



CHEMISTRY

BOOKS - MHTCET PREVIOUS YEAR PAPERS AND PRACTICE PAPERS

PRACTICE SET 20

Paper 1 Physics Chemistry

1. When SO_2 is passed through an acidified $K_2Cr_2O_7$ solution, the oxidation state of sulphur changes from

A. +4 to 0

B. +4 to +2

C. +4 to +6

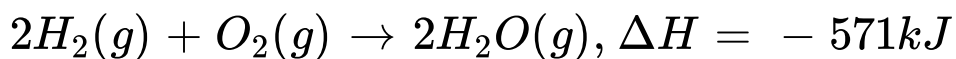
D. +6 to 4

Answer: C



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2. For the reaction:



bond energy of $(H - H) = 435kJ$ and of

$(O = O) = 498\text{kJ}$. Then, calculate the average bond energy of $(O - H)$ bond using the above data.

- A. 484
- B. -484
- C. 200
- D. -271

Answer: A



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3. How many coulombs are required for the oxidation of 1 mol of H_2O_2 ?

A. 93000 C

B. 1.93×10^5 C

C. 9.65×10^4 C

D. 19.3×10^3 C

Answer: B



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4. Rate of reaction can be expressed by following rate expression $\text{Rate} = K[A]^2[B]$, if concentration of A is increased by 3 times and concentration of B is increased by 2 times, how many times will rate of the reaction be increased?

- A. 9 times
- B. 27 times
- C. 18 times
- D. 8 times

Answer: C



5. which of the following is not the characteristic of ionic solids?

- A. very low value of electrical conductivity in the molten state
- B. Brittle nature
- C. Very strong forces of interactions
- D. Anisotropic nature

Answer: A



6. For H_3PO_3 and H_3PO_4 the correct choice is

A. H_3PO_3 is dibasic and reducing agent

B. H_3PO_3 is dibasic and non-reducing agent

C. H_3PO_4 is tribasic and reducing agent

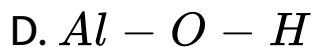
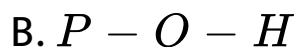
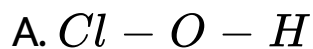
D. H_3PO_3 is tribasic and non-reducing agent

Answer: A



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7. In which of the following O-H bond ruptures easily ?



Answer: A



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8. $4K_2Cr_2O_7 \xrightarrow{\text{heat}} 4K_2CrO_4 + 3O_2 + X$. In the above reaction X is

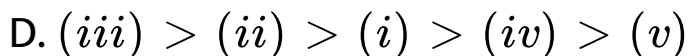
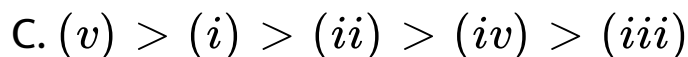
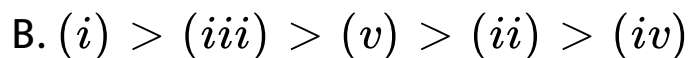
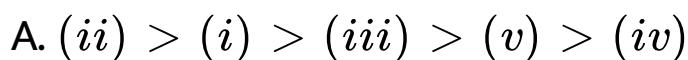
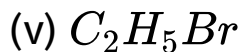
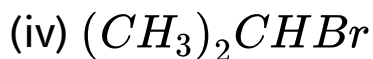
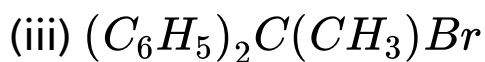
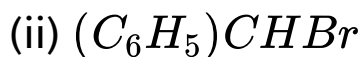
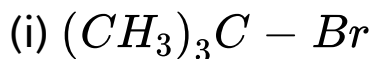


Answer: C



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9. The S_{N1} reactivity of the following halides will be in the order:

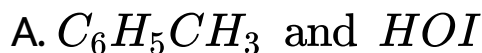
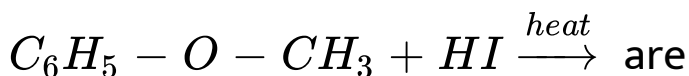


Answer: D



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10. The products formed in the following reaction



Answer: B



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11. $10^{-3} M$ KCl solution will be isotonic with which of the following solutions?

- A. $0.5 \times 10^{-3} M$ NaCl
- B. $2 \times 10^{-3} M$ glucose
- C. $2 \times 10^{-3} M CaCl_2$
- D. $1 \times 10^{-3} M$ oxalic acid

Answer: B



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12. The degree of hardness of water is usually expressed in terms of

A. ppm by weight of $MgSO_4$

B. g/L of $CaCO_3$ and $MgCO_3$ present

C. ppm by weight of $CaCO_3$ irrespective of whether it is actually present

D. ppm of $CaCO_3$ actually present in water.

Answer: C



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13. Which of the following solutions has the highest equivalent conductance?

A. 0.1 M NaCl

B. 0.050 M NaCl

C. 0.005 M NaCl

D. 0.02 M NaCl

Answer: C



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14. Why do most chemical reaction rates increase rapidly as the temperature rise ?

A. The fraction of molecules with kinetic energy greater

B. The average kinetic energy as temperature rises

C. The activation energy decreases as temperature rises

D. More collisions take place between particles , so that the reaction can occur

Answer: A



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15. In an ionic compound $A^+ X^-$, the radii of A^+ and X^- ions are 1.0pm and 2.0pm, respectively. The volume of the unit cell of the crystal AX will be:

A. 27pm^3

B. 64pm^3

C. 125pm^3

D. 216pm^3

Answer: D



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16. Choose the incorrect statement regarding the fact that halogens are coloured ?

A. Due to absorption of visible light by their molecules

B. The small F_2 molecules absorb high energy violet radiation and appear yellow

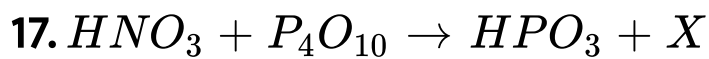
C. large I_2 molecule absorb low energy yellow and green radiations and appear violet in colour

D. The excitation energy required by the small F-atom is smaller than required by the large I-atom

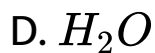
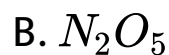
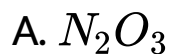
Answer: B



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in the above reaction the product X is :



Answer: B



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18. Larger number of oxidation states are exhibited by the actinoids than those by the lanthanoids, the main reason being

A. 4f -orbitals more diffused than the 5 f-orbitals

B. lesser energy difference between 5 f and 6d than between 4 f and 5 d-orbitals

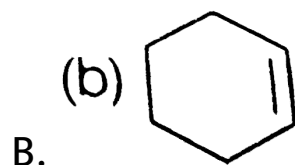
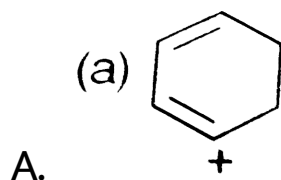
C. more energy difference between 5f and 6d than between 4f and 5d-orbitals

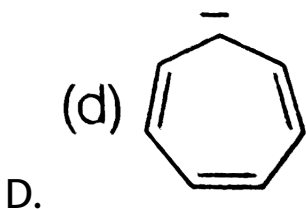
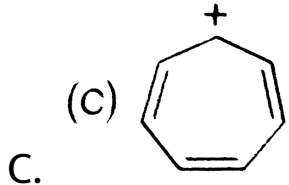
D. more reactive nature of the actinoids than the lanthanoids

Answer: B

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19. Which of the following is aromatic ?



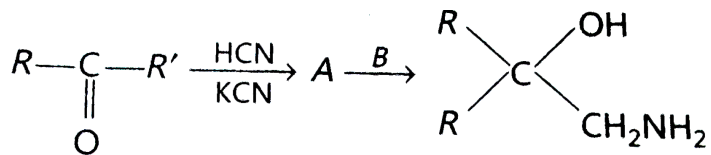


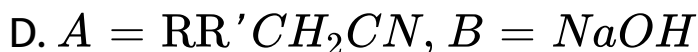
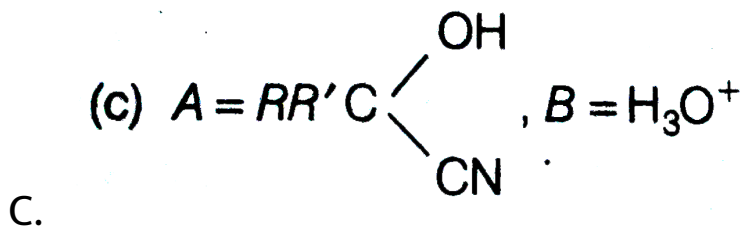
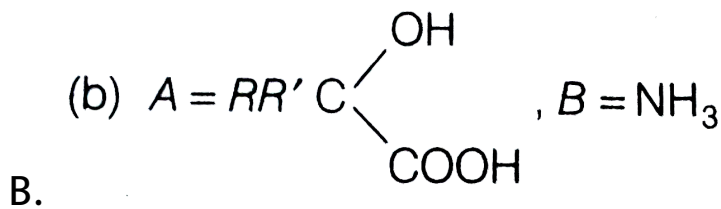
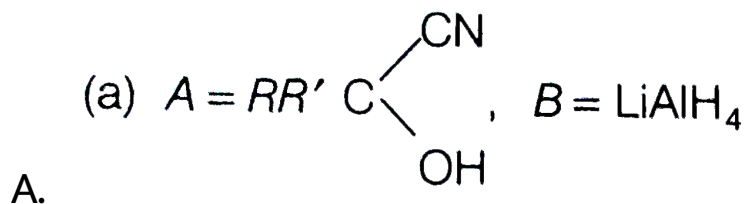
Answer: C



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20. A and B in the following reaction sequence are





Answer: A



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21. The use of common salts, e.g., NaCl or CaCl_2 anhydrous, is made to clear snow on the roads.

This causes:

- A. lowering in freezing point of water
- B. lowering in melting point of ice
- C. ice melts at temperature of atmosphere present at that time
- D. All of the above

Answer: A



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22. Thermodynamics is concerned with

- A. total energy of system
- B. energy change in system
- C. rate of reaction
- D. mass change

Answer: B



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23. Given $\Lambda^\circ = \left(\frac{1}{3}Al^{3+}\right) = 63cm^2/\Omega \text{ mol}$

and $\Lambda^\circ \left(\frac{1}{2}SO_4^{2-}\right) = 80cm^2/\Omega mol.$

The value of $\Lambda^\circ Al_2(SO_4)_3$ would be

A. $143cm^2/\Omega \text{ mol}$

B. $206cm^2/\Omega \text{ mol}$

C. $286cm^2/\Omega \text{ mol}$

D. $858cm^2/\Omega \text{ mol}$

Answer: D



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24. The conversion of $A \rightarrow B$ follows second-order kinetics. Doubling the concentration of A will increase the rate of formation of B by a factor

A. $1/4$

B. 2

C. $1/2$

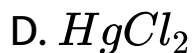
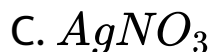
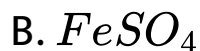
D. 4

Answer: D



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25. Which of the following compounds does not give a precipitate with excess of NaOH ?



Answer: A



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26. The correct statement (s) about oxygen is/are

- A. it is paramagnetic in nature
- B. it has three stable isotopes
- C. it exhibits allotropy
- D. All of the above

Answer: D



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27. Deep sea divers used to respire in a mixture of

- A. oxygen and argon
- B. oxygen and helium

C. oxygen and nitrogen

D. oxygen and hydrogen

Answer: B



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28. Which of the following is used in preparation of optical glass of camera having high refractive index ?

A. Ceric compounds

B. CeO_2

C. Oxides of lanthanoids

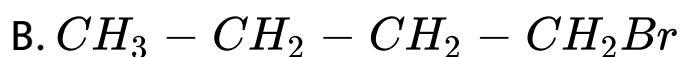
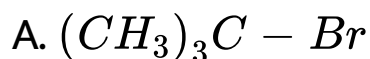
D. Gadolinium sulphate

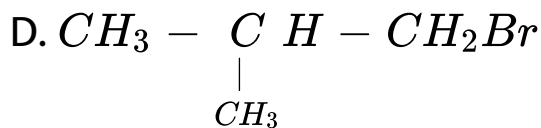
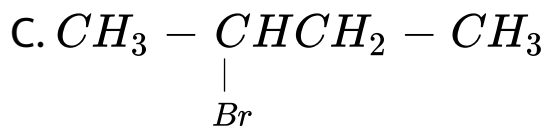
Answer: B



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29. What is the chief product obtained when n – butane is treated with Br_2 in the presence of light at $130^\circ C$?





Answer: C



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30. The formulation of certain aromatic compounds using carbon monoxide and HCl in the presence of cuprous chloride is known as the Gettemann-Koch reaction and the product of this reaction is represented as

A. ArCOCl

B. ArH

C. ArCHO

D. ArCuCl

Answer: C



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31. In the metallurgy of iron, when limestone is added to the blast furnace, the calcium ions end up in

A. slag

B. gangue

C. metallic Ca

D. $CaCO_3$

Answer: A



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32. Which of the following interhalogen anions is linear ?

A. I_3^-

B. ICl_2

C. Both (a) and (b)

D. None of these

Answer: C

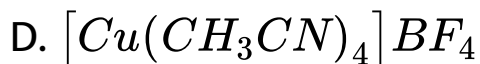


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33. Among the following the coloured compound is .

A. CuCl

B. $\text{K}_3[\text{Cu}(\text{CN})_4]$



Answer: C



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34. When methanol is sprinkled over hot copper plate , the smell would be

A. Fruity

B. bitter almonds like

C. formaline like

D. rotten eggs like

Answer: C



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35. Glacial acetic acid be

A. pure acetic acid at $100^{\circ}C$

B. acetic acid mixed with methanol

C. pure acetic acid at $0^{\circ}C$

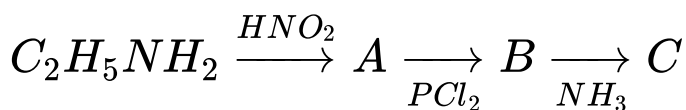
D. pure acetic acid at $16.0^{\circ}C$

Answer: D



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36. What is the end product in the following sequence of reactions?



- A. Methyl amine
- B. Ethyl amine
- C. Iso-propyl amine
- D. Diethyl amine

Answer: B



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37. In the Ostwald's process for the manufacturing of HNO_3 , the catalyst used is :-

A. MO

B. Fe

C. Mn

D. Pt

Answer: D



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38. Which of the following monosaccharides is a pentose?

A. Glucose

B. Galactose

C. Arabinose

D. Fructose

Answer: C



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39. The number of ram molecules of chlorine in 602×10^{25} hydrogen chloride molecules is

A. 10

B. 100

C. 50

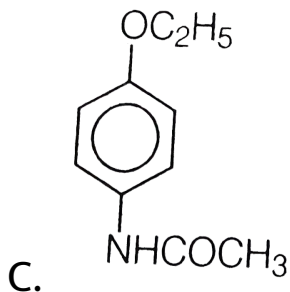
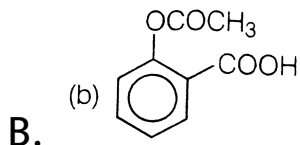
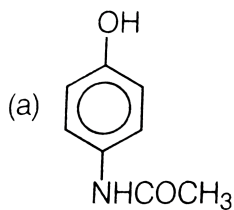
D. 5

Answer: B



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40. Which one of the following is paracetamol ?



D. None of these

Answer: A



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41. Among the following molecules : SO_2 , SF_4 , ClF_3 , BrF_5 , and XeF_4 , which of the following shapes does not describe any of the molecules mentioned ?

- A. Bent
- B. Trigonal bipyramidal
- C. See-saw
- D. T-shape

Answer: B



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42. One litre a buffer solution containing 0.01 M NH_4Cl and 0.1 M NH_4OH having pK_b of 5 has Ph of

- A. 9
- B. 10
- C. 6
- D. 7

Answer: B



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43. For one mole of an ideal gas, increasing the temperature from $10^{\circ}C$ to $20^{\circ}C$

A. increases the average kinetic energy by two times

B. increases the RMS velocity by $\sqrt{2}$ times

C. increase the RMS velocity by two times

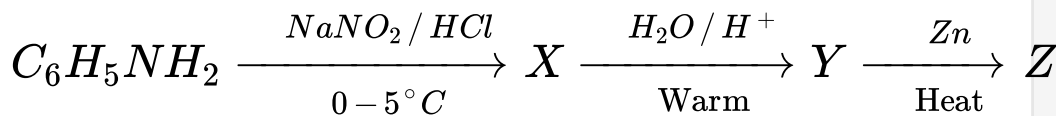
D. increases both the average kinetic energy and RMS velocity , but not significantly

Answer: D



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44. Identify X, Y and Z in the following reaction :



A. toluence

B. benzene

C. phenol

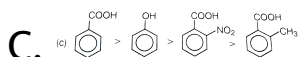
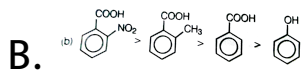
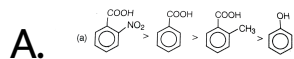
D. o-nitrophenol

Answer: B



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45. Choose the correct order of acidic strength .



D. None of the above

Answer: A



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46. Which of the following compounds gives secondary amine on reduction?

- A. Alkyl nitrile
- B. Carbonyl amine
- C. Primary amine
- D. Secondary nitro compound

Answer: B



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47. During Lassaigne's test N and S present in an organic compound changes into

A. Na_2S and $NaCN$

B. $NaCNS$

C. Na_2SO_4 and $NaCN$

D. Na_2S and $NaCN$

Answer: B



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48. Polymer used in bullet-proof glass is:

A. PMMA

B. lexan

C. nomex

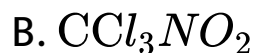
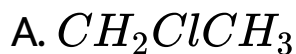
D. kevlar

Answer: C



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49. Chloropicrin is used as an insecticide and has been used as tear war gas . The chloropicrin is

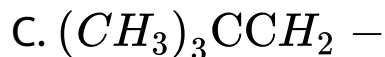


Answer: B



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50. Which of the following is a 3 methyl butyl group.



Answer: D



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