$

33. The ν_{C-O} stretching frequencies in a series of complex as general formula $L_3Mo(CO)_3$

(A) $\left[(PF_3)_3\,Mo(CO)_3\right]$ (B) $\left[(PCl_3)_3\,Mo(CO)_3\right]$

(C) $\left[P\{(OMe)_3\}_3\,Mo(CO)_3\right]$ (D) $\left[(PPh_3)_3\,Mo(CO)_3\right]$

(E) $\left[(CH_3CN)_3\,Mo(CO)_3\right]$ (F) $\left[(dien)Mo(CO)_3\right]$

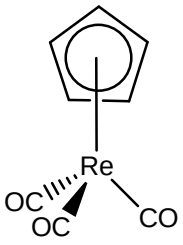
(a) A > B > C > D > E > F (b) F > E > C > D > B > A

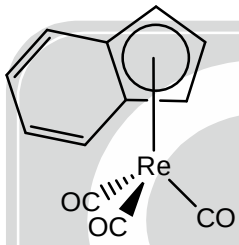
(c) A > B > C > D > F > E (d) F > E > B > C > A > D

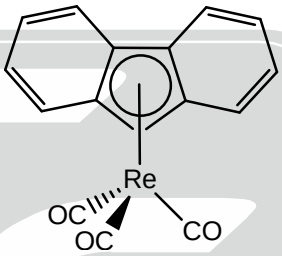
34. The longest M-C bond length in the following $\left[M(\eta^5\text{-}Cp)_2\right]$ complexes;

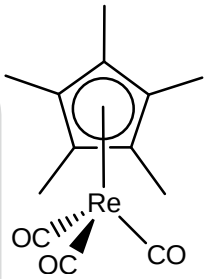
(a) $\left[V(\eta^5\text{-}Cp)_2\right]$ (b) $\left[Mn(Cp^*)_2\right]$ (c) $\left[Mn(Cp)_2\right]$ (d) $\left[Fe(\eta^5\text{-}Cp)_2\right]$

35. Which of the following compounds will undergo substitution of CO ligand for phosphine more readily

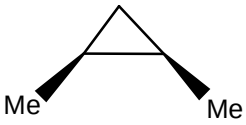
(a) 

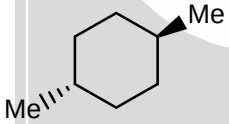
(b) 

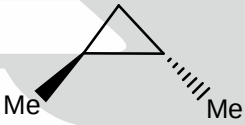
(c) 

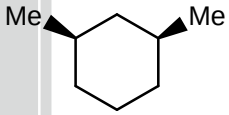
(d) 

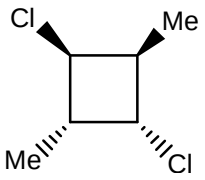
36. The chiral and achiral molecules are respectively

(a) 

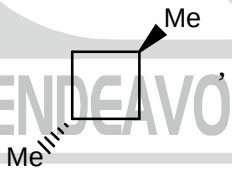
, 

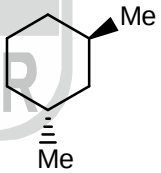
(b) 

, 

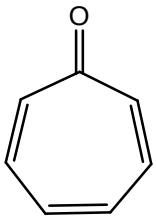
(c) 

, 

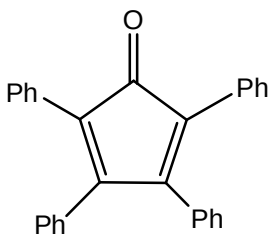
(d) 

, 

37. The basicity of carbonyl oxygen in the following compound (X) and (Y) is

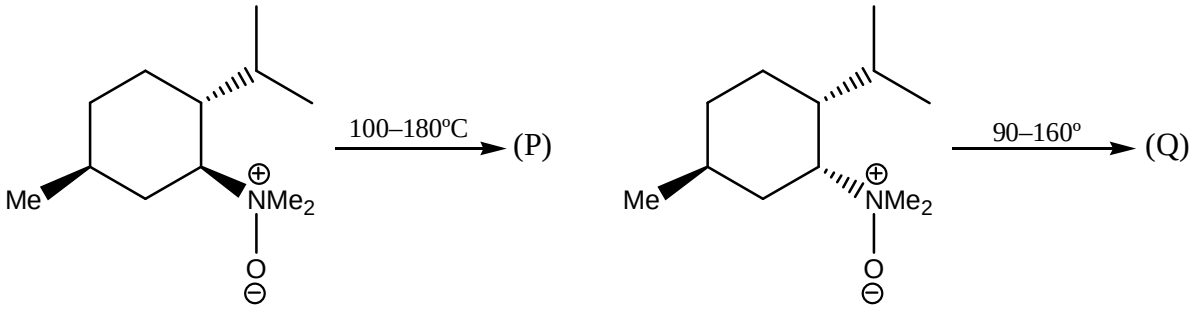


(X)

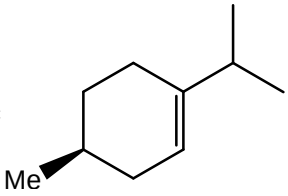


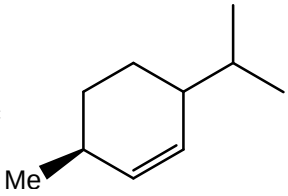
(Y)

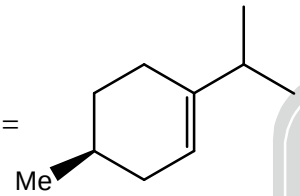
(a) Y > X (b) X > Y (c) X = Y (d) none of these

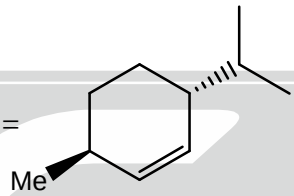
38. 

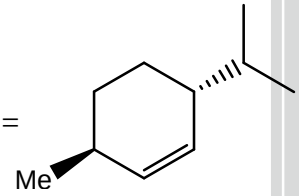
The major product P and Q are respectively

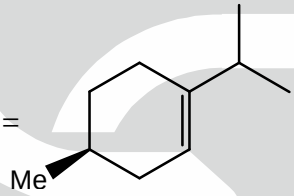
(a) P = Q = 

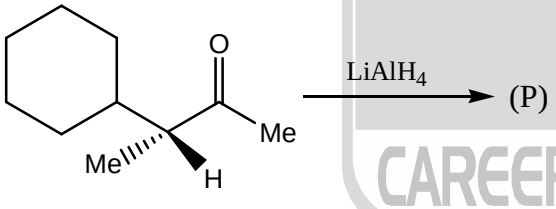
(b) P = Q = 

(c) P = 

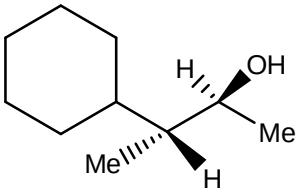
and Q = 

(d) P = 

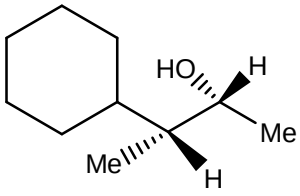
and Q = 

39. 

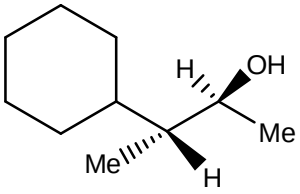
The major product (P) is

(a) 

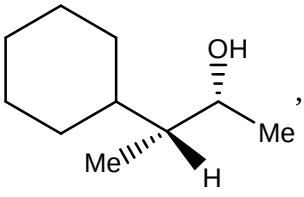
, anti-cram's product

(b) 

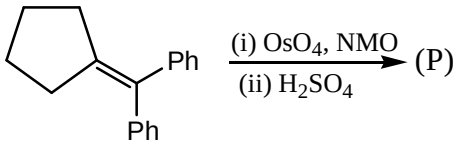
, Cram's product

(c) 

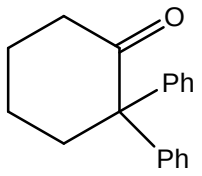
, Cram's product

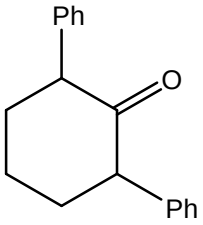
(d) 

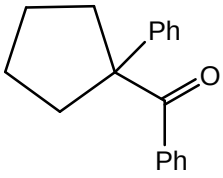
, anti-cram's product

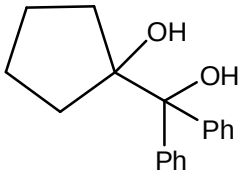
40. 

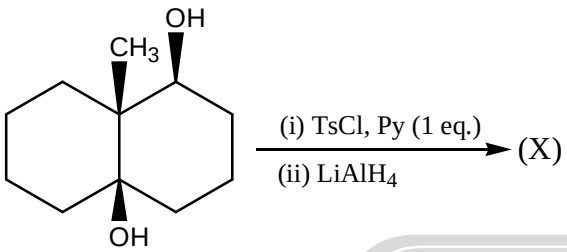
The major product (P) in the above reaction is

(a) 

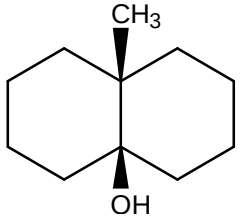
(b) 

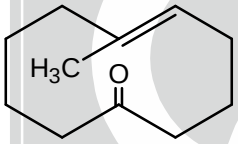
(c) 

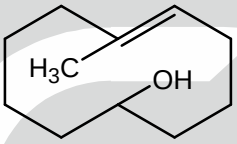
(d) 

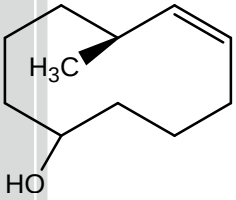
41. 

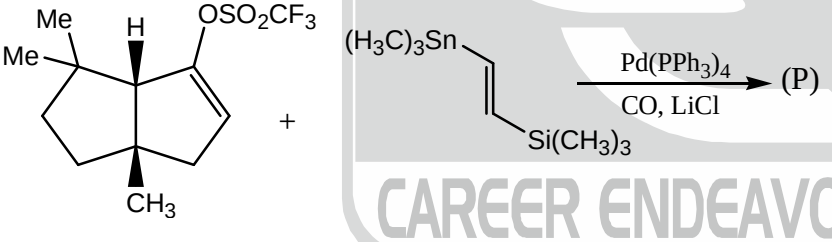
The major product (X) in the above reaction is

(a) 

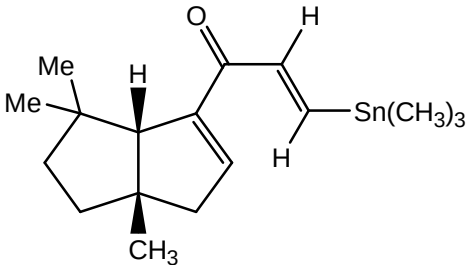
(b) 

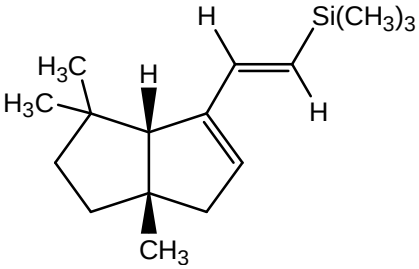
(c) 

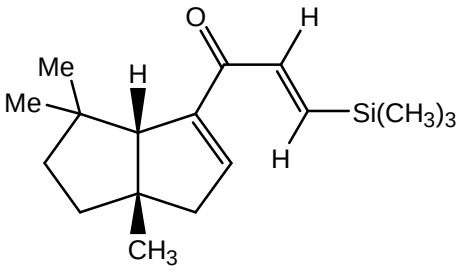
(d) 

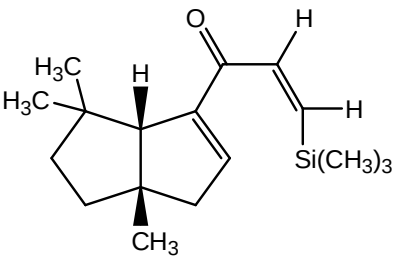
42. 

The major product (P) in the above synthetic transformation is

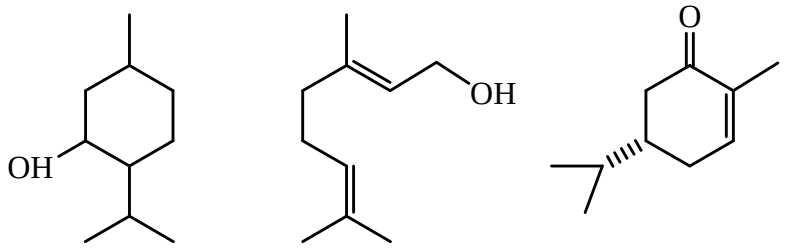
(a) 

(b) 

(c) 

(d) 

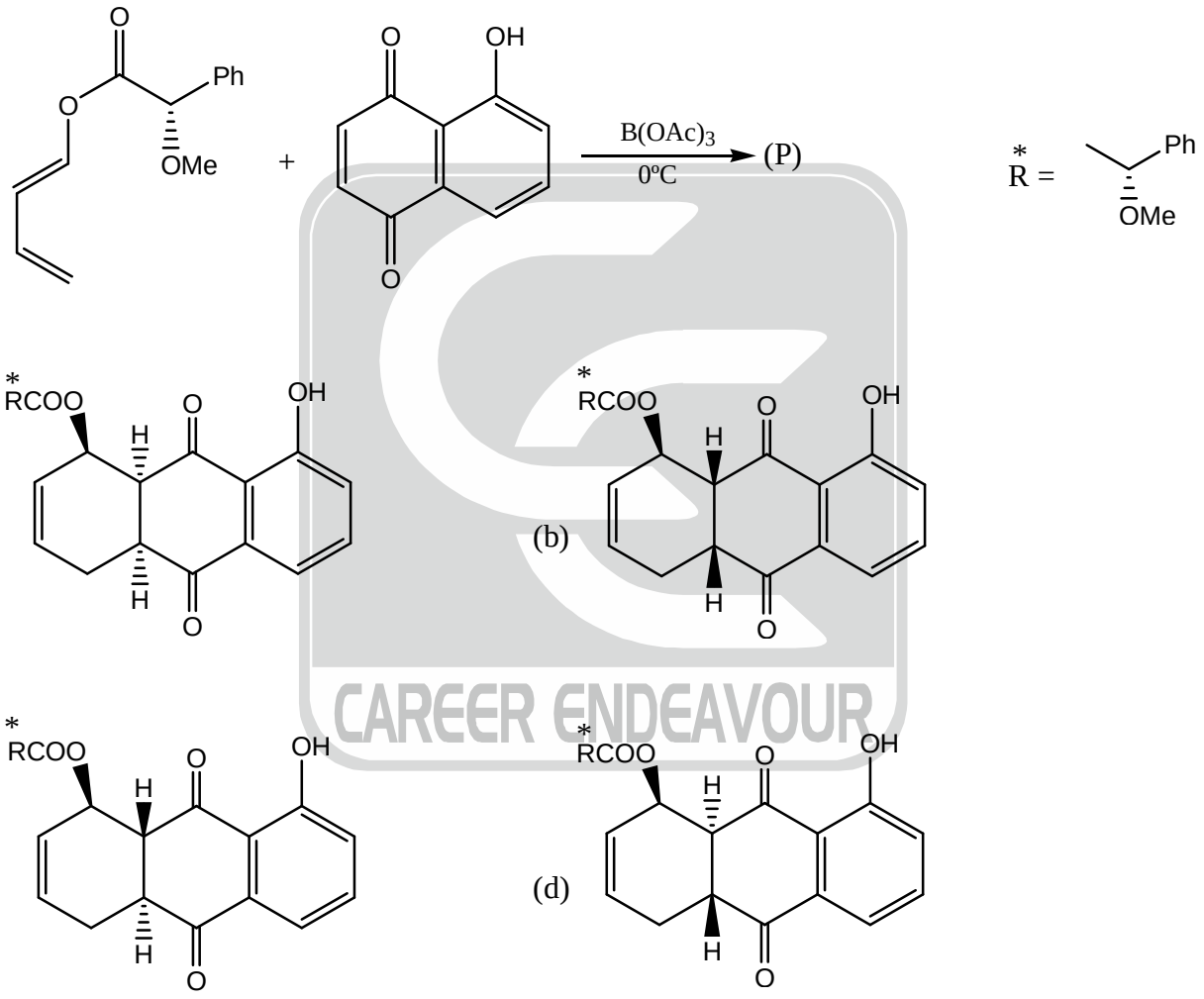
43. The number of isoprene units in the following compounds are respectively



(A) (B) (C)

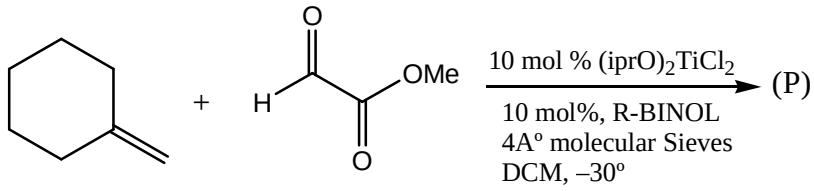
(a) 2, 3, 2 (b) 3, 2, 2 (c) 2, 2, 3 (d) 2, 2, 2

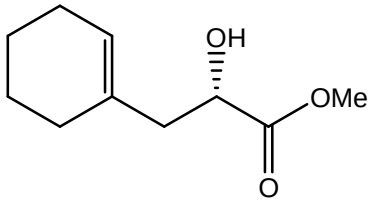
44. The major product (P) is

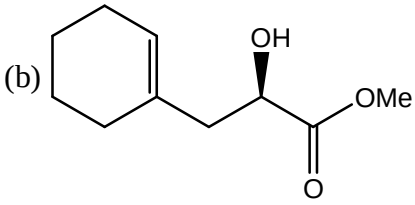


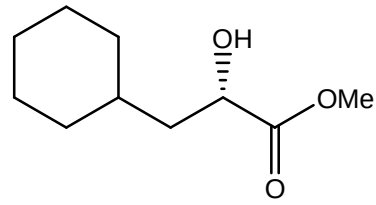
45. The symmetry of HOMO of B_2 and LUMO of S_2^{2-} respsectively are
(a) gerade and ungerade (b) ungerade and gerade
(c) both ungerade (d) both gerade

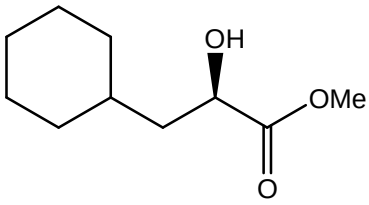
46. Number of peroxy linkage in $H_2S_3O_{11}$ is
(a) 2 (b) 1 (c) 0 (d) 3

47. 

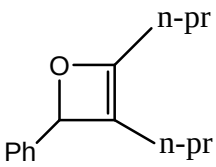
(a) 

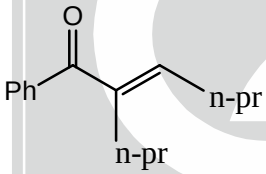
(b) 

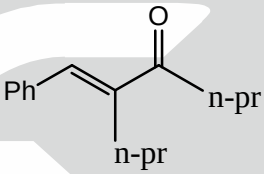
(c) 

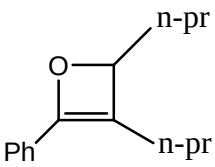
(d) 

48. The major product (P) is

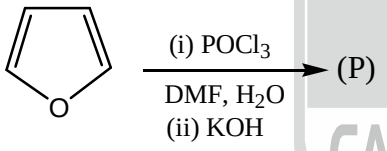
(a) 

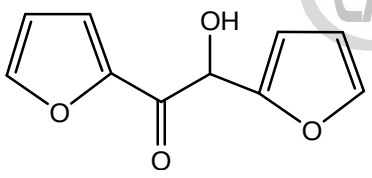
(b) 

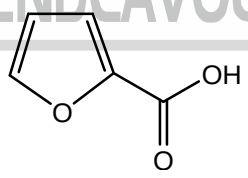
(c) 

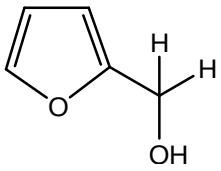
(d) 

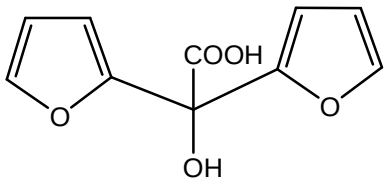
49. The product formed in the following reaction sequence are



(1) 

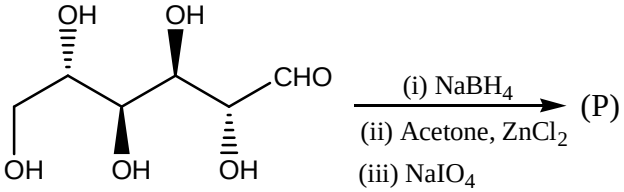
(2) 

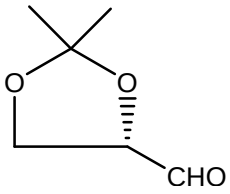
(3) 

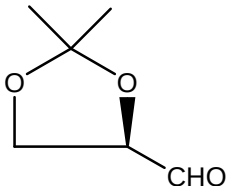
(4) 

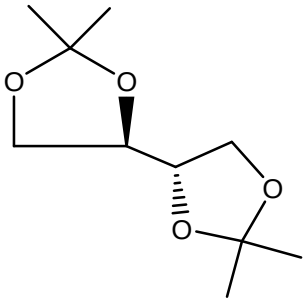
(a) 1 and 2 (b) 2 and 3 (c) 3 only (d) 4 only

50. The major product (P) in the given reaction below is



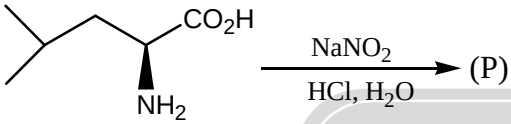
(a) 

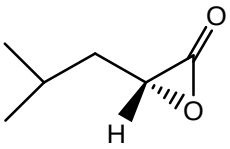
(b) 

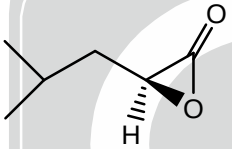
(c) 

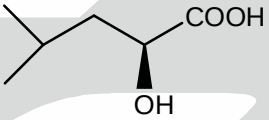
(d) none of these

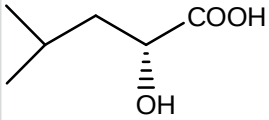
51. The product (P) is



(a) 

(b) 

(c) 

(d) 

52. The relative Boltzmann population of two energy levels at 25 °C if the energy levels are seperated by 10 kJ mol^{-1} is

(a) 2.750×10^{-11} (b) 1.77×10^{-2} (c) 2.75×10^{-10} (d) 2.75×10^{-14}

53. For finding the best Fit curve. We use the method of least squares. In this method the sum of squares of the errors(E) is found out then It is minimised. For a set of 'n'-points as $(x_1y_1),(x_2y_2),.....(x_iy_i),.....(x_ny_n)$ which are to be fitted in the curve $y=a+bx+cx^2$ the sum of square of errors (E) is ,

(a) $E=\sum_{i=1}^{n}\left[y_i-\left(a+bx_i+cx_i^2\right)\right]^2$ (b) $E=\sum_{i=1}^{n}\left[y_i-\left(a+bx_i+cx_i^2\right)\right]$

(c) $E=\sum_{i=1}^{n}\left[y_i-\left(a+bx_i+cx_i^2\right)\right]^{1/2}$ (d) $E=\frac{1}{n}=\sum_{i=1}^{n}\left[y_i-\left(a+bx_i+cx_i^2\right)\right]$

54. Which of the following molecules would not give pure rotational spectrum ?

H_2, HCl, CO, CH_3Cl, H_2O(liq.), NH_3, NH_4Cl

(a) H_2 (b) H_2, NH_4Cl, CO

(c) HCl, NH_3, NH_4Cl (d) H_2, H_2O(liq.), NH_4Cl

55. The pure rotational Raman spectrum of $^{14}N_2$ shows a spacing of 7.99 cm^{-1} between adjacent rotational lines. The spacing between the unshifted line at ν_0 and each of the pure rotational linear molecule lines close to ν_0 is

(a) 24 cm^{-1} (b) 12 cm^{-1} (c) 6 cm^{-1} (d) 48 cm^{-1}

56. In an n-type of extrinsic semiconductor the Fermi level lies
(a) In between Donor band and Valence band
(b) In between Donor band and Conduction band
(c) In between Acceptor band and Conduction band
(d) In between Acceptor band and Valence band

57. In half wave potential the correct relation of diffusion current is

(a) $id = 607\ n\ D^{1/2}\ C\ m^{2/3}\ t^{1/6}$ (b) $id = 607\ n\ D^{2/3}\ C\ m^{1/2}\ t^{1/6}$

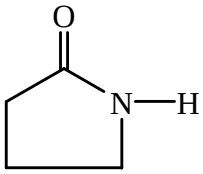
(c) $id = 607\ n\ D^{2/3}\ C\ m^{1/6}\ t^{2/3}$ (d) $id = 507\ n\ D^{1/6}\ C\ m^{2/3}\ t^{1/6}$

58. The correct intensity pattern for the nuclear spin (I = 5/2)
(a) 1 : 2 : 3 : 2 : 1 (b) 1 : 3 : 5 : 5 : 3 : 1
(c) 1 : 3 : 6 : 7 : 6 : 3 : 1 (d) 1 : 3 : 5 : 3 : 1

59. In the M.B. spectrum of ^{119}Sn compounds the correct order of chemical shift (mm s^{-1}) Sn^{+4}, Sn (4-covalent), Sn^{+2}(compounds)

(a) $Sn^{+4} > Sn > Sn^{+2}$ (b) $Sn^{+4} < Sn < Sn^{+2}$ (c) $Sn^{+4} > Sn^{+2} > Sn$ (d) $Sn^{+4} < Sn^{+2} < Sn$

60. In the following compound



The ν_{CO} frequency is

(a) $1690 - 1705\ cm^{-1}$ (b) $1735 - 1770\ cm^{-1}$

(c) $1715 - 1780\ cm^{-1}$ (d) $1715 - 1745\ cm^{-1}$

61. Which of the following is not correctly matched

(a) formaldehyde	C_{2V}
(b) admantane	D_{2d}
(c) boric acid	C_{3h}
(d) B_2H_6	D_{2h}

62. The Langmuir nondissociative formula for a diatomic gas is

(a) $\theta = \frac{(kp)^{1/2}}{1+(kp)^{1/2}}$ (b) $\theta = \frac{(kp)^{2}}{1+(kp)^{2}}$ (c) $\theta = \frac{kp}{1+kp}$ (d) $\theta = \frac{(kp)^{2}}{1+(kp)^{1/2}}$

63. The differential rate equation for the net deformation of B for the following sequence of reactions

$$2A \underset{k_2}{\overset{k_1}{\rightleftharpoons}} B$$

$2B + C \xrightarrow{k_3} D + E$ is given by

(a) $k_1[A]^2 - k_2[B] - k_3[B]^2[C]$ (b) $2k_2[B] + 2k_3[B]^2[C] - 2k_1[A]^2$

(c) $k_2[B] + 2k_3[B]^2[C] - 2k_1[A]^2$ (d) $k_2[B] + 2k_3[B]^2[C] - k_1[A]^2$

64. If the transmittance for 1cm path length is 10%, then the transmittance for 2 cm path length would be
(a) 20% (b) 19% (c) 10% (d) None

65. Osmometry is used to measure
(a) Number average molar mass (b) Mass average molar mass
(c) Viscosity average molar mass (d) Z average molar mass

66. The energy of the 1st excited quantum state of a particle in the two-dimensional patential

$$v(x,y)=\frac{1}{2}m\omega^2\left(x^2+4y^2\right)$$

(a) $2\hbar\omega$ (b) $3\hbar\omega$ (c) $\frac{3}{2}\hbar\omega$ (d) $\frac{5}{2}\hbar\omega$

67. The π-bond energy of cyclobutadiene molecule according to Hückel theory is
(a) 2β (b) 4β (c) 6β (d) 8β

68. The free energy of mixing $\left(\Delta G_{mix}\right)$ at 25°C when 10 moles of He are mixed with 20 moles of Ne is
(a) –52.2 kJ (b) –47.3 kJ (c) –42.4 kJ (d) –36.8 kJ

69. Λ_m^0 for $Ba(OH)_2$ = 457.6 $\Omega^{-1}cm^2mol^{-1}$

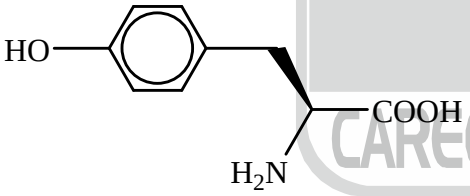
Λ_m^0 for $BaCl_2$ = 240.6 $\Omega^{-1}cm^2mol^{-1}$

Λ_m^0 for NH_4Cl = 129.8 $\Omega^{-1}cm^2mol^{-1}$

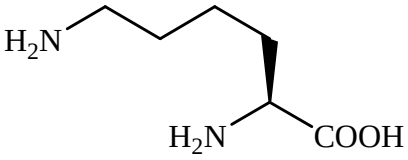
The Λ_m^0 for NH_4OH is
(a) 128.3 Scm^2mol^{-1} (b) 199.4 Scm^2mol^{-1} (c) 238.3 Scm^2mol^{-1} (d) 342.4 Scm^2mol^{-1}

70. Match the following amino acids with their structure :

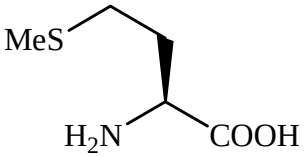
Column-I **Column-II**

(1) 

(A) Trp

(2) 

(B) His

(3) 

(C) Tyr

(D) Met

(E) Lys

(a) 1-C, 2-B, 3-D (b) 1-A, 2-E, 3-B (c) 1-C, 2-E, 3-D (d) 1-A, 2-B, 3-D

PART-C

71. The increasing order of intensity of colour for the manganese complexes is

(a) $\left[Mn\left(NH_3\right)_6\right]^{2+} < \left[Mn\left(CN\right)_6\right]^{3-} < \left[MnCl_4\right]^{-} < MnO_4^{-}$

(b) $\left[Mn\left(NH_3\right)_6\right]^{2+} < \left[MnCl_4\right]^{-} < \left[Mn\left(CN\right)_6\right]^{3-} < MnO_4^{-}$

(c) $\left[Mn\left(CN\right)_6\right]^{3-} < \left[Mn\left(NH_3\right)_6\right]^{2+} < \left[MnCl_4\right]^{-} < MnO_4^{-}$

(d) $\left[MnCl_4\right]^{-} < \left[Mn\left(CN\right)_6\right]^{3-} < \left[Mn\left(NH_3\right)_6\right]^{2+} < MnO_4^{-}$

72. Although $Co^{2+}(aq)$ forms a tetrahedral complex on treatment with conc. HCl, Ni^{2+} (aq) does not do so because

(a) tetrahedral complex of Co^{2+} is more stable than octahedral.
(b) tetrahedral complex of Ni^{2+} is more stable than octahedral
(c) change in CFSE on going from octahedral ion (aqua complex) to tetrahedral ion is much less for Co^{2+} than Ni^{2+}
(d) change in CFSE on going from octahedral ion (aqua complex) to tetrahedral is much less for Ni^{2+} than Co^{2+}.

73. Match the following

(P) Carboxy peptidase	(1) Group transfer
(Q) Cytochromes	(2) Iron storage
(R) Ferritin	(3) Electron transfer
(S) Vitamin B_{12}	(4) Hydrolysis of proteins
(a) P-4, Q-3, R-2, S-1	(b) P-3, Q-2, R-1, S-4
(b) P-1, Q-3, R-2, S-4	(d) P-2, Q-3, R-4, S-3

74. Match the following

(P) Cytochrome P-450	(I) Photosynthesis
(Q) Chlorophyll	(II) Electron transport
(R) Carbonic anhydrase	(III) Oxidation of Fe^{2+}
(S) Ceruloplasmin	(IV) $H_2CO_3 \rightarrow H_3O + CO_2$
	(V) Oxidation of alkene
(a) P-II, Q-III, R-IV, S-V	(b) P-III, Q-IV, R-V, S-I
(c) P-V, Q-I, R-IV, S-III	(d) P-V, Q-I, R-III, S-IV

75. The increasing order of rate of water exchange in the following aqua complexes is

(a) $\left[Cr\left(H_2O\right)_6\right]^{3+} < \left[Al\left(H_2O\right)_6\right]^{3+} < \left[V\left(H_2O\right)_6\right]^{3+} < \left[Mg\left(H_2O\right)_6\right]^{2+}$

(b) $\left[Cr\left(H_2O\right)_6\right]^{3+} < \left[Al\left(H_2O\right)_6\right]^{3+} < \left[Mg\left(H_2O\right)_6\right]^{2+} < \left[V\left(H_2O\right)_6\right]^{3+}$

(c) $\left[Al\left(H_2O\right)_6\right]^{3+} < \left[Cr\left(H_2O\right)_6\right]^{3+} < \left[Mg\left(H_2O\right)_6\right]^{2+} < \left[V\left(H_2O\right)_6\right]^{3+}$

(d) $\left[Cr\left(H_2O\right)_6\right]^{3+} < \left[V\left(H_2O\right)_6\right]^{3+} < \left[Al\left(H_2O\right)_6\right]^{3+} < \left[Mg\left(H_2O\right)_6\right]^{2+}$

76. The ground state term for Co^{2+} ion and the lowest energy transition for $\left[CoF_6\right]^{4-}$ ion are respectively

(a) ${}^3F$ and ${}^3T_{1g} \rightarrow {}^3T_{2g}$ (b) ${}^4F$ and ${}^4T_{1g} \rightarrow {}^4T_{2g}$

(c) ${}^4F$ and ${}^4A_{2g} \rightarrow {}^4T_{2g}$ (d) ${}^3F$ and ${}^3A_{2g} \rightarrow {}^3T_{2g}$

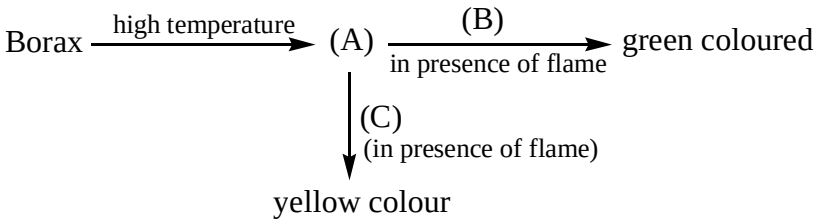
77. The increasing order of acid strength of the aqua complex ions is

(a) $\left[V(H_2O)_6\right]^{2+} < \left[Fe(H_2O)_6\right]^{2+} < \left[Mn(H_2O)_6\right]^{3+} < \left[Hg(H_2O)_6\right]^{2+}$

(b) $\left[V(H_2O)_6\right]^{2+} < \left[Fe(H_2O)_6\right]^{2+} < \left[Hg(H_2O)_6\right]^{2+} < \left[Mn(H_2O)_6\right]^{3+}$

(c) $\left[Hg(H_2O)_6\right]^{2+} < \left[V(H_2O)_6\right]^{2+} < \left[Fe(H_2O)_6\right]^{2+} < \left[Mn(H_2O)_6\right]^{3+}$

(d) $\left[V(H_2O)_6\right]^{2+} < \left[Hg(H_2O)_6\right]^{2+} < \left[Fe(H_2O)_6\right]^{2+} < \left[Mn(H_2O)_6\right]^{3+}$

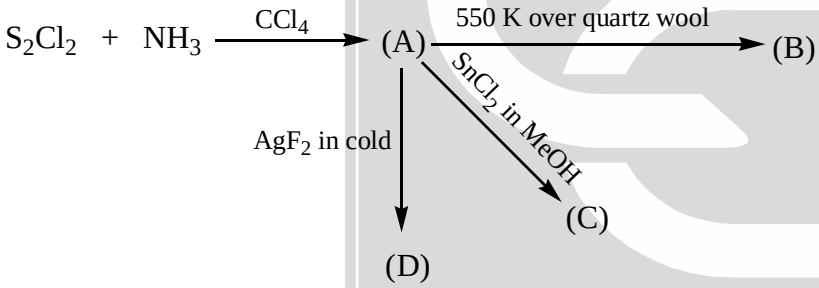
78. 

B and C respectively are

(a) Mn and Co (b) Cr nad Fe (c) Fe and Cr (d) Co and Zn

79. Na_2HPO_4 and NaH_2PO_4 on heating at high temperature produce a chain sodium octaphosphate. The ideal molar ratio of Na_2HPO_4 to NaH_2PO_4 and total charge on octaphosphate anion respectively are

(a) 5 : 3 and –10 (b) 4 : 4 and –10 (c) 2:6 and –10 (d) 3:5 and –6

80. 

A, B, C and D respectively are

(a) $S_2N_2, (SN)_x, S_2N_2Cl_2, S_2N_2F_2$ (b) $S_4N_4, (SN)_x, S_4N_4Cl_4, SNF_3$

(c) $S_4N_4, (SN)_x, S_4N_4H_4, S_4N_4F_4$ (d) $S_4N_4, S_2N_2, S_4N_4H_4, S_4N_4F_4$

81. Select the correct set from following

(I) $BrO_4^- > IO_4^- > ClO_4^-$ oxidising power (II) $ClF_n > BrF_n > IF_n$ reactivity

(III) $ClF < BrF < IF$ stability (IV) $F_2 > Cl_2 > Br_2 > I_2$ HOMO-LUMO Gap

(a) I and IV (b) I, II, III and IV (c) III and IV (d) I, III and IV

82. The number of species involving 3c-4e$^-$ bond among $ICl_2^-, HF_2^-, XeF_2, XeF_4, I_3^-$ are

(a) 3 (b) 1 (c) 5 (d) 2

83. Correct statement regarding BrF_5 molecule is

(1) it show a doublet and binomial quintet at room temperature (^{19}F NMR)

(2) it show quartet and triplet at room temperature (^{19}F NMR)

(3) above 450K it show only one signal(^{19}F NMR)

(4) It show fluxional behaviour (^{19}F NMR)

(a) 2, 3 and 4 (b) 1, 3 and 4 (c) 1 and 4 (d) 2 and 3

84. Select the correct statement regarding $\left[TaF_8\right]^{3-}$

(1) it involve $d_{x^2-y^2}$ orbital in hybridization (2) it involve d_{z^2} orbital in hybridization

(3) it has D_{4d} point group (4) it has D_{2d} point group

(a) 1 and 4 (b) 2 and 4 (c) 2 and 3 (d) 1 and 3

85. Select the correct set regarding strength of backbonding

(I) $B(NH_2)_3 > B(OH)_3 > BF_3$

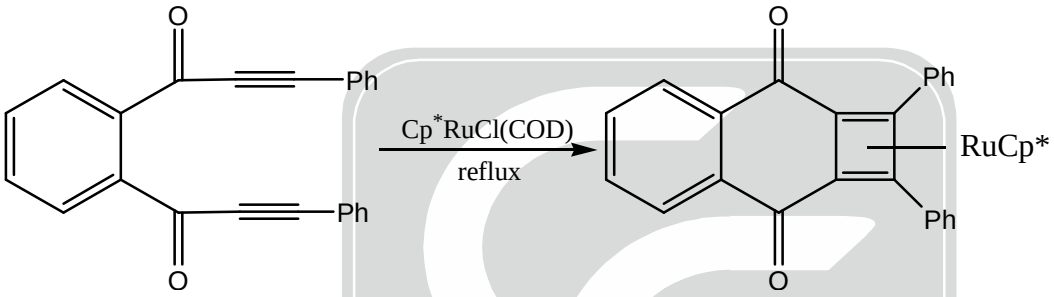
(II) $ClO_4^- > SO_4^{2-} > PO_4^{3-} > SiO_4^{4-}$

(III) $\left[M(CO)_x\right]^{2-} > \left[M(CO)_x\right] > \left[M(CO)_x\right]^+$

(IV) $N(SiH_3)_3 > N(SiH_3)_2H > NH_2(SiH_3)$

(a) I, II, III, IV (b) II, III, IV (c) I, II, III (d) I, III, IV

86.



The mechanism involved in the above synthetic transformation is

(a) O.C., R.E., O.A. (b) O.C., O.A., R.E. (c) O.A., M.I., R.E. (d) L.S., O.C., R.E.

Note: Where O.C. = Oxidative Coupling, O.A. = Oxidative Addition, R.E. = Reductive Elimination M.I. = Migratory Insertion, L.S. = Ligand Substitution.

87. Consider the following statements

(1) Reductive elimination, the reverse of oxidative addition decreases both the oxidation state and coordination number by two.

(2) Oxidative coupling, like oxidative addition has oxidation state and co-ordination number both increase by two, but two new ligands are involved and a new bond is formed between them.

(3) The oxidative addition is usually favoured by strongly donor ligands because these ligand stabilize the oxidized state.

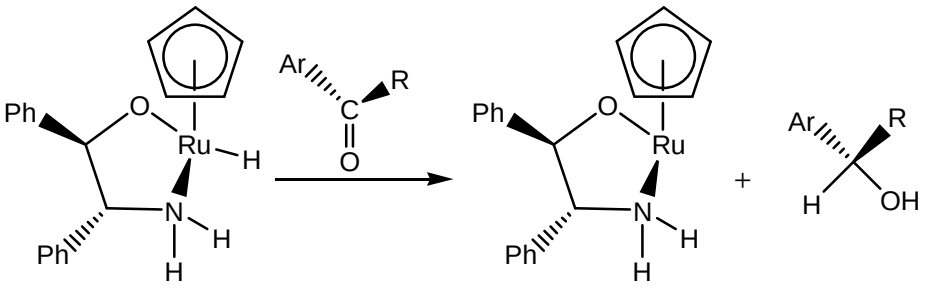
(4) $Fe(CO)_5 \xrightarrow[(ii)\ Me_3O^+]{(i)\ LiNEt_2} (OC)_4Fe{=}C(NEt_2)(OMe)$ (X)

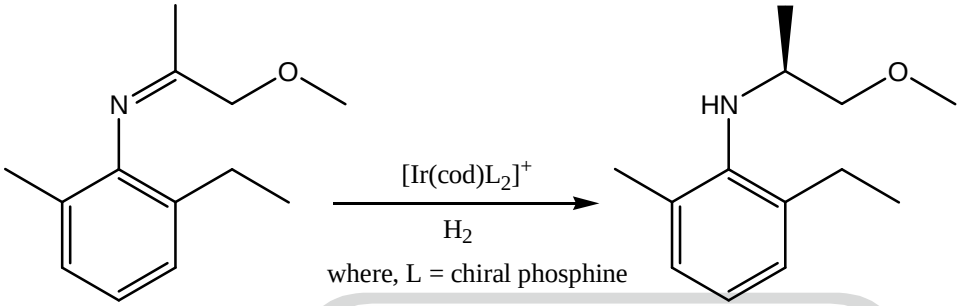
The product (X) is an example of Schrock carbene

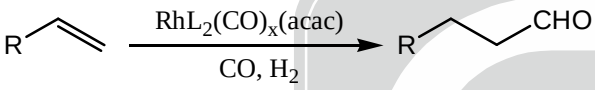
The correct statement is/are

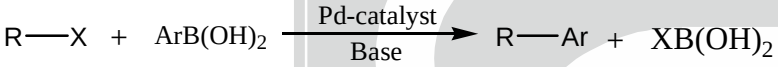
(a) 1, 2, 3 and 4 (b) 3 and 4 (c) 1, 2 and 3 (d) 4 only

88. **Reactions:**

(A) 

(B) 

(C) 

(D) 

Name and reaction

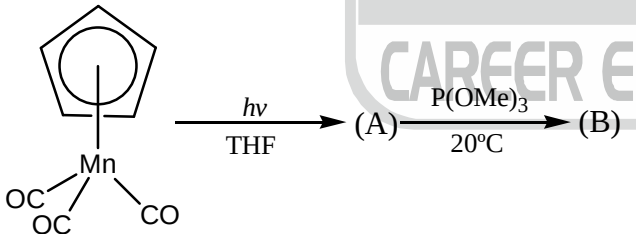
(I) Asymmetric hydride transfer (II) Asymmetric hydrogenation

(III) Miyaura Suzuki coupling (IV) Hydroformylation

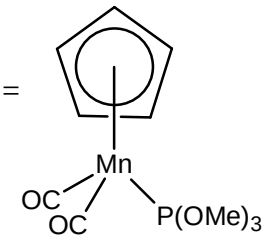
The correct combinations of reactions and their respective names are

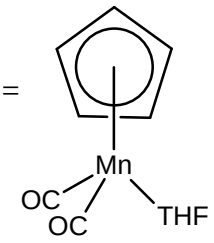
(a) A-I, B-II, C-IV, D-III (b) A-II, B-I, C-IV, D-III

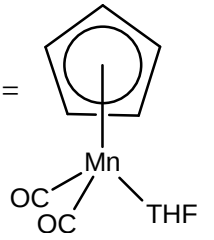
(c) A-III, B-I, C-IV, D-II (d) A-III, B-IV, C-II, D-I

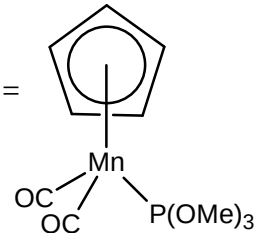
89. 

The major product (A) and (B) in the above reaction is

(a) A = B = 

(b) A = B = 

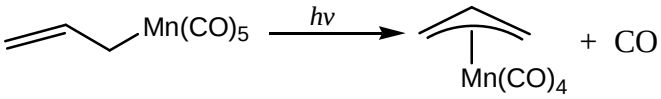
(c) A = 

B = 

(d) none of the above

90. $(CO)_3Co(NO) \xrightarrow[PPh_3]{h\nu} (CO)_2Co(NO)(PPh_3)$

(P)



(Q)

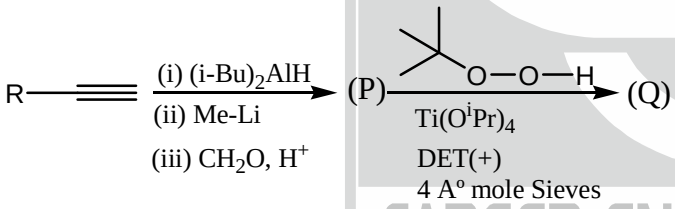
The intermediate of the above mentioned photochemical conversion reaction scheme (P) and (Q) are respectively

(a) $P = (CO)_2\,Co(NO)$ $\quad Q = (\eta^1\text{-allyl})Mn(CO)_4$

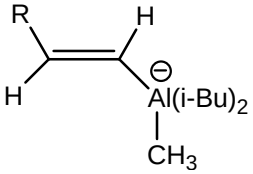
(b) $P = (CO)_3\,Co(NO\ bent)$ $\quad Q = (\eta^3\text{-allyl})Mn(CO)_4$

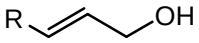
(c) $P = (CO)_3\,Co(NO\ bent)$ $\quad Q = (\eta^1\text{-allyl})Mn(CO)_4$

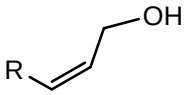
(d) $P = (CO)_2\,Co(NO\ bent)$ $\quad Q = (\eta^1\text{-allyl})Mn(CO)_3$

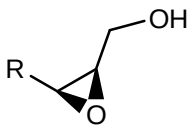
91. 

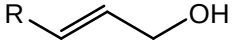
The major prduct (P) and (Q) are respectively

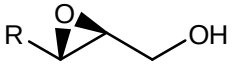
(a) P = 

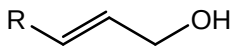
Q = 

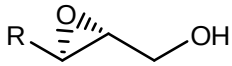
(b) P = 

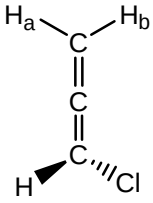
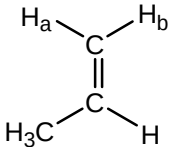
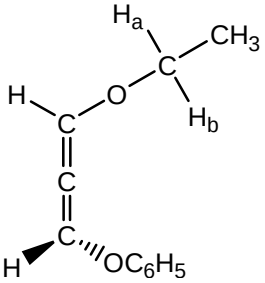
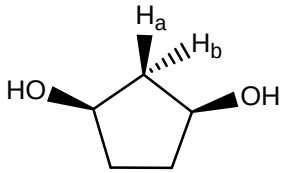
Q = 

(c) P = 

Q = 

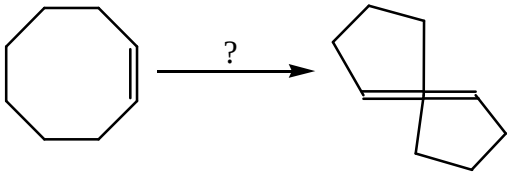
(d) P = 

Q = 

92. (P)  (Q)  (R)  (S) 

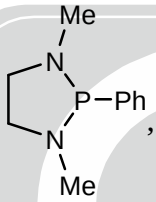
Which of the following compounds, contain enantiotopic protons (H_a and H_b)

(a) Q, R (b) P and Q (c) P only (d) S only

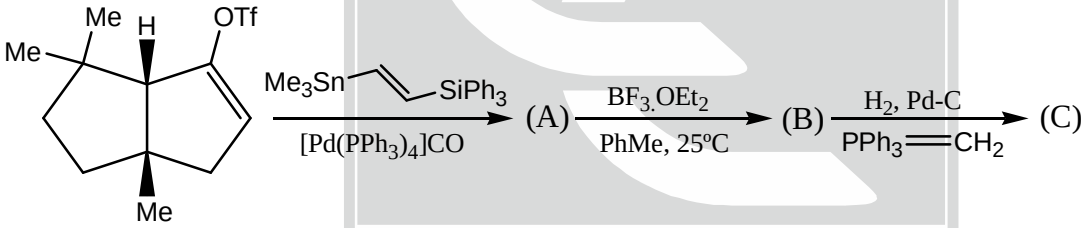
93. 

The suitable reagent for the above conversion is

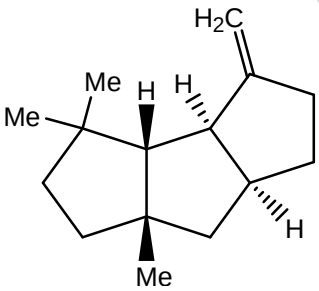
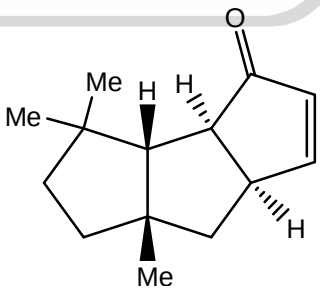
(a) $KMnO_4$, $SCCl_2$, $P(OMe)_3$, 100–130°C (b) m-CPBA, H^+, H_2O, $P(OMe)_3$, 100–130°C

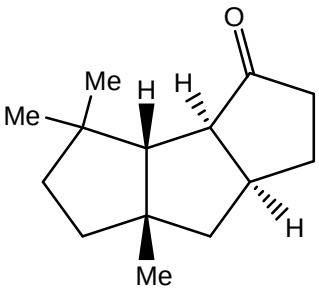
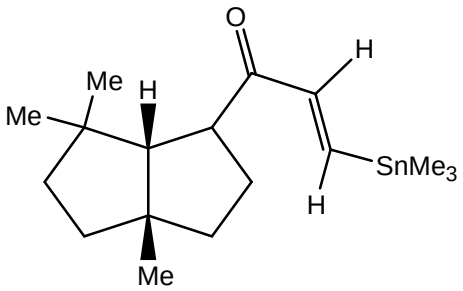
(c) m-CPBA, H^+, H_2O, $SCCl_2$,  , 100–130°

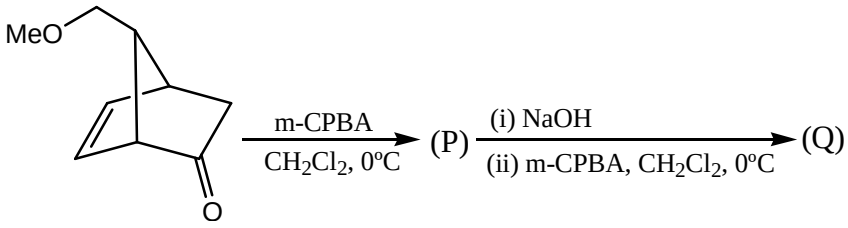
(d) DIBAl-H

94. 

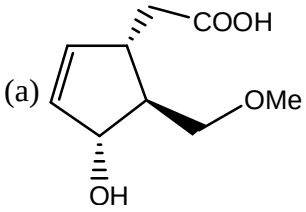
The major product (C) in the above reaction is

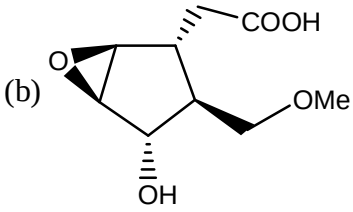
(a)  (b) 

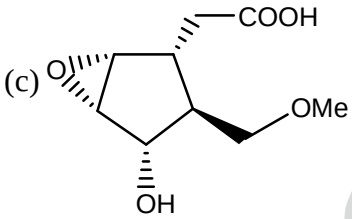
(c)  (d) 

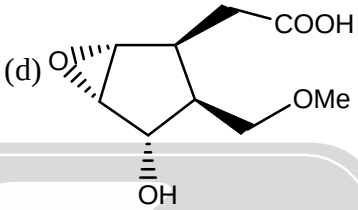
95. 

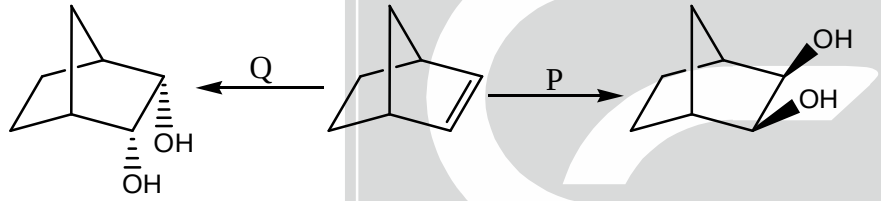
The major product (Q) in the above reaction is

(a) 

(b) 

(c) 

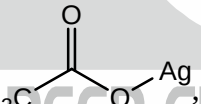
(d) 

96. 

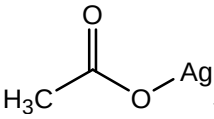
The suitable reagent P and Q are respectively

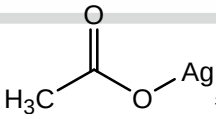
(a) P = Q = OsO_4, NMO

(b) P = OsO_4, NMO and Q = $KMnO_4$

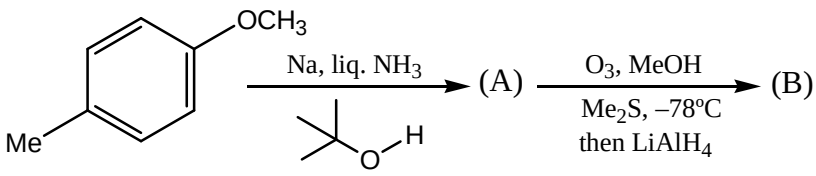
(c) P = OsO_4, NMO and Q = I_2, 

, H_2O

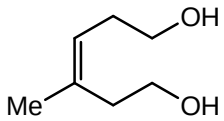
(d) P = I_2, 

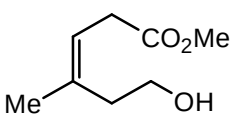
, H_2O and Q = I_2, 

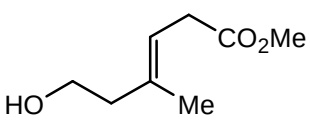
, CCl_4

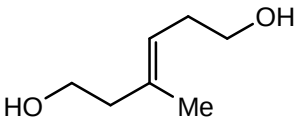
97. 

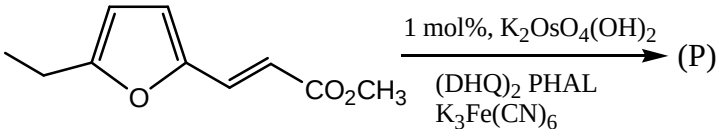
The major product (B) in the above synthetic transformation is

(a) 

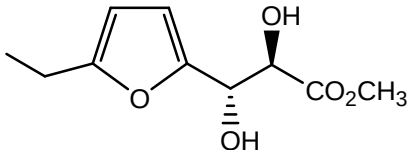
(b) 

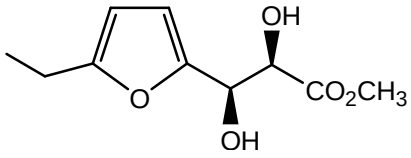
(c) 

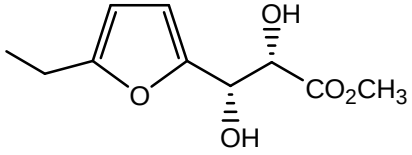
(d) 

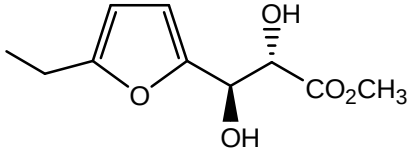
98. 

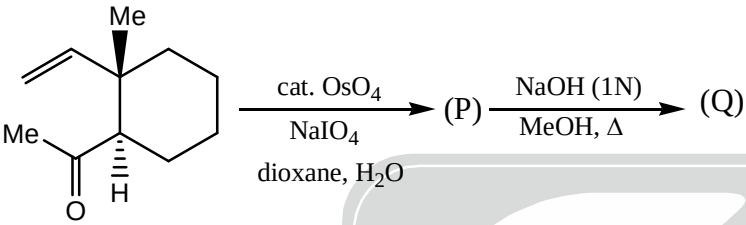
The major product of enantioselective Osmium catalyzed dehydroxylation of alkene is

(a) 

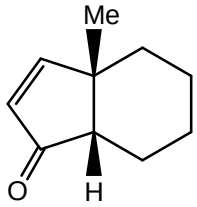
(b) 

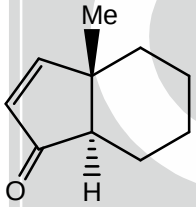
(c) 

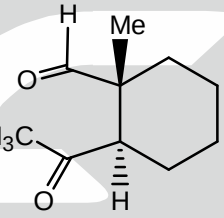
(d) 

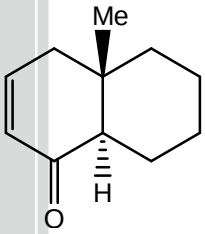
99. 

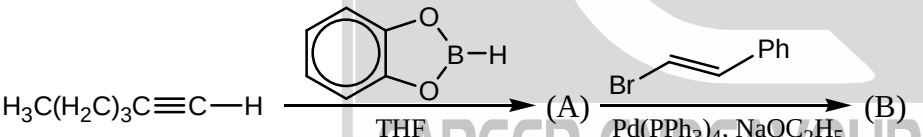
The major product Q in the above synthetic transformation is

(a) 

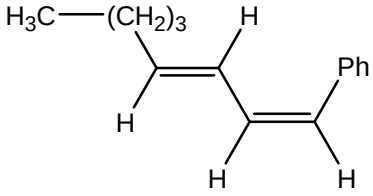
(b) 

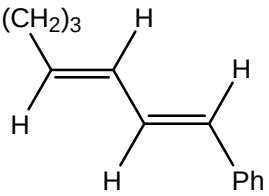
(c) 

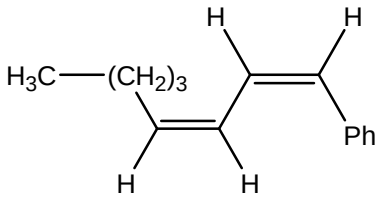
(d) 

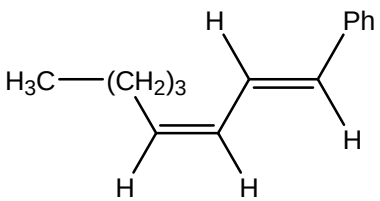
100. 

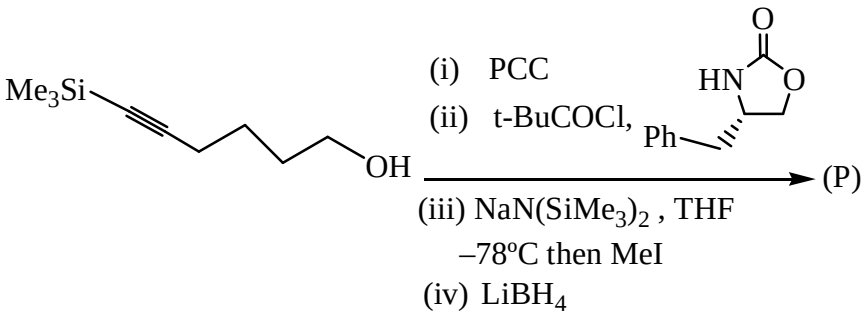
The major product (B) in the above synthetic transformation is

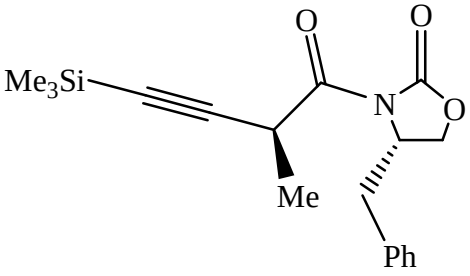
(a) 

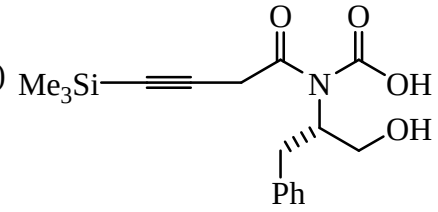
(b) 

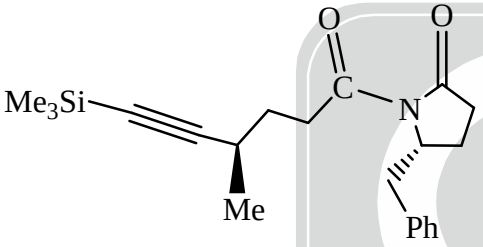
(c) 

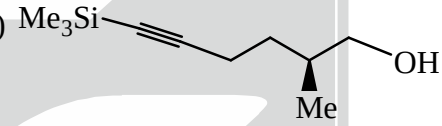
(d) 

101. 

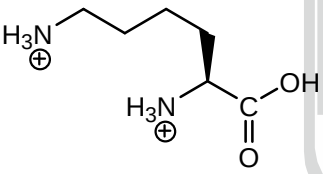
(a) 

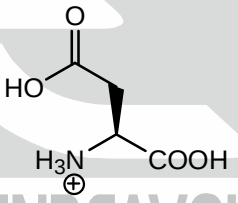
(b) 

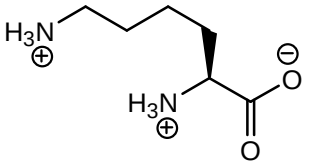
(c) 

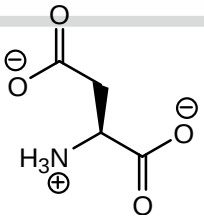
(d) 

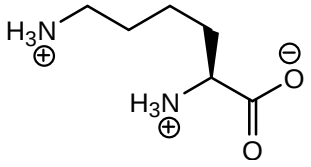
102. At pH 5 the correct structures are of the following two amino acid will be

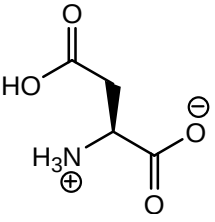
(I) 

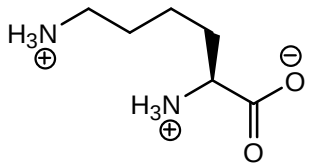
(II) 

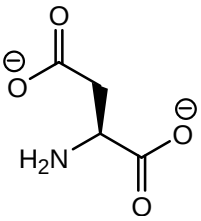
(a) (I) 

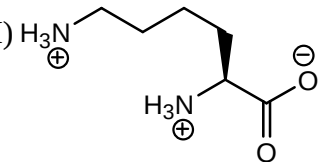
(II) 

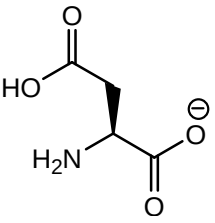
(b) (I) 

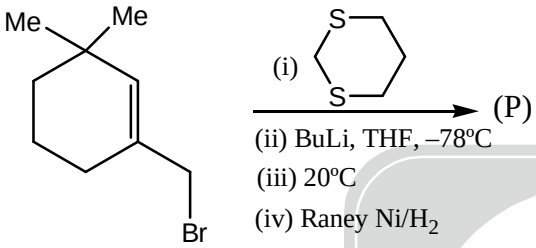
(II) 

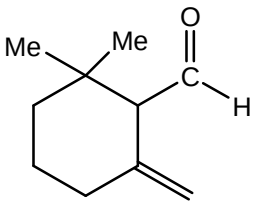
(c) (I) 

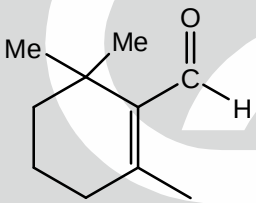
(II) 

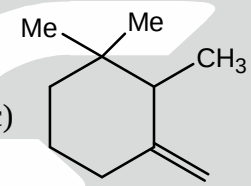
(d) (I) 

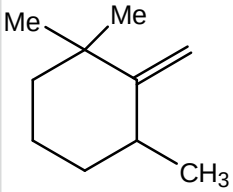
(II) 

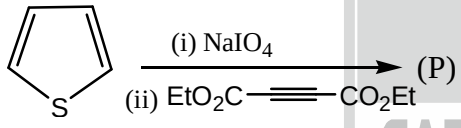
103. 

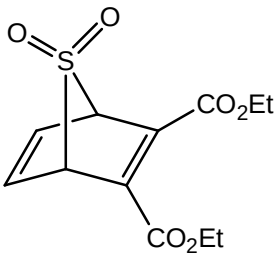
(a) 

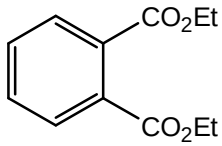
(b) 

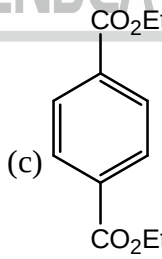
(c) 

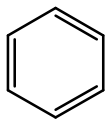
(d) 

104. 

(a) 

(b) 

(c) 

(d) 

105. Four identical fermion particles are to be distributed in two energy levels E_1 and E_2. Energy E_1 is 5-fold degenerate and E_2 is 6-fold degenerate. The energy corresponding to the distribution having maximum number of arrangements is

(a) E_2 (b) $E_1 + 3E_2$ (c) $2(E_1 + E_2)$ (d) $3(E_1) + E_2$

106. Nickel forms a gaseous compound of the formula $Ni(CO)_x$. The value of *x* given that under the same conditions of temperature and pressure methane effuses 3.25 times faster than the compound is (Given : Ni = 58.7)

(a) 3 (b) 4 (c) 5 (d) 6

107. The formula for the standard deviation for a set of small sample of n measurements is

(a) $\dfrac{\left[\sum_{i=1}^{N}\left(x_i\right)^2\right]^{1/2}}{N-1}$ (b) $\left[\dfrac{\sum_{i=1}^{N}\left(x_i-\bar{x}\right)^2}{N-1}\right]^{1/2}$ (c) $\left[\dfrac{\sum_{i=1}^{N}x_i}{N(N-1)}\right]^{1/2}$ (d) $\left[\dfrac{\sum_{i=1}^{N}\left(x_i\right)^2}{N(N-1)}\right]^{1/2}$

108. Match the following

i. BrF_3	1. Linear
ii. CO_2	2. Symmetric top molecule (oblate)
iii. SO_2	3. Prolate near symmetric top molecules
iv. s-trans crotonic acid	4. Oblate near symmetric top molecules
v. s-trans acrolin	5. Assymmetric molecule
	6. Symmetric top molecule (prolate)

(a) i-2, ii-1, iii-1, iv-3, v-3 (b) i-5, ii-1, iii-5, iv-4, v-4
(c) i-5, ii-1, iii-5, iv-3, v-3 (d) i-2, ii-1, iii-1, iv-4, v-3

109. Consider a binary mixture of ideal gases with N_1 and N_2 molecules of type 1 and 2 respectively. The expression for partition function is

(a) $\dfrac{q_1^{N_1}}{\lfloor N_1} \times \dfrac{q_2^{N_2}}{\lfloor N_2}$ (b) $\dfrac{q_1^{N_1}}{\lfloor N_1+N_2} \times \dfrac{(q_2)^{N_2}}{\lfloor N_1+N_2}$

(c) $\dfrac{(q_1 q_2)^{N_1+N_2}}{\lfloor N_1+N_2}$ (d) $\dfrac{q_1^{N_1}}{\lfloor N_1} + \dfrac{q_2^{N_2}}{\lfloor N_2}$

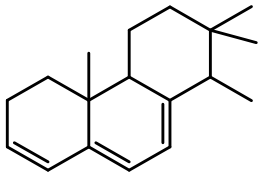
110. Which of the following statement is/are correct ?
1. In TGA measurement of change in mass w.r.t. temperature
2. In DTA measurement of differences in heat contents with temperature
3. In DSC measurement of difference in volume
4. In Gas solid chromatography a silica gel column is used CO_2 is separated from C_2H_2, O_2, H_2, N_2 and CO on a 4 ft. column.

(a) 1 and 3 (b) 3 and 4 (c) 1, 2 and 4 (d) 3 only

111. For an enzyme catalyzed reaction a fineweaver-Burk plot gave the following data slope = 60's, intercept = 4 $(\text{m mol dm}^{-3}\text{ s}^{-1})^{-1}$, if the initial concentration of enzyme is 4.5×10^{-10} mol dm^{-3}. What is catalytic efficiency (in $dm^{-3}\text{ mol}^{-1}\text{s}^{-1}$) of the reaction.

(a) 1.9×10^7 (b) 2.5×10^7 (c) 2.9×10^7 (d) 3.7×10^7

112. λ_{max} for the compound is



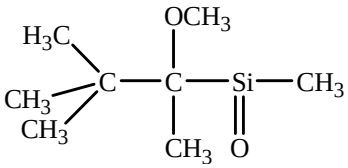
(a) 345 mμ (b) 313 mμ (c) 310 mμ (d) 290 mμ

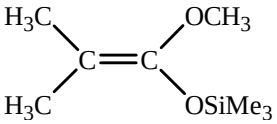
113. An organic compound $(C_8H_{18}O_2Si)$ group transfer reagent exhibited the following spectral data

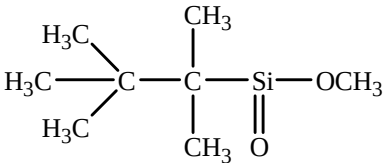
^1H NMR : δ 3.67 (s, 3H), 1.72 (s, 3H), 1.69 (s, 3H), 0.53 (s, 9H)

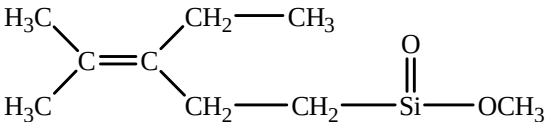
^{13}C NMR : δ 148, 91, 56, 15, 14, 0.2

The compound is

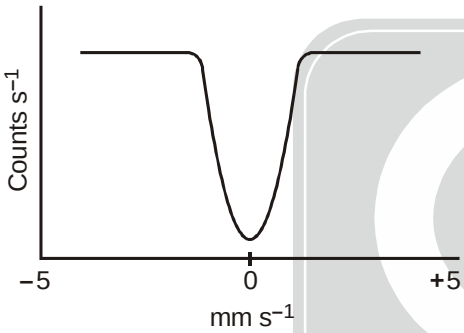
(a) 

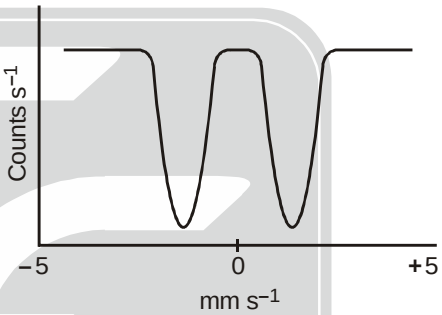
(b) 

(c) 

(d) 

114. The two M.B. spectrum of compound $(x)\,[Fe(CN)_6]^{-4}$ and $(y)\,[Fe(CN)_5NO]^{-2}$ given below:

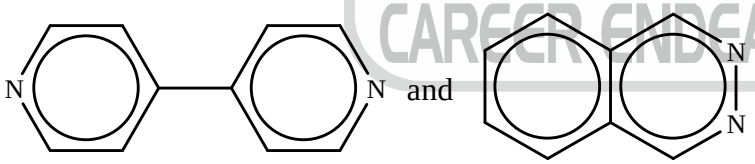
(A) 

(B) 

The correct match is

(a) x belongs to B, y belongs to A
(b) x belongs to A, y belongs to B
(c) y belongs to A, x belongs to A
(d) x belongs to B, y belongs to B

115. In the ESR spectrum of



Total number of lines are respectively

(a) 135, 125 (b) 145, 135 (c) 125, 135 (d) 135, 145

116. A slight excess iodide solution is added to a dilute silver nitrate solution. A solution of AgI is formed whose surface adsorbs

(a) Na^+ (b) NO_3^- (c) I^- (d) Ag^+

117. The geometric cross-section (in barn) of a nucleus $A = 125$, $r_0 = 1.4 \times 10^{-15}$ m approximately is

(a) 1.05 (b) 1.54 (c) 2.05 (d) 2.54

118. The surface tension of dilute solutions is given by $\gamma = \gamma_0 - 5C_2$. The surface excess is

(a) $\frac{5C_2}{RT}$ (b) $\frac{-5C_2}{RT}$ (c) $\frac{-RT}{5C_2}$ (d) None

119. The values of slope and intercept are 100 cm^{-3} and 10 Pa cm^{-3} respectively in Langmuir adsorption. The value of adsorption constant is

(a) $10\,Pa^{-1}$ (b) 10 Pa (c) 0.1 Pa (d) $0.1\ Pa^{-1}$

120. The polydispersity index for

N	M
10	1000
40	2000

is

(a) $\frac{850}{81}$ (b) $\frac{85}{810}$ (c) $\frac{850}{810}$ (d) $\frac{85}{81}$

121. let x and p denote respectively the co-ordinate and momentum operators satisfying the relation $[x, p] = i$ in natural units $(\hbar = 1)$. Then the commutator $[x, e^{-p}]$ is

(a) $i e^{-p}$ (b) $-i e^{-p}$ (c) $i p e^{-p}$ (d) $-i p e^{-p}$

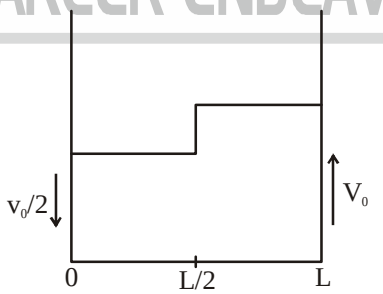
122. The minimum energy of a collection of 6 non interacting particles of spin $(-\frac{1}{2})$ placed in a one dimensional infinite square well potential of width L is

(a) $\frac{3\pi^2\hbar^2}{mL^2}$ (b) $\frac{7\pi^2\hbar^2}{mL^2}$ (c) $\frac{12\pi^2\hbar^2}{mL^2}$ (d) $\frac{14\pi^2\hbar^2}{mL^2}$

123. Let $\psi_{n,\ell,m}$ denote the eign function of a Hamiltonian for a spherically symmetric-potential $v(r)$. The expectation value of $\hat{L}_z$ in the state $\psi = \frac{1}{6}\left[\psi_{2,0,0} + \sqrt{5}\,\psi_{2,1,0} + \sqrt{10}\,\psi_{2,1,-1} + \sqrt{20}\,\psi_{2,1,1}\right]$ is

(a) $-\frac{5}{18}\hbar$ (b) $-\frac{5}{6}\hbar$ (c) $\frac{5\hbar}{6}$ (d) $\frac{5\hbar}{18}$

124. A constant perturbation as shown follow acts an a particle of mass m confined in a infinite potential well between 0 to L



The 1st order correction to the ground state energy of the particle is

(a) $\frac{V_0}{2}$ (b) $\frac{3V_0}{4}$ (c) $\frac{V_0}{4}$ (d) 0

125. For a Vanderwaal gas, $Z = 1 + \left[b - \left(\frac{a}{RT} \right) \right] \frac{P}{RT}$

What is the fugacity at 100 bar and 298K (Given : a = 0.2476 dm^3bar mol^{-1} and b = 0.02661 dm^3 mol^{-1})

(a) 106.9 bar (b) 101.9 bar (c) 110.9 bar (d) 120.9 bar

126. Given : $NO_3^- \longrightarrow NO_2$ (acidic medium) $E^0 = 0.8V$

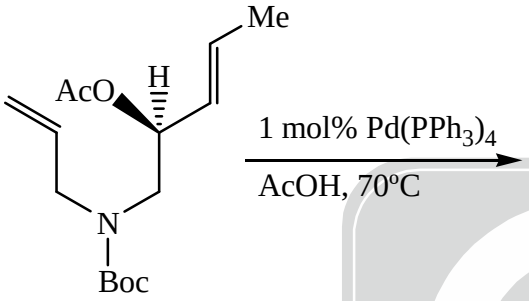
$NO_3^- \longrightarrow NH_2OH$ (acidic medium) $E^0 = 0.74V$

At what pH the above two half reaction will have same EMF value. Assume the concentration

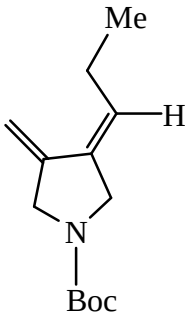
$[NO_3^-] = [NO_2] = [NH_2OH] = 1\,M$

(a) pH = 7.4 (b) pH = 8.4 (c) pH = 2.5 (d) pH = 1.2

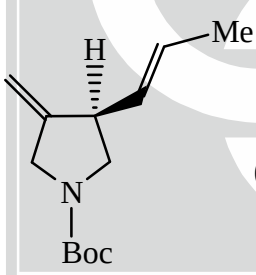
127.



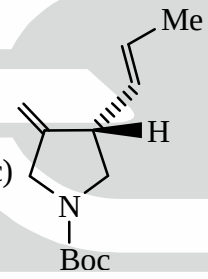
(a)



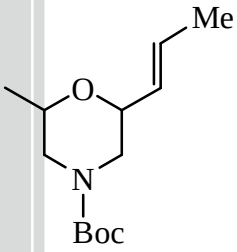
(b)



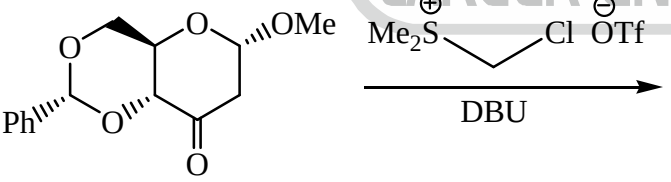
(c)



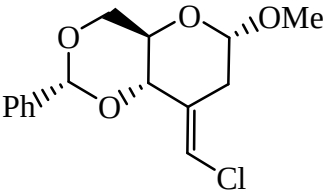
(d)



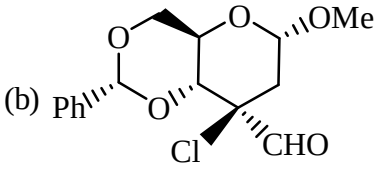
128.



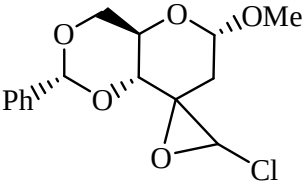
(a)



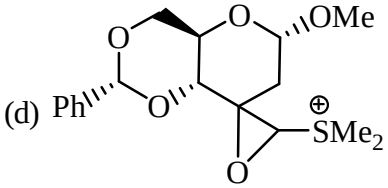
(b)



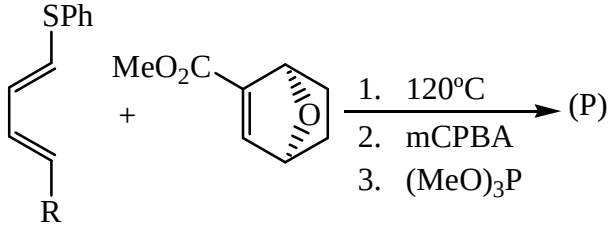
(c)

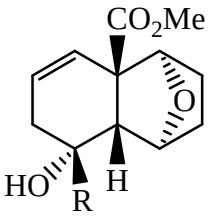


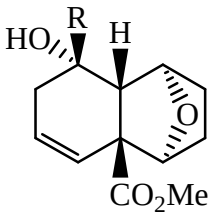
(d)

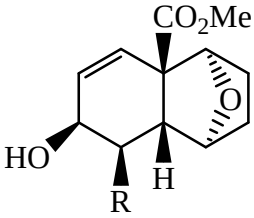


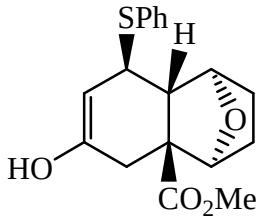
129. The major product (P) formed in the following reaction sequence is



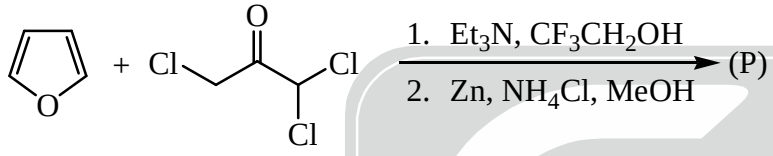
(a) 

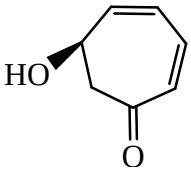
(b) 

(c) 

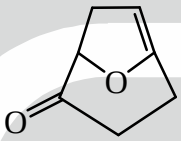
(d) 

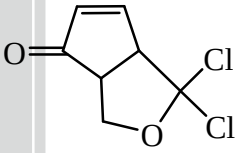
130. The major product (P) formed in the following reaction sequence is



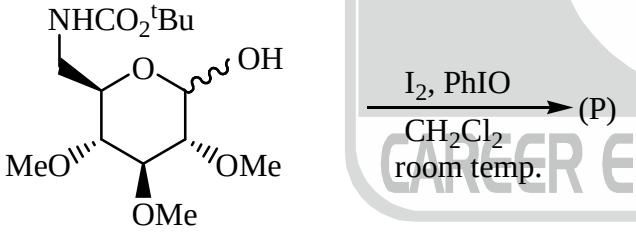
(a) 

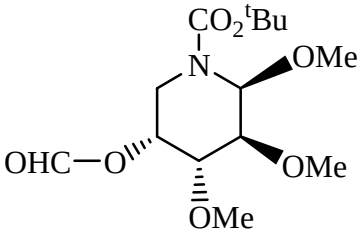
(b) 

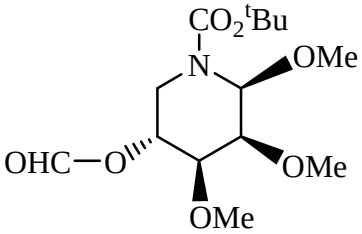
(c) 

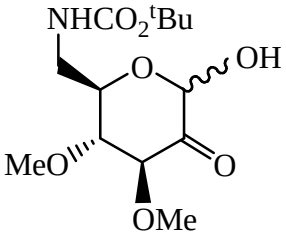
(d) 

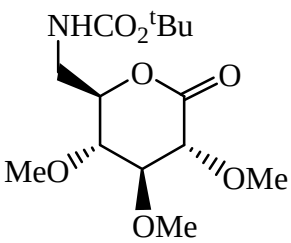
131. The major product (P) formed in the following reaction sequence is



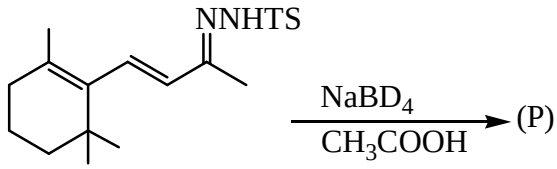
(a) 

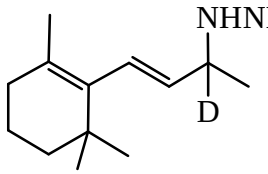
(b) 

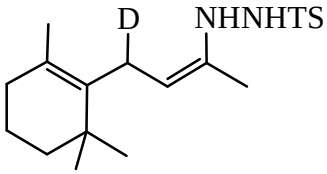
(c) 

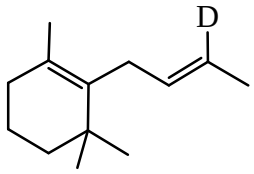
(d) 

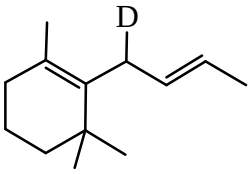
132. The major product (P) formed in the following reaction sequence is



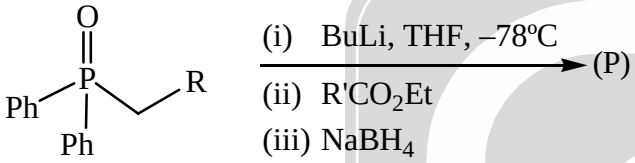
(a) 

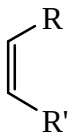
(b) 

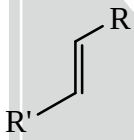
(c) 

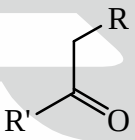
(d) 

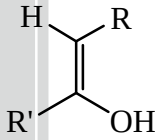
133. The major product (P) formed in the following reaction sequence is



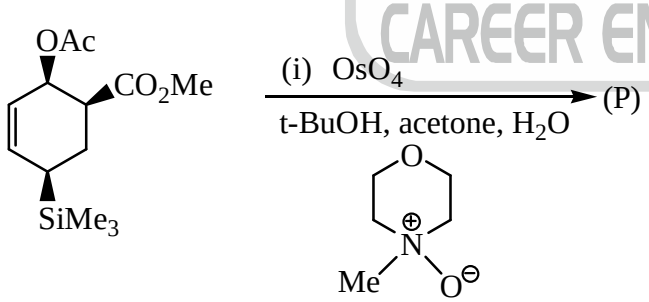
(a) 

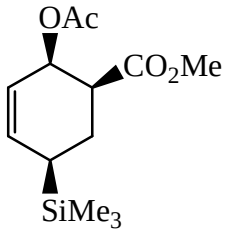
(b) 

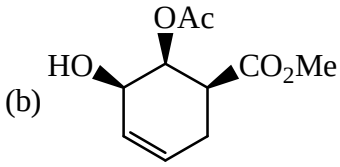
(c) 

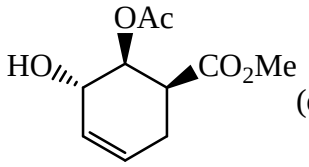
(d) 

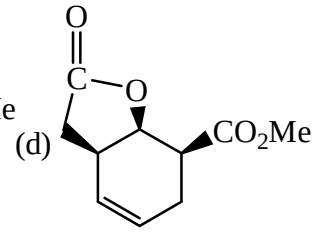
134. The major product (P) formed in the following reaction sequence is



(a) 

(b) 

(c) 

(d) 

135. The ratio of M and M + 1 peak in the mass spectrum of C_{60} is

(a) 2 : 3 (b) 6 : 1 (c) 1 : 6 (d) 3 : 2

136. Consider the reducible representation (R.R)

	E	$2C_3$	$3\sigma_V$
Γ	6	3	0

and irreducible representation (I.R.)

	E	$2C_3$	$3\sigma_V$	
A_1	1	1	1	z
A_2	1	1	−1	
E	2	−1	0	x, y

The correct reduction of R.R. into I.R. is

(a) $2E + A_1 + A_2$ (b) $3A_1 + 3A_2$ (c) $2E + 2A_1$ (d) $E + 2A_1 + 2A_2$

137. The structure factor of (111) planes in a B.C.C. lattice is

(a) 4 (b) 2 (c) 1 (d) 0

138. Two atoms A and B form a F.C.C. lattice with A atoms at corners and B at each face centre. If two A and 3B atoms are missing from their lattice positions, then the formula of the resulting lattice is

(a) AB_3 (b) AB_2 (c) A_2B (d) A_2B_3

139. The rate constant at 100°C of a particular reaction is given as

$$k = 1.4 \times 10^{-2}\ e^{-20/T}$$

The activation energy of the reaction is (R = 2 cal K^{-1} $mole^{-1}$)

(a) 40 cal K^{-1} $mole^{-1}$ (b) 40 cal $mole^{-1}$ (c) 14.920 cal K^{-1} $mole^{-1}$ (d) 14.920 kcal K^{-1} $mole^{-1}$

140. For the reaction,

$$A^{2+} + B^{Z_B} \longrightarrow \text{Product}$$

(a) The slope of the plot of $\log\left(\frac{k}{k_0}\right)$ versus $\sqrt{I}$ was found to be +6.109 at 298K. The charge on B is

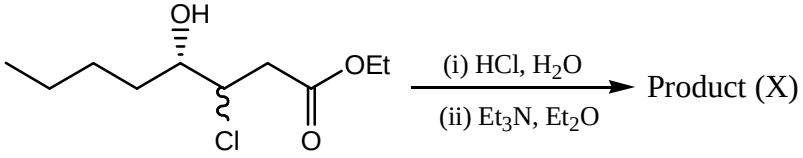
(a) +1 (b) +2 (c) +3 (d) none of these

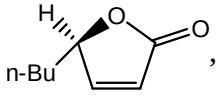
141. Two substances 'A' and 'B' start decaying at the same time following second order kinetics and half lives of A and B are 12 and 28 mins respsectively. If initial quantity of A is double of the initial quantity of B, then how much time later will the concentration of A and B would be the same?

(a) 56 mins (b) 44 mins (c) 84 mins

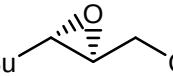
(d) the concentration of A and B will never become equal

142. Correct statement for following reaction is

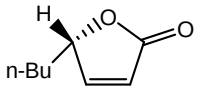


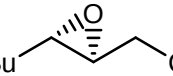
(a) 'X' is 

, its formation involves ElCB mechanism

(b) 'X' is 

, its formation involves addition mechanism

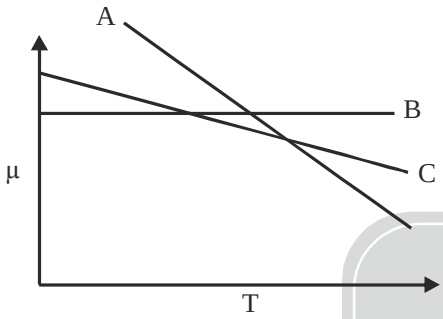
(c) 'X' is  its formation involves lactonization and E1CB mechanism

(d) 'X' is n-Bu  CO_2Et, its formation involves addition mechanism

143. For the reaction, $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$. On increasing pressure equilibrium shift to

(a) forward (b) backward
(c) first backward than forward (d) cannot be predicted.

144. For the below diagram, effect of pressure on the curve of change of μ as a function of temperature will be maximum for



(a) curve A (b) curve B (c) curve C
(d) curve A and curve B show same extent of change

145. For the liquid $\rightleftharpoons$ vapour equilibrium of a substance $\frac{dP}{dT}$ at 1 bar and 500K is 4×10^{-3} bar K^{-1}. If the molar volume in the vapour form is 500 L mol^{-1} and the molar volume in the liquid form is negligible. The molar enthalpy of vapourisation is (1.0 bar L = 100 J)
(a) 10000 J/mol (b) 10000 kJ/mol (c) 100 kJ/mol (d) 1000 kJ/mole

All the very Best for NET "18th Dec. 2016" Exam

Space for rough work

CHEMICAL SCIENCES **Date : 10-12-2016**

TEST SERIES-(E)

ANSWER KEY

PART-A

1. (c)	2. (d)	3. (c)	4. (d)	5. (b)	6. (b)	7. (a)
8. (d)	9. (a)	10. (d)	11. (d)	12. (d)	13. (b)	14. (b)
15. ()	16. (b)	17. (d)	18. (d)	19. (c)	20. (b)	

PART-B

21. (d)	22. (c)	23. (c)	24. (b)	25. (d)	26. (a)	27. (a)
28. (a)	29. (a)	30. (b)	31. (b)	32. (d)	33. (a)	34. (c)
35. (c)	36. (b)	37. (b)	38. (b)	39. (c)	40. (a)	41. (c)
42. (c)	43. (d)	44. (b)	45. (c)	46. (b)	47. (b)	48. (c)
49. (b)	50. (a)	51. (c)	52. (b)	53. (a)	54. (d)	55. (b)
56. (b)	57. (a)	58. (b)	59. (b)	60. (a)	61. (b)	62. (c)
63. (d)	64. (d)	65. (a)	66. (d)	67. (b)	68. (b)	69. (c)
70. (c)						

PART-C

71. (a)	72. (c)	73. (a)	74. (c)	75. (a)	76. (b)	77. (a)
78. (b)	79. (c)	80. (c)	81. (b)	82. (c)	83. (b)	84. (d)
85. (c)	86. (d)	87. (c)	88. (a)	89. (c)	90. (c)	91. (c)
92. (c)	93. (c)	94. (a)	95. (c)	96. (c)	97. (a)	98. (b)
99. (a)	100. (b)	101. (d)	102. (a)	103. (c)	104. (b)	105. (c)
106. (b)	107. (b)	108. (c)	109. (a)	110. (c)	111. (d)	112. (b)
113. (b)	114. (b)	115. (c)	116. (d)	117. (b)	118. (a)	119. (a)
120. (d)	121. (b)	122. (d)	123. (d)	124. (b)	125. (a)	126. (c)
127. (c)	128. (b)	129. (c)	130. (b)	131. (a)	132. (c)	133. (b)
134. (c)	135. (d)	136. (d)	137. (d)	138. (b)	139. (b)	140. (c)
141. (c)	142. (c)	143. (a)	144. (a)	145. (c)		