



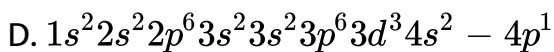
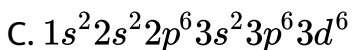
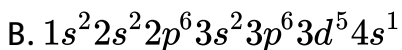
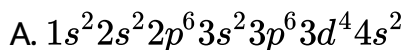
## CHEMISTRY

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### QUESTION PAPER 2018

#### Example

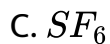
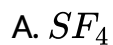
1. Which of the following is the ground state electronic configuration of Cr?(Atomic number of Cr is 24)



**Answer:**

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2. The state of hybridisation of the central atom of which of the following is  $sp^3 d^2$ ?



**Answer:**

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3. Which of the following is the correct order of repulsive interaction of lone pair(lp) and bond pair (bp) of electrons?

A. lp - lp gt lp -bp gt bp - bp

B. lp - bp gt lp - lp gt bp - bp

C. bp - bp gt lp - lp gt lp -bp

D. lp -lp gt bp - bp- gt lp - bp

**Answer:**

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4. The cause of spherical shape of water drops is-

A. viscosity

B. surface tension

C. hydrogen bond

D. high critical temperature of  $H_2O$  vapour.

**Answer:**

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5. An amount of work  $w$  is done by a system and  $q$  amount of heat is supplied to the system. By which of the following relation the change in internal energy of the system can be expressed?-

A.  $\Delta U = qw$

B.  $\Delta U = q + w$

C.  $\Delta U = q$

D.  $\Delta U = w - q$

**Answer:**



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6. Which one of the following indicates a spontaneous process?-

A.  $\Delta G = 0$

B.  $\Delta H = T\Delta S$

C.  $\Delta G > 0$

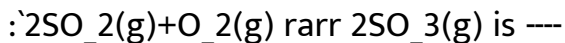
D.

Answer:



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7. The relation between  $K_p$  and  $L_p$  for the following reaction



A.  $K_p = K_c$

B.  $K_p = K_c(RT)^{-1}$

C.  $K_p = K_cRT$

D.  $K_p = K_c(RT)^2$ .

**Answer:**

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**8.** Which one of the following elements shows diagonal relationship with magnesium?-

A. Na

B. Li

C. Be

D. Ca

**Answer:**

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**9.** Sodium is preserved in which of the following liquids?-

A. Water

B. Ethanol

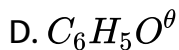
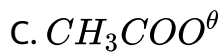
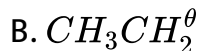
C. Kerosene oil

D. Methanol

**Answer:**

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**10.** Which of the following is a carbanion?-



**Answer:**

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**11.** In the Lassaigne test for the detection of nitrogen in an organic compound, with which of the following metals the organic compound is fused?

A. Li

B. Mg

C. Na



D. Zn.

**Answer:**

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12. Which of the following compounds does not produce a white precipitate on treatment with ammoniacal silver nitrate solution?-

A. Acetylene

B. Methyl acetylene

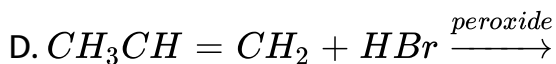
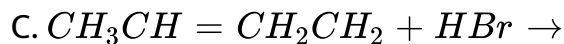
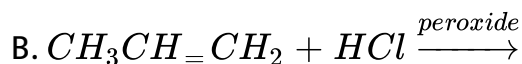
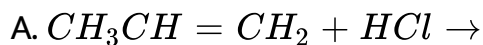
C. Ethyl acetylene

D. Dimethyl acetylene.

**Answer:**

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13. In which of the following reaction the product is not formed according to Markownikoff' rule?-



Answer:

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14. Which of the following gases emitted by motor vehicles is responsible for the formation of photochemical smog---

A.  $SO_2$

B. CO

C.  $NO_2$

D.  $CO_2$ .

**Answer:**

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15. The empirical formula of an organic compound is  $CH_2$  and its molecular weight is 180. What is the molecular formula of the compound? (H = 1, C = 12, O = 16)

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16. Arrange the following elements in the increasing order of their first ionisation enthalpy : Li, Be, Na, Mg.

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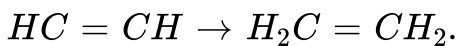
17. Arrange the following elements in the decreasing order of their electronegativity : Si, N, F, Cl .

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18. Write the SI unit of entropy.

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19. What reagent can be used for the following conversation ?



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20. How many neutrons are present in  $5 \times 10^{-1}$  moles of  $C_6^{14}$ ?

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21. Determine the mass percentage composition of water (H=1.0, O=16).

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22. State Heisenberg uncertainly principle . What is the shape of s orbital?

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23. Explain why  $SiCl_4$ . undergoes hydrolysis readily.

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24. Why is aqueous solution of borax alkaline ?

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25. Which reagent is called anelectrophile in organic reation?  
write with an example.



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26. Write the IUPAC names of the compounds  $CH_2 = CHCH_2CH_2C = CH$  and  $CH_3CH = CHCH_2C = CH$ .

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27. Mention two causes of soil pollution .

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28. How does the increase in the amount of  $CO_2$  in the atmosphere lead to global warming ?

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29. Write with an example the condition for two atoms to be considered as isobars .

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30.  ${}_{26}\text{Fe}^{3+}$  is more stable than  $\text{Fe}^{2+}$ . Explain why? Which is more paramagnetic?

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31. What are the quantum numbers by which an electron in an atom can be described?

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**32.** What is the maximum number of quantum number that may be the same for two electrons of an atom ?

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**33.** The outermost electrons configuration of the atom of an elements is  $3s^23p^3$ . Mention the position of the elements in the long periodic table.

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**34.** Why is electrons gain enthalpy of oxygen less than that of sulphur ?

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35. Show by drawing its molecular orbital diagram why  $O_2$  is paramagnetic.

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36. Draw the canonicals of  $CO_3^{-2}$ .

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37. Why is boiling point of  $H_2O$  greater than that of  $H_2S$ ?

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38. State Gay Lussac's law related to pressure and temperature of a gas. 3.2g of sulphur when vapourised the sulphur vapour

occupies a volume of  $280 \times 2$  mL at STP . Determine the molecular formula of sulphur vapour under this condition . (S = 32)

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**39.** Determine the volume of  $2.2$  g of carbon dioxide at  $27^\circ \text{C}$  and  $570$  mm Hg pressure .

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**40.** State Hess' law.

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**41.** For the following reaction at  $298\text{K}$



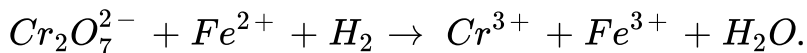
$\Delta H = 300 \text{ kJ mol}^{-1}$  and  $\Delta S = 0.2 \text{ kJ K}^{-1}\text{mol}^{-1}$  At what temperature will the reaction become spontaneous considering  $\Delta H$  and  $\Delta S$  to be constant over the temperature range?

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42. What is the oxidation number of M in  $K_2MnO_4$ ?

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43. Balance the following chemical equation by ion by ion electron method:



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44. Balance the following chemical equation by ion by oxidation number of method :  $\text{NaNO}_3 + \text{Zn} + \text{NaOH} \rightarrow \text{NH}_3 + \text{Na}_2\text{ZnO}_2 + \text{H}_2\text{O}$ .

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45. What is the oxidation number of S in  $\text{S}_8$ ?

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46. What is heavy water ?

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47. With balanced chemical equation, give an example of reducing property of  $H_2$ .

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48. Write the balanced chemical equation of preparation of Oxygen

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49. Show two canonicals of benzene by drawing. Benzene is stored in a bottle. Is there existence of the two canonicals in benzene of the bottle? Answer with reason.

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**50.** What happens when hydrated zinc chloride is heated?

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**51.** State the law of mass action .

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**52.** What is a buffer solution? Give example of an acidic buffer solution .

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**53.** Give the reaction of mercurous chloride with stannic chloride.

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54. Determine the pH of 0.1 M acetic acid solution. (pKa of acetic acid is 4.75) Is there any OH<sup>-</sup>-ion present in this solution of acetic acid? Answer with reason.

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55. Why does rate of dissociation of H<sub>2</sub>S in aqueous solution decrease in the presence of HCl?

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56. Why is carbon monoxide toxic?

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57. Write with balanced chemical equation what happens when aluminium is heated with concentrated aqueous solution of caustic potash.

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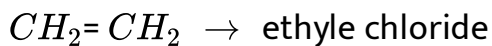
58. Write one use each of Silicones and Apcolite.

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59. Two isomeric compounds A and B having the molecular formula  $C_3H_7Br$  form the same compound C on dhydrobromination. C on ozonolysis produces acetaldehyde and formaldehyde. Identify A, B and C.

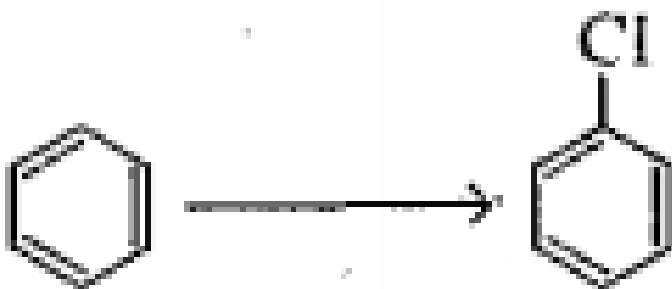
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60. How would you convert?



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61. How would you convert?



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62. Write the mechanism of the following reaction :  $\langle br \rangle$



HCL

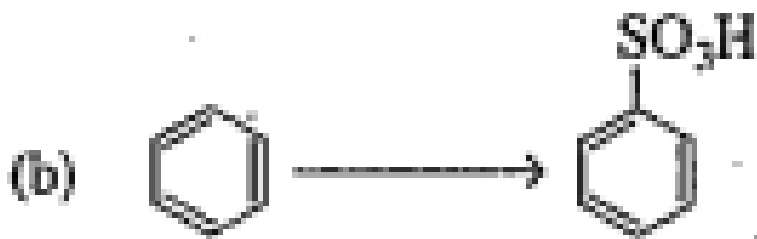
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63. How would you convert?



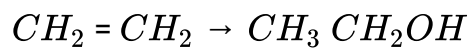
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64. How would you convert?



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65. How would you convert?



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