



# CHEMISTRY

## BOOKS - MTG CHEMISTRY (BENGALI ENGLISH)

### QUESTION PAPER 2011

Chemistry

1. The normality of 30 volume  $H_2O_2$  is

A.  $2.678N$

B.  $5.336N$

C.  $8.034N$

D.  $6.685N$

**Answer:**



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2. Reaction of formaldehyde and ammonia gives .

A. Hexamethylene teramine

B. Bakelite

C. Urea

D. Triethylene Tetramine

**Answer:**



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3. A plot of  $\ln k$  against  $\frac{1}{T}$  (absoissa) is expected to be a straight line with intercept on ordinate axis equal to

A.  $\frac{\Delta S^\circ}{2.303R}$

B.  $\frac{\Delta S^\circ}{R}$

C.  $-\frac{\Delta S^\circ}{R}$

D.  $R \times \Delta S^\circ$

**Answer:**



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4. Which of the following represents the compositions of Carnallite mineral ?

A.  $K_2O$ ,  $Al_2O_3$ ,  $6SiO_2$

B.  $KNO_3$

C.  $K_2SO_4$ ,  $MgSO_4$ ,  $MgCl_2 \cdot 6H_2O$

D.  $KCl$ ,  $MgCl_2 \cdot 6H_2O$

**Answer:**



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5. The solubility of  $Ca_3(PO_4)_2$  in water is  $y$  moles/litre. Its solubility product is

A.  $6y^4$

B.  $36y^4$

C.  $64y^5$

D.  $108y^5$

**Answer:**



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**6. Paracetamol is**

A. Methyl salicylate

B. Phenyl salicylate

C. N-acetyl p-amino phenol

D. Acetyl salicylic acid

**Answer:**



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7. Anhydrous ferric chloride is prepared by

A. Dissolving  $Fe(OH)_3$  in concentrated

HCl

B. Dissolving  $Fe(OH)_3$  in dilute HCl

C. Passing dry HCl over heated iron scrap.

D. Passing dry  $Cl_2$  gas over heated iron  
scrap.

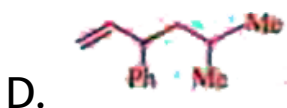
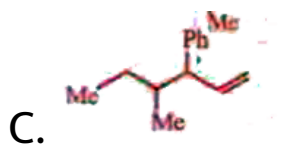
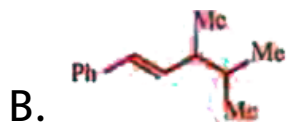
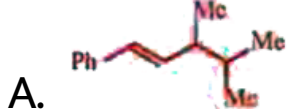
**Answer:**



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8. Which one of the following is s- butyl  
phenylvinyl methane ?





**Answer:**

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9. Hybridization of

$C_2$  and  $C_3$  of  $H_3C - CH = C = CH - CH_3$

are

A.  $Sp, Sp^3$

B.  $Sp^2, Sp$

C.  $Sp^2, Sp^2$

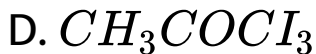
D.  $Sp, Sp$

**Answer:**



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10. Which of the following compounds is not formed in iodoform reactions of acetone?



**Answer:**



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11. The energy of an electron in first Bohr orbit of H-atom is  $-13.6\text{eV}$ . The possible energy value of electron in the excited state of  $\text{Li}^{2+}$  is

A.  $-122.4\text{eV}$

B.  $30.6\text{eV}$

C.  $-30.6\text{eV}$

D.  $13.6\text{eV}$

**Answer:**



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12. The amount of heat released when 20 ml 0.5 M NaOH is mixed with 100 ml 0.1 M HCl is  $x$  kJ. The heat of neutralization is

A.  $-100x \text{ kJ} / \text{mol}$

B.  $-50x \text{ kJ} / \text{mol}$

C.  $+100x \text{ kJ} / \text{mol}$

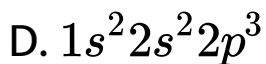
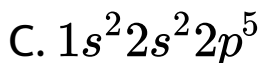
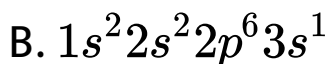
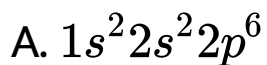
D.  $+50x \text{ kJ} / \text{mol}$

**Answer:**



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13. Which one of the following has the lowest ionization energy?



**Answer:**



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14. The ozone layer forms naturally by

A. the interaction of CFC with oxygen.

B. the interaction of UV , radiation with oxygen.

C. the interaction of TR radiation with oxygen.

D. the interaction of oxygen and water Vapour.

**Answer:**

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15. 2 gm of metal carbonate is neutralized by 100 ml of 0.1 (N) HCl . The equivalent weight of metal carbonate is

A. 50

B. 100

C. 150

D. 200

**Answer:**





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16. Which one of the following is not true at room temperature and pressure

- A.  $P_4O_{10}$  is a white solid
- B.  $SO_2$  is a colourless gas
- C.  $SO_3$  is a colourless gas
- D.  $NO_2$  is a brown gas

**Answer:**



17. An electric current is passed through an aqueous solution of a mixture of alanine (isoelectric points 6.0 ) glutamic acid (3.2) and arginine (10.7) buffered at pH6. What is the fate of the three acids?

A. Glutamic acid migrates to anode at pH.6

Arginine is present as a cation and migrates to the cathode. Alanine in a

dipolar ion remains uniformly distributed in solutions.

B. Glutamic acid migrates to cathode and others remains uniformly distributed in solution.

C. All three uniformly distributed in solution

D. All three move to cathode.

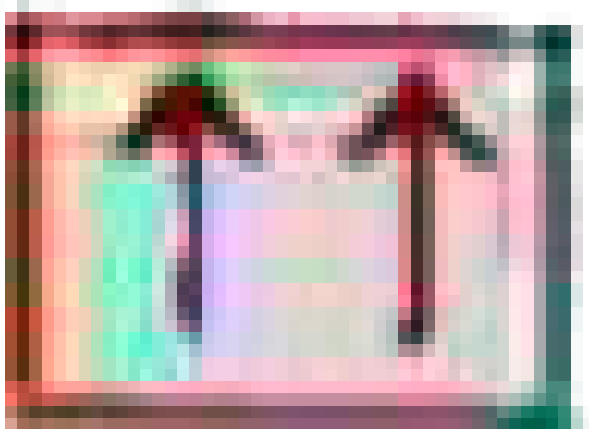
**Answer:**



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18. The representation of the ground state electronic configuration of He by box- diagram as

as



is wrong because it violates

A. Hysenberg's Uncertainty Principle

B. Bohr's Quantization Theory of Angular  
Momenta

C. Pauli Exclusion Principle

D. Hund's Rule

**Answer:**



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**19.** The electronic transitions from  $n=2$  to  $n=1$  will produce shortest wavelength in (where  $n$  = principle quantum state)



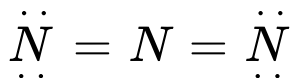
**Answer:**



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**20.** In the following electron dot structure ,  
calculate the formal charge from left to right

nitrogen atom.



A.  $-1, 1, +1$

B.  $-1, +1, -1$

C.  $+1, -1, -1$

D.  $+1, -1, +1$

**Answer:**



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21. If the molecular wt. of  $Na_2S_2O_3$  and  $I_2$  are  $M_1$  and  $M_2$  respectively, then what will be the equivalent wt of  $Na_2S_2O_3$  and  $I_2$  in the following reactions?

A.  $M_1, M_2$

B.  $M_1, M_2 / 2$

C.  $2M_1, M_2$

D.  $M_1, 2M_2$

**Answer:**





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22. A radioactive atom  ${}_{-} (Y)^X M$  emits two  $\alpha$  particles and one  $\beta$  particle successively. The number of neutrons in the nucleus of the product will be

A.  $X - 4 - Y$

B.  $X - Y - 5$

C.  $X - Y - 3$

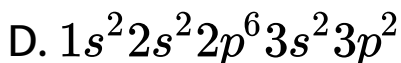
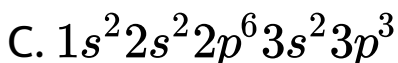
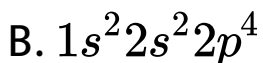
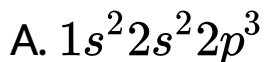
D.  $X - Y - 6$

**Answer:**



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**23.** An element belongs to Group 15 and third period of the periodic table. Its electronic configuration will be



**Answer:**



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24. Which one of the following is paramagnetic?



**Answer:**



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**25.** Platinum, Palladium and Iridium are called noble metals because.

A. Alfred Nobel discovered them.

B. They are shining lustrous and pleasing to look at.

C. they are found in native state

D. They are inert towards many common reagents.

**Answer:**



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**26.** Which one is not a constituent of nucleic acid?

A. Uracil

B. Guanine

C. Phosphoric acid

D. Ribose sugar

**Answer:**



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27. The  $sp^3d^2$  hybridization of central atom of a molecule would lead to

A. Square planar geometry

B. Tetrahedral geometry

C. Trigonal bipyramidal geometry

D. Octahedral geometry

**Answer:**



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**28.** In aqueous solutions glucose remains as

A. Only in open chain form

B. Only in pyranose form

C. Only in furanose forms

D. In all three forms in equilibrium

**Answer:**



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**29.** Which of the following is used to prepare  $Cl_2$  gas at room temperature from concentrated HCl?

A.  $MnO_2$

B.  $H_2S$



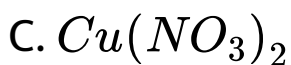
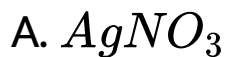


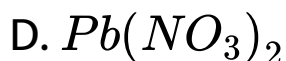
**Answer:**



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**30.**  $NO_2$  is not obtained on heating





**Answer:**



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**31.** Two aromatic compounds having formula  $C_7H_8O$  which are easily identifiable by  $FeCl_3$  solution test (violet colouration )are

A.  $\underset{\text{—}}{o}$  - cresol benzyl alcohol

B.  $\underset{\text{—}}{m}$  -cresol and  $\underset{\text{—}}{p}$  cresol

C. *o* – cresol and *p* cresol

D. methyl phenyl ether and benzyl alcohol

**Answer:**



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**32.** The ease of dehydrohalogenation of alkyl halide with alcoholic KOH is

A.  $3^\circ < 2^\circ < 1^\circ$

B.  $3^\circ < 2^\circ < 1^\circ$

C.  $3^\circ < 2^\circ < 1^\circ$

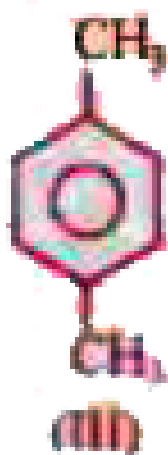
D.  $3^\circ < 2^\circ < 1^\circ$

**Answer:**



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**33.** The ease of Nitration of the following three hydrocarbones follows the order



A.  $II - III \approx I$

B.  $II > III > I$

C.  $III > II > I$

D.  $I = III > II$

**Answer:**



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34. The correct order of decreasing acidity of nitrophenols will be

A. *m*-Nitrophenol > *p*-Nitrophenol  
> *o*-Nitrophenol

B. *o*-Nitrophenol > *m*-Nitrophenol > *p*-  
Nitrophenol

C. *p*-Nitrophenol > *m*-Nitrophenol > *o*-  
Nitrophenol

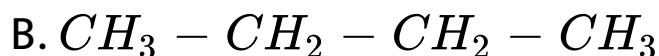
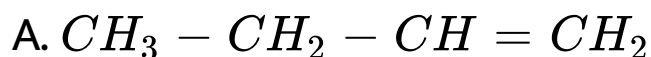
D. p-Nitrophenol > o- Nitrophenol > m-  
Nitrophenol

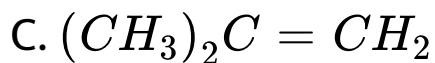
**Answer:**



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**35.** Among the alkenes which one produces tertiary butyl alcohol on acid hydration?





**Answer:**



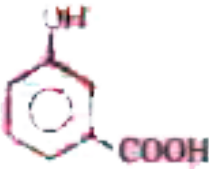
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**36.** Which of the following compounds has maximum volatility ?





A.



B.



C.

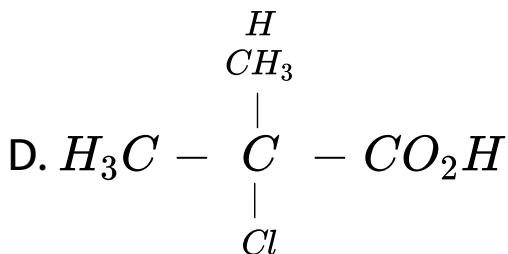
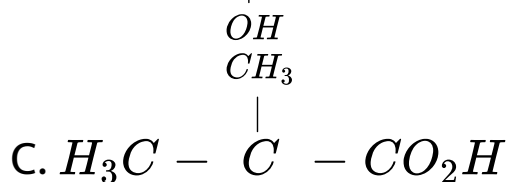
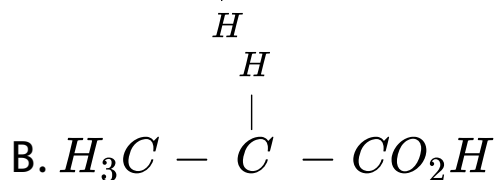
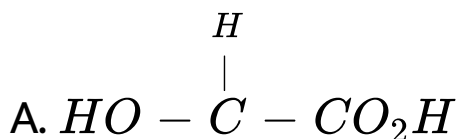


D.

**Answer:**



37. Which of the following will show optical isomerism ?



**Answer:**



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**38.** The pH of an aqueous solution of  $CH_3COONa$  of concentration  $C$ (M) is given by

A.  $7\frac{1}{2}pk_a + \frac{1}{2}\log C$

B.  $\frac{1}{2}pk_w + \frac{1}{2}pK_b + \frac{1}{2}\log C$

C.  $\frac{1}{2}pk_w - \frac{1}{2}pK_b - \frac{1}{2}\log C$

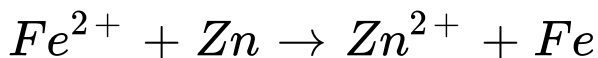
D.  $\frac{1}{2}pk_w + \frac{1}{2}pK_a + \frac{1}{2}\log C$

**Answer:**



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**39.** The standard reduction potential  $E^\circ$  for half reaction are  $Zn \rightarrow Zn^{2+} + 2e^- ; E^\circ = +0.76V$   $Fe \rightarrow Fe^{2+} + 2e^- ; E^\circ = +0.41V$  The EMF of the cell reaction is:



A.  $-0.35V$

B.  $+0.35V$

C.  $+1.17V$

D.  $-1.17V$

**Answer:**



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**40.** If the equilibrium constants of the following equilibrium



are  $K_1$  and  $K_2$  Which shows the correct relation between  $K_1$  and  $K_2$

A.  $K_2 = \left(\frac{K_1}{K_2}\right)^2$

B.  $K_1 = \left(\frac{K_1}{K_2}\right)^3$

C.  $K_2 = \left(\frac{1}{K_1}\right)^2$

D.  $K_2 = (K_1)^2$

**Answer:**



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