CHEMISTRY

BOOKS - UNITED BOOK HOUSE

MODEL QUESTION PAPER 7

Exercise

1. For d electron, the orbital angular momentum is

A. $\sqrt{6}h/2\pi$

B. $\sqrt{2h/2\pi}$

C. $h/2\pi$

D. $2h / \pi$

Answer:

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2. Which one of the following molecule has the lowest bond angle?

A. CH_4

B. H_2O

C. C_2H_2

D. NH_3

Answer:

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3. The number of lone pair in $XeOF_4$ is

A. 0

B. 1

C. 2

D. 3

Answer:

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4. Maximum deviation from ideal gas is expected from—

A. H_2

B. N_2

C. CH_4

D. NH_3

Answer:

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5. The equilibrium constant (K) of a reaction may be written as

A. $K = e^{-\Delta G / RT}$

B. $K = e^{-\Delta G^0 / RT}$

C. $K = e^{-\Delta H / RT}$

D. $K = e^{-\Delta H^0 / RT}$

Answer:

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6. An ideal gas is allowed to expand under adiabatic conditions what is zerofor such a process

A. $\Delta G = 0$

B. $\Delta T = 0$

C. $\Delta S = 0$

D. none of these

Answer:

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7. Consider the reaction `A(g) + B (g) overset(rightarrow) (leftarrow) C (g) + D (g) which occurs in one step.The specific rate constants are 0.25 and 5000 for the forward and reverse reactions respectively. The equilibrium constant is —

A. 2×10^{-4}

B. 4×10^{2}

C. 5×10^{-5}

D. 2.5×10^{-6}

Answer:

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8. Which of the following has the lowest melting point ?

A. Na

B. Cs

C. Rb

D. K

Answer:

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9. Which of the following is least thermally statble?

A. K_2CO_3

B. Na_2CO_3

C. $BaCO_3$

D. Li_2CO_3

Answer:

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10. In the Lassaigne's test for the detection of sulphur, the purple colour is due to the formation of

A. $Na_4\left[Fe(CN)_5NOS\right]$

B. $Na_3\left[Fe(CN)_5S\right]$

C. $Na_2\left[Fe(CN)_5NOS\right]$

D. $Na_3\left[Fe(CN)_6\right]$

Answer:

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11. In the compound $\overset{1}{C}H_2 = overet2CH-\overset{3}{C}H_2-\overset{4}{C}H_2-\overset{5}{C} \equiv CH,$ the

C_2— C_3 bond is of the type —

A. $sp - sp^2$

B. $sp^3 - sp^3$

C. $sp - sp^3$

D. $sp^2 - sp^3$

Answer:

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12. Which of the following gives on ozonolysis both aldehydes and ketones?

A. $Me_2C = CHMe$

B. $Me_2C = CMe_2$

C. $MeCH_2 = CHMe = CMe_2$

D. $MeCHMe — CH_2 — CH = CHMe.$

Answer:

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13. Benzene reacts with CH_3COCI in, the presence of anhydrous $AICI_3$ to form

A. Chlorobenzene

B. Benzophenone

C. Acetophenone

D. Toluene

Answer:

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14. Which one causes Minamata

A. Cu

B. Fe

C. Hg

D. Pb

Answer:

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15. Calculate the number of atoms in 56u of He atom (Atomic mass of He = 4u).

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16. 1 amu =_____ g.

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17. Identify the s-block and p-block elements among the following elements :Mg, Cu, P, and Zn.

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18. Write the IUPAC name and symbol for the element with atomic number 119.

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19. Classify the following system into open, closed or isolated : Hot tea kept in a thermosflask.

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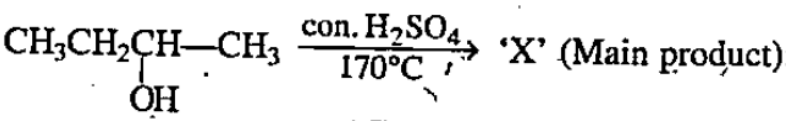
20. Identify 'X' in the figure.



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21. Haemoglobin was found to contain- 0.335% iron (atomic weight of Fe = 56). The molecular weight of Haemoglobin is 1.67×10^4. Find the number of iron atoms in haemoglobin.

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22. Show that if uncentainty in position and velocity are equal then uncertainty in momentum will be $\frac{1}{2}\sqrt{\frac{mh}{\pi}}$

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23. The shortest wavelength of H atom in Lyman series is x, then find the longest wavelength in Balmer series of He^+ ion.

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24. Explain why $PbCl_4$ is a good oxidising agent.

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25. CO has both -oxidising and reducing property—explain.

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26. What type of fission of a covalent bond products free radicals? Give an example with proper sign.

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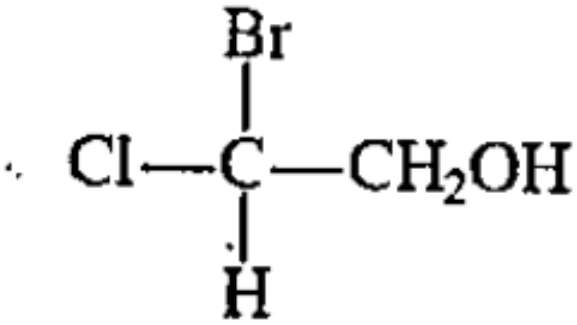
27. Write down the IUPAC name of the following compound:



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28. Draw the structure of the following compound : 3, 4-dimethylpehtanoic acid.

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29. What is acid rain? How it effects on soil,vegetation and human health?

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30. Why electronic energy is negative?

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31. What do you understand by stationary state? Does an electron remain stationary in a stationary orbit?

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32. Atomic radius of chlorine atom is $0.99\overset{\circ}{A}$ but ionic radius of chloride $\left(Cl^{-}\right)$ is $1.81\overset{\circ}{A}$— explain.

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33. State the group number in the modern periodic table where solid, liquid and gaseous elements are

present at ordinary temperature. Identify the solid and liquid elements.

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34. Arrange Mg, Al, Si and Na in the increasing order of their ionisation potentials.

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35. Arrange according to the directions : Sb_2O_3, N_2O_5, AS_2O_3 (Increasing order of acidic property)

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36. Arrange according to the directions : B— Cl, Ba— Cl, Br— Cl, Cl— Cl (Decreasing order of bond polarity)

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37. In certain polar solvent, PCl_5 undergoes ionisation as follows: $2PCl_5 \rightarrow PCl_4^+ + PCl_6^-$. Predict geometrical shapes of all the species involved.

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38. Give an example, of intramolecular hydrogen bonding.

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39. Bond angel of H_2O is greater than H_2S— Explain.Explain, ammonia is more basic than phosphin.

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40. Out of SF_6 and SCl_2, S has highe electronegativity in which of the compounds and why?

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41. Arrange CO_2, SO_2 and NO_2 gases in increasing order of their rates of difusion under the same condition of teperatiire and pressure with reason.

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42. For a fixed mass of an ideal gas draw the following graphs:

(i) P/T vs T (volume remaining constant)

(ii) d (density) vs P (temperature remaining constant)

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43. Classify the different types of systems.with one example of each.

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44. Show that $\Delta H = q/p$.

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45. At T K, what will be the value of (H-U) for 1 mol of ideal gas?

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46. Mention the oxidation number of Mn in $KMnO_4$.

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47. Balance the following chemical., equation by ion electron method :

$$Cr_2O_7^{2-} + Fe^{2+} + H^+ \rightarrow Cr^{3+} + Fe^{3+} + H_2O.$$

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48. Balance the reaction by oxidation number method

$$AI + NaOH + H_2O \rightarrow NaAIO_2 + H_2$$

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49. Find the oxidation state of C— 1 and C— 2 in CH_3CH_2OH.

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50. What do you mean by 30 volume H_2O_2 solution? Why H_2O_2 exhibit both oxidising and reducing property?

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51. Among alkaline earth metals _____ is having the highest ionization energy.

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52. Compare the alkali metals and alkaline earth metals with respect to: basicity of oxides

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53. What is epson salt? Give its important uses.

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54. KO_2 is paramagnetic in nature: Explain.

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55. Chloroform is more acidic than fluoroform— Explain.

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56. Draw the resonance structures of following compound : $CH_3CH = CHCHO$.

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57. Arrange in order of increasing stability : $\bar{C}H_3, (CH_3)_2\bar{C}H, (CH_3)_3\bar{C}, CH_3\bar{C}H_2$

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58. Arrange in order of increasing stability : $\bar{C}H_3, (CH_3)_2\bar{C}H, (CH_3)_3\bar{C}, CH_3\bar{C}H_2$

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59. Explain the orders of acidity of carboxylic acids? $CH_3CH_2COOH > (CH_3)_2CHCOOH > (CH_3)_3\mathbb{C}OOH$.

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60. 25 ml $(M/10)$ HC1 solution is mixed with 50 ml $(2/25)$ M KOH solution. What will be the pH of the resulting solution?

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61. How would you prove that chemical equifibrim is of dynamic nature?

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62. Derive thevrelationship between K_P and K_C.

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63. Calculate the pH of 10^{-8} (M) NaOH solution.

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64. CO_2 is a gas but SiO_2 is a high melting solid—explain why.

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65. What is producer gas? Mention its two uses.

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66. Write the formula of following are : Bauxite.

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67. Aniline does not undergo Friedelcraft reaction, even though it contains an electron donating group — Why?

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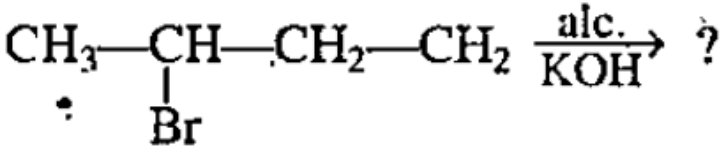
68. Identify the major product :



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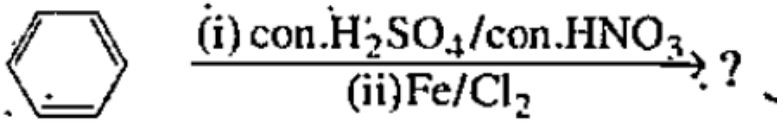
69. Identify the major product :



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70. Identify the major product : $CH_2 = CH_2 \xrightarrow[KMnO_4]{colddi}$

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71. Out of benzene, m-dinitrobenzene and toluene, which will undergo nitration most easily and why?

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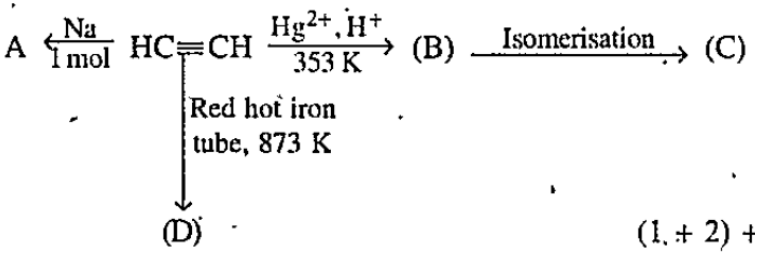
72. Identify 'A','B','C' and 'D'.



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