



## CHEMISTRY

### BOOKS - NTA MOCK TESTS

### NTA TPC JEE MAIN TEST 56

#### Chemistry

1. Which molecule has same structure as that of  $CO_2$  ?

A.  $SO_2$

B.  $NO_2$

C.  $KO_2$

D.  $BeF_2$

Answer: D

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2. In which of the following options the order of arrangement does not agree with the variation of property indicated against it?

A.  $Al^{3+} < Mg^{2+} < Na^+ < F$  (increasing ionic size)

B.  $B < C < N < O$  (increasing first ionisation enthalpy)

C.  $I < Br < F < Cl$  (increasing electron gain enthalpy)

D.  $Li < Na < K < Rb$  (increasing metallic radius)

Answer: B

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3. The carbon-based reduction method is NOT used for the extraction of

(a) tin from  $SnO_2$

(b) iron from  $Fe_2O_3$

(c) aluminium from alumina

(d) magnesium from  $MgCO_3$ .  $CaCO_3$

A. a,b

B. c,d

C. a,b,c

D. b,c,d

**Answer: B**



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4. The hardness of water can be determined titrimetrically, and the commonly used reagent for this is:

- A. Oxalic acid
- B. Sodium thiosulphate
- C. Sodium citrate
- D. Disodium salt of EDTA

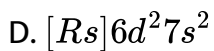
**Answer: D**



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5. Identify d-block element ?

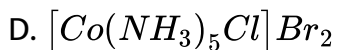
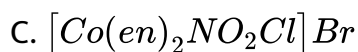
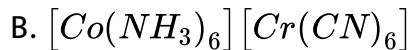
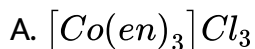
- A.  $[Xe]4f^{14}5d^16s^2$
- B.  $[Rn]5f^{14}6d^17s^2$
- C.  $[Xe]4f^{14}5d^{10}6s^2$



**Answer: C**

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**6. Identify the compound showing linkage isomerism.**



**Answer: C**

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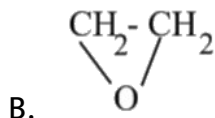
7. Not correctly matched ?

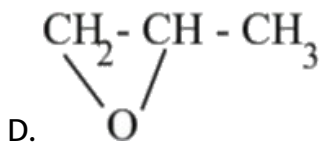
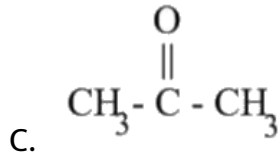
- A.  $BF_3 < BCl_3$  (Lewis acidic strength)
- B. o-nitrophenol  $<$  p-nitrophenol (Acidic strength)
- C. o-nitrophenol  $>$  p-nitrophenol (volatile nature)
- D.  $LiF > NaF$  (Solubility)

Answer: D

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8. The compound that gives secondary alcohol as a major product on reaction with  $CH_3MgBr$  followed by  $H_2O$  is

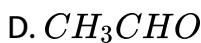
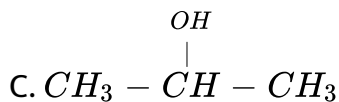
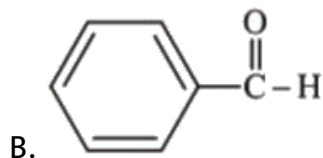
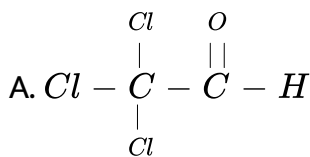




Answer: D

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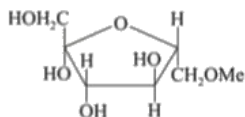
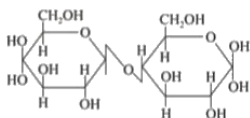
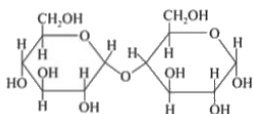
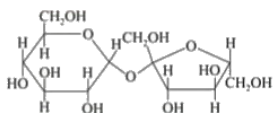
9. Which of the can be a reactant for Cannizzaro reaction?



Answer: B

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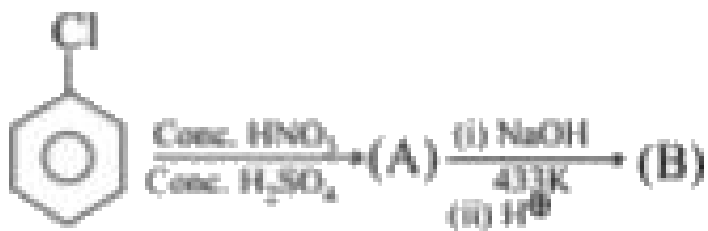
10. Which of the following compound will not give test with Tollen's reagent:



Answer: A

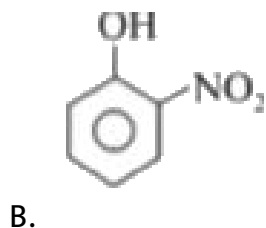
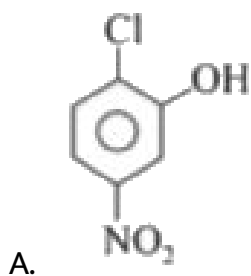
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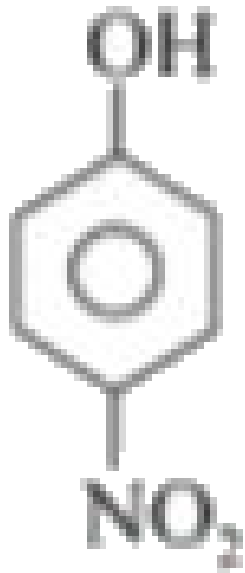




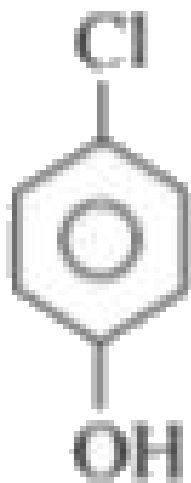
11.

B is a major product





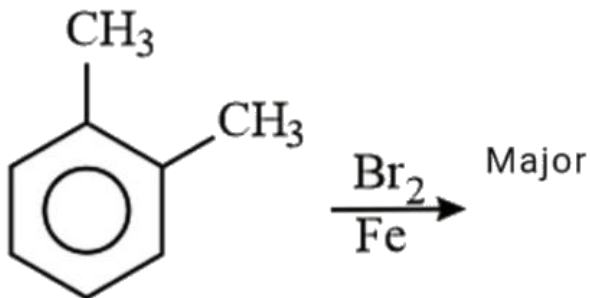
C.



D.

Answer: C

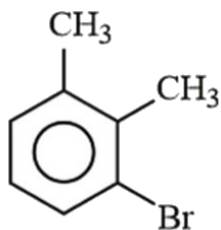
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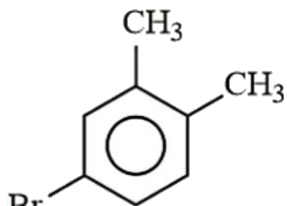
product is

12.

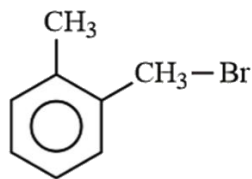
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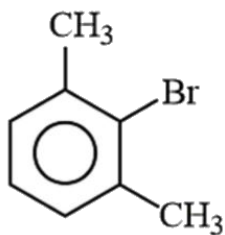
A.



B.



C.

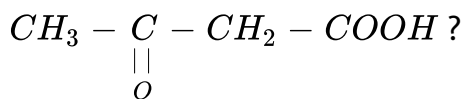


D.

**Answer: B**

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13. The IUPAC name of the following structure is



- A. 3-ketobutanoic acid
- B. 2-ketobutanoic acid
- C. 4-ketobutanoic acid
- D. 3-oxobutanoic acid

**Answer: D**



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14. In Cannizzaro reaction RDS involves:

A. transfer of  $H^{\oplus}$

B. transfer of  $HR^{\ominus}$

C. transfer of  $H^{\cdot}$

D. transfer of  $:CCl_2$

**Answer: B**



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15. Which gas is used in anaesthetics?

A.  $N_2O$

B. NO

C.  $\text{NCl}$

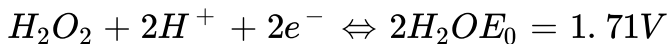
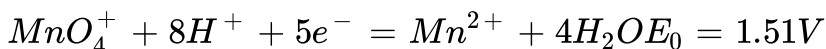
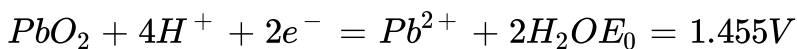
D.  $\text{NO}_2$

**Answer: A**



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**16.** The standard reduction potentials of some half cell reactions are given below:



Pick out the Incorrect statement :

A.  $\text{Ce}^{4+}$  will oxidise  $\text{Pb}^{2+}$  to  $\text{PbO}_2$

B.  $\text{MnO}_4^-$  will oxidise  $\text{Pb}^{2+}$  to  $\text{PbO}_2$

C.  $H_2O_2$  will oxidise  $Mn^{+2}$  to  $MnO_4^-$

D.  $PbO_2$  will oxidise  $Mn^{+2}$  to  $MnO_4^-$

**Answer: D**



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17. A solution containing one mole per litre each of  $AX$ ,  $BX_2$ ,  $CX_2$  and  $DX_2$  is electrolysed using inert electrodes. The values of the standard potentials for reduction reactions of  $A^+ | A$ ,  $B^{2+} | B$ ,  $C^{2+} | C$  and  $D^{2+} | D$  are + 0.80, +0.34, -0.76 and -1.66 volts respectively. The correct sequence in which these metals will be deposited on the cathode is :

A. A,B,C,D

B. D,C,B,A

C. A,C,B,D

D. D,B,C,A

**Answer: A**

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**18.** An element X crystallises in BCC lattice. The edge length of unit cell is  $5\text{\AA}$ . If molar mass of X is  $125\text{g mol}^{-1}$ , then calculate density of crystal.

A.  $5\text{gcm}^{-3}$

B.  $2.66\text{gcm}^{-3}$

C.  $1.5\text{gcm}^{-3}$

D.  $3.33\text{gcm}^{-3}$

**Answer: D**

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19. Rate of reaction at  $[A] = 0.2 \text{ M}$  is  $10^{-2} \text{ mol litre}^{-1}\text{min}^{-1}$ . If reaction is of first order then its half life will be:

A. 832 sec

B. 416 sec

C. 440 sec

D. 14 sec

**Answer: A**

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20. Given the bond energies of N=N, H - H and N - H bonds are 945, 436 and  $391 \text{ kJ mol}^{-1}$  respectively, the enthalpy of the reaction

$\text{N}_{2(g)} + 3\text{H}_{2(g)} \rightarrow 2\text{NH}_{3(g)}$  is :

A.  $-93 \text{ kJ}$

B. 102 kJ

C. -93 kJ

D. 105 kJ

**Answer: A**

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21. Electrons occupying  $t_{2g}$  , orbitals in  $[Co(NH_3)_6]^{3+}$  complex will be \_\_\_\_\_ .

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22. Select the number of species having bond with fractional bond order (Indicated bond)

$N_3^-$  ,  $CO_3^{2-}$  ,  $ClO_3$  ,  $ClO_3^-$  ,  $O_3$  ,  $CO_2$  , ( $BF_3$  ,  $Al_2Cl_6$  ,  $CH_3COOH$  - O bond)



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23. Find the value of 'x' where 'x' is the number of the oxygen atom(s) in solid state of  $N_2O_5$  which exists as  $[NO_X]^+ [NO_Y]^-$ .



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24. How many of the following compounds can be categorized as secondary amines?

Propan-2-amine, diphenylamine, N isopropylaniline, dibenzylamine, ethylmethanamine, N methylisopropylamine, p-tert butylaniline.



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25. Alcohol + Lucas reagent  $\rightarrow$  Immediate turbidity

How many of the following will give above test positive?

2-Methylpropan-2-ol, butan-1 ol, 2-methylpropan-1-ol, 2, 2-dimethylpropan-1-ol, 2,4 – dimethylpentan-2-ol, propan 1,3-diol

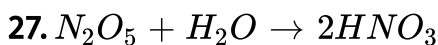
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**26.** A one-litre vessel containing 0.015 moles of  $N_{2(g)}$  and 0.02 moles of  $PCl_{5(g)}$  are heated at  $227^{\circ}C$ , where the total pressure was found to be 1.843 atm. Assuming nitrogen to be inert, determine  $K_p$  for the following decomposition reaction:



(Put your answer by multiplying with 100)

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The concentration of a mixture of  $HNO_3$  and  $N_2O_{5(g)}$  can be expressed similar to oleum. Initially we have a mixture containing

23g of  $HNO_3$  and 27g of  $N_2O_5(g)$  . Find the percentage labelling if 100g of this mixture is mixed with 4.5g of  $H_2O$ .

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28. An excess of  $AgNO_3$  solution is added to 100 mL of a 0.2 M solution of dichloridotetraaquachromium(III) chloride. The number of millimoles of  $AgCl$  precipitated will be \_\_\_\_

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29. An ideal gas 'X' has same density at 1 bar pressure as that of dinitrogen at 2 bar at 298 K. What is the molar mass of the gas 'X'?

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30. Determine  $\frac{Z}{6}$  if the atomic number of an inert gas atom in which the total number of d-electrons is equal to the difference in the number of total p and s electrons is Z.



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