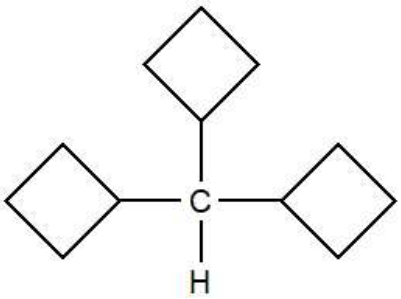
JEE Main Part Test 2

1. Choose the correct IUPAC name of the following compound:



A. tricyclobutylmethane

B. methyltricyclobutane

C. 1-methyltributane

D. None of the above

2. Which one of the following process uses water gas shift reaction?

A. Merck's process

B. Lane's process

C. Permutit's process

D. Bosch's process

3. When a substance A reacts with water, it produces a combustible gas B and a solution of substance C in water. D reacts with this solution C and produces the same gas B on warming. D can also produce gas B on reaction with dilute H_2SO_4. A imparts a deep golden yellow colour to smokeless flame. A, B, C and D respectively are

A. $Na,\ H_2,\ NaOH,\ Zn$

B. $K,\ H_2,\ KOH,\ Al$

C. $Ca,\ H_2,\ Ca(OH)_2,\ Sn$

D. $CaC_2,\ C_2H_2,\ Ca(OH)_2,\ Fe$

4. Balance the following equation :
$PbS + H_2O_2 \rightarrow PbSO_4 + H_2O$

A. $2PbS + 4H_2O_2 \rightarrow 2PbSO_4 + 4H_2O$

B. $PbS + 4H_2O_2 \rightarrow PbSO_4 + 4H_2O$

C. $PbS + 2H_2O_2 \rightarrow PbSO_4 + 2H_2O$

D. $2PbS + 2H_2O_2 \rightarrow 2PbSO_4 + 4H_2O$

5. On an industrial scale, H_2O_2 is prepared by auto - oxidation of:

A. 2- Ethylanthraquinol

B. 1- Ethylanthraquinol.

C. 1-Ethylanthraquinone.

D. All of the above.

6. In blood, carboxyhaemoglobin is formed by

A. Inhalation of CO

B. Inhalation of CO_2

C. Inhalation of SO_2

D. Inhalation of Ozone

7. Photochemical smog consists of:

A. O_3, SO_2 and hydrocarbons

B. O_3, PAN and NO_2

C. SO_2, CO_2 and hydrocarbons

D. SO_2 PAN and smoke

8. Ozone is an air pollutant that is a major component of:

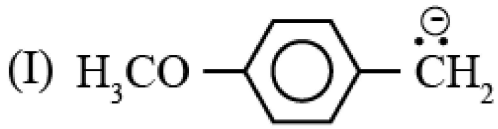
A. Photochemical smog

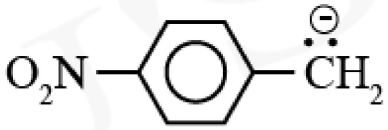
B. Smoke

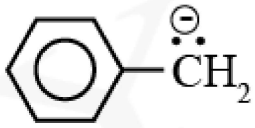
C. Dust

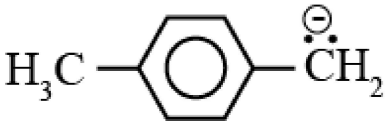
D. Fog

9. Consider the following carbanions.

(I) 

(II) 

(III) 

(IV) 

Correct decreasing order of stability is:

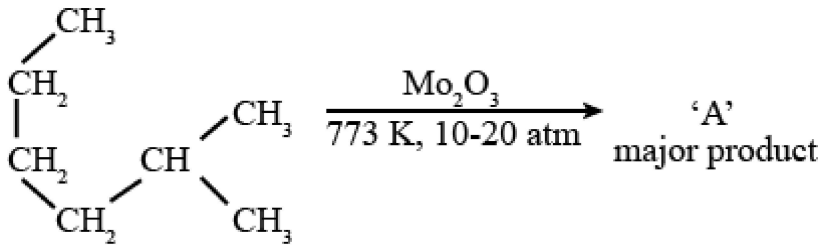
A. $II > III > IV > I$

B. $III > IV > I > II$

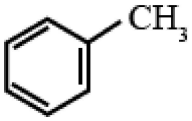
C. $IV > I > II > III$

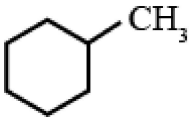
D. $I > II > III > IV$

10. Identify 'A' in the given chemical reaction:



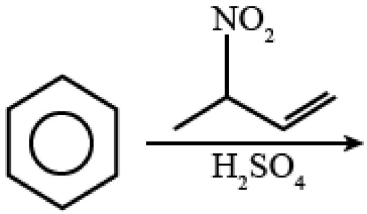
A. 

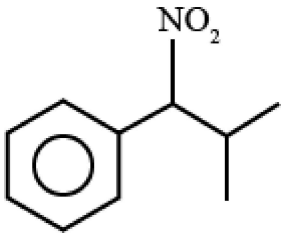
B. 

C. 

D. 

11. The major product of the following reaction is :



A.


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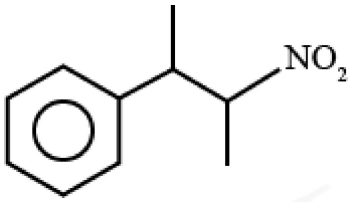

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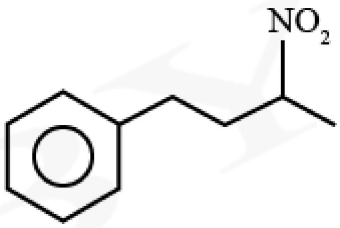

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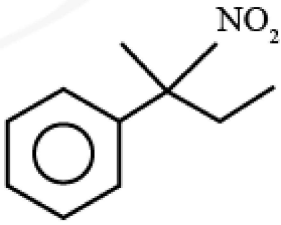


12. A species $'X'$ can show reaction with both HCl and $NaOH$. $'X'$ cannot be:

A. Al_2O_3

B. Zn

C. PbS

D. $ZnCO_3$

13. Which of the following is a proper name for $(CH_3)_2CHCH_2NHCH_2CH_2CH(CH_3)_2$?

A. 2,7-dimethyl-4-azaoctane

B. 3-methyl-N(2-methlypropyl)-1-butanamine

C. 2,7-dimethylpropylbutylamine

D. 3-amino-2,7-dimethyloctane

14. Which among the following alkali metal has the highest density?

A. Rb

B. Na

C. K

D. Cs

15. Which of the following is an example of interstitial carbide?

A. CaC_2

B. Fe_3C

C. SiC

D. Mg_2C_3

16. A solution of sodium metal in liquid ammonia is strongly reducing due to the presence of

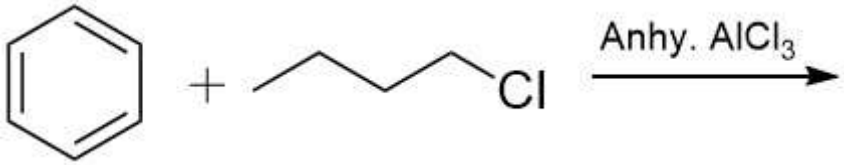
A. Sodium atoms

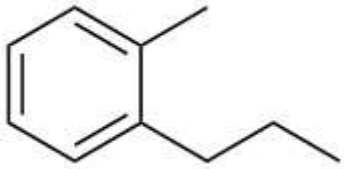
B. Sodium hydride

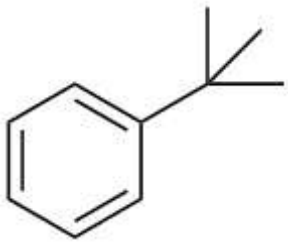
C. Sodium amide

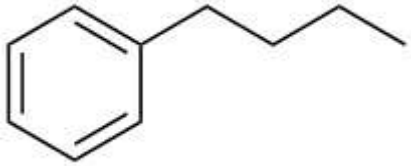
D. Solvated electrons

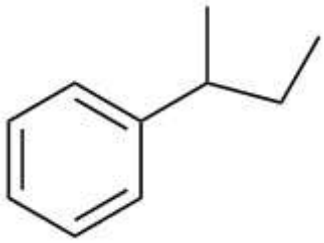
17. Predict the major organic product for given Friedel-Crafts alkylation reaction:



A. 

B. 

C. 

D. 

18. When Na and Li are placed in dry air, generally we get:

A. $Na_3N,\ Na_2O,\ Li_2O$

B. $NaO_2,\ Li_2O$

C. $Na_2O,\ Li_2O,\ Li_3N,\ NH_3$

D. $Na_2O,\ Li_3N,\ Li_2O$

19. When BrO_3^- ion reacts with Br^- in acidic medium, Br_2 is liberated. The equivalent weight of Br_2 in this reaction is:

A. $\frac{5\text{M}}{8}$

B. $\frac{5\text{M}}{3}$

C. $\frac{3\text{M}}{5}$

D. $\frac{4\text{M}}{6}$

20. What are the products formed when ammonia reacts with excess chlorine?

A. N_2 and NCl_3

B. NCl_3 and HCl

C. N_2 and NH_4Cl

D. N_2 and HCl

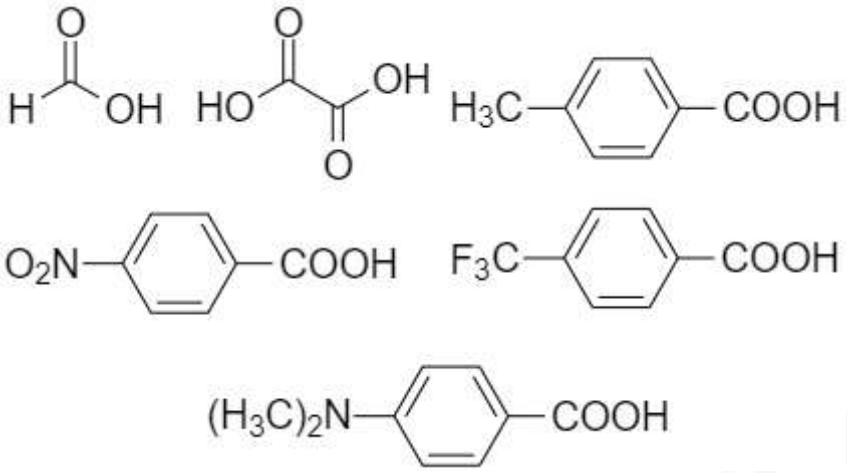
21. For the given disproportionation reaction:
$H_3PO_2 \rightarrow PH_3 + H_3PO_3$
The equivalent mass of H_3PO_2 in grams is :
(Given : $\text{Atomic mass of } P = 31\ u$)

22. What is the degree of hardness (in ppm) of a sample of water containing $24\ \text{mg of}\ MgSO_4$ (molecular mass $= 120$) per kg of water.

23. For alkali metal M:
$M_2O + H_2O \rightarrow x$
$M_2O_2 + H_2O \rightarrow x + y$
$MO_2 + H_2O \rightarrow x + y + z$
Sum of the number of atoms present in one molecule of each of $x,\ y,\ z$ is:

24. How many of the following nitrates of metal M decompose on heating similar to as given below in the scheme?
where M : $Li,\ Be,\ Mg,\ K,\ Ca,\ Sr,\ Na,\ Rb,\ Ba$
$\text{Metal nitrate} \xrightarrow{\text{heat}} \text{Metal oxide} + \text{Nitrogen dioxide} + \text{oxygen gas}$

25. Find out the number of compounds which are more acidic than benzoic acid among the following.



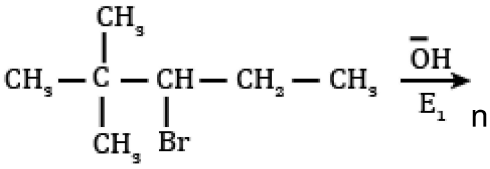
26. One mole of $1,2-\text{Dibromopropane}$ on treatment with x moles of $NaNH_2$ followed by treatment with ethyl bromide gave $2-pentyne$. The value of x is:

27. Consider the following orders –
(1) $F_2 > Cl_2 > Br_2 > I_2$: boiling point
(2) $F_2 > Cl_2 > Br_2 > I_2$: oxidizing nature
(3) $F_2 > Cl_2 > Br_2 > I_2$: EN
(4) $F_2 > Cl_2 > Br_2 > I_2$: BDE
(5) $F_2 > Cl_2 > Br_2 > I_2$: EA
(6) $F_2 > Cl_2 > Br_2 > I_2$: Reactivity
(7) $HOCl > HClO_2 > HClO_3 > HClO_4$: Acidic nature
(8) $HOCl > HClO_2 > HClO_3 > HClO_4$: Oxidizing nature
Then calculate $(x^2 + y^2)$ when x is correct order and y is incorrect order.

28. Calculate value of "x + y" for "hypophosphoric acid" where x is total number of lone pair(s) and y is total number of π -bond(s) in given oxo acid.

29. i) Involves complete shifting of π electrons.
ii) It is a temporary effect.
iii) In -E effect , π electrons of the multiple bond are transferred to the atom to which the reagent gets attached.
iv) It operates in organic compounds having multiple bonds under the influence of an outside attacking species.
How many statements are correct regarding Electromeric effect from above.

30. In the given reaction:



number of possible alkenes would form is