

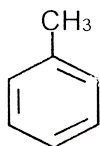
## CHEMISTRY

### BOOKS - AIIMS PREVIOUS YEAR PAPERS

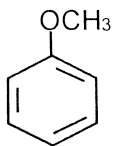
#### AIIMS 2019 26 MAY MORNING SHIFT

#### Chemistry

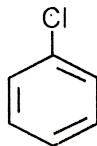
1. Correct order of electrophilic substitution reaction is :



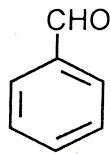
(a)



(b)



(c)



(d)

A.  $a > b > c > d$

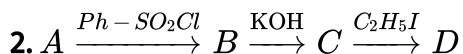
B.  $d > b > a > c$

C.  $b > a > c > d$

$$D. b > a > d > c$$

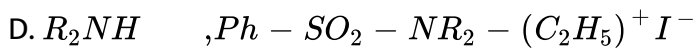
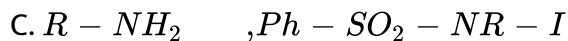
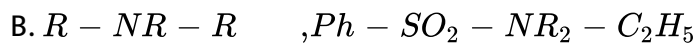
Answer: C

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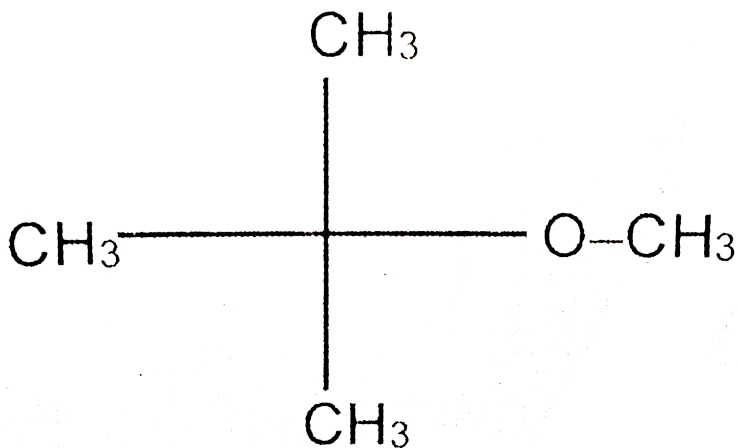
'C' is water soluble

Correct structure of A and D are



Answer: A

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3. Assertion :

React with HBr to form  $(\text{CH}_3)_3\text{CBr}$  and  $\text{CH}_3\text{OH}$

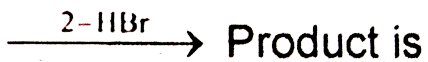
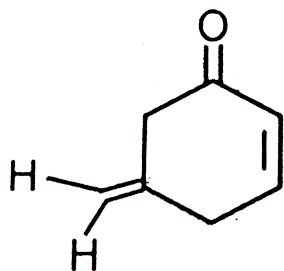
Reason : It follows  $\text{S}_\text{N}1$  mechanism

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
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- D. If both assertion and reason are false.

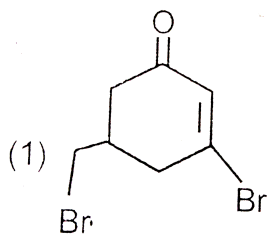
Answer: 1



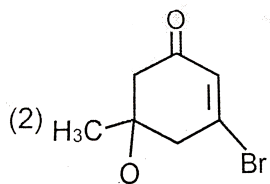
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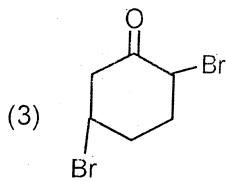
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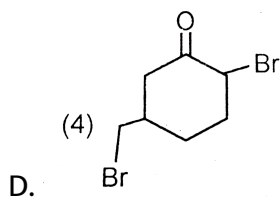
A.



B.



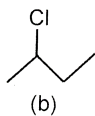
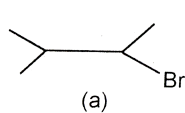
C.



**Answer: B**

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5. Correct order for reaction with alcoholic KOH



A. a gt b gt c gt d

B. a gt c gt b gt d

C. d gt b gt c gt a

D. a gt d gt b gt c

**Answer: B**

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6.  $H - \overset{O}{\underset{||}{C}} - H + CH_3 - CH = O \xrightarrow{\text{Conc. NaOH}}$  Find out the products of reaction

- A.  $CH_3CO_2Na$  &  $CH_3OH$
- B.  $CH_3CH_2OH + CH_3OH$
- C.  $CH_3CH_2OH$  &  $HCO_2Na$
- D.  $CH_3CO_2Na + HCO_2Na$

Answer: C



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7. (i)  $F_3C - COOH$ , (ii)  $CH_3COOH$ , (iii)  $C_6H_5COOH$ , (iv)  $CH_3CH_2COOH$

Correct order of  $pK_a$  value is :

A. 1 gt 3 gt 2 gt 4

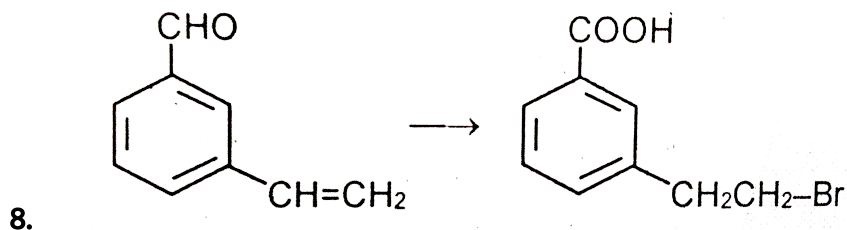
B. 4 gt 2 gt 3 gt 1

C. 4 gt 3 gt 2 gt 1

D. 1 gt 2 gt 4 gt 3

Answer: B

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Suitable reagent for following conversion

A.  $CH_3MgBr$ ,  $H_3O^+$ ,  $I_2 / NaOH$ ,  $H - Br / R_2O_2$

B.  $KMnO_4 / NaOH$ ,  $HBr / R_2O_2$

C.  $CH_3MgBr$ ,  $KMnO_4$ ,  $HBr$

D.  $CH_3MgBr, H_3O^+, H - Br, I_2 / NaOH$

**Answer: A**

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9. Assertion : Two sugar units joined by 1,2-glycosidic bond in sucralose.

Reason : It contains  $C_1$ -glucose and  $C_2$ -fructose glycosidic bond

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

**Answer: D**

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10. Assertion : Hydroquinone is more acidic than resorcinol.

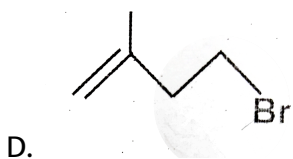
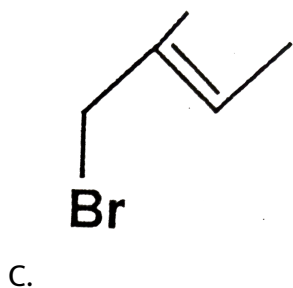
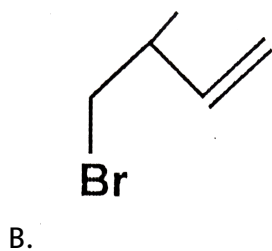
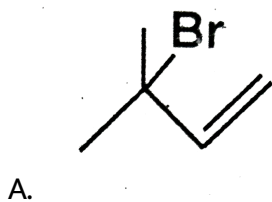
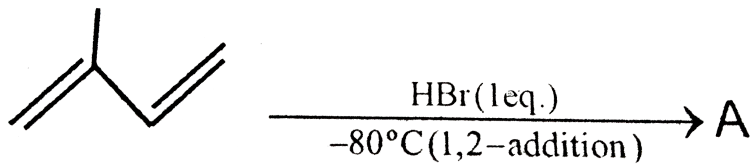
Reason : OH shows  $-I$  effect

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

**Answer: A**



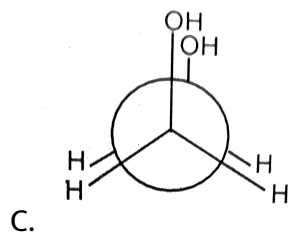
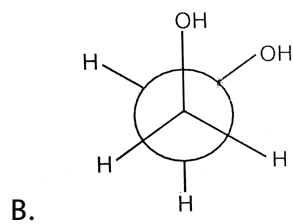
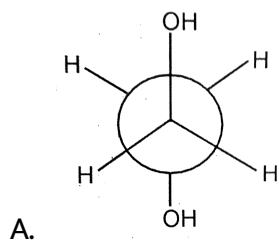
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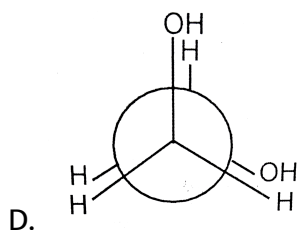


Answer: B

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12. Which is most stable conformer of ethan-1,2-diol





**Answer: D**

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**13. Assertion :** Tert. Butyl amine can be formed by Gabriel phthalimide synthesis

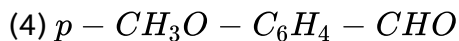
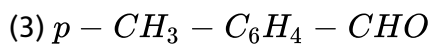
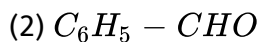
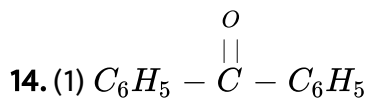
**Reason :** It follow  $S_N1$  mechanism

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- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

Answer: C



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Correct order for nucleophilic addition reaction :

A. 2 gt 1 gt 3 gt 4

B. 4 gt 3 gt 2 gt 1

C. 2 gt 3 gt 4 gt 1

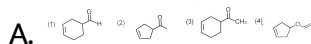
D. 4 gt 2 gt 3 gt 1

Answer: A



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15.  $C_7H_{10}O$  reacts with  $CH_3MgBr$  to give a compound  $C_8H_{10}O$  which gives the test with iodoform, then find out structure of A



**Answer: A**

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16. Select the correct set of answer:

- | Column I        | Column - II                     |
|-----------------|---------------------------------|
| (A) Tyrosine    | (P) Essential amino acid        |
| (B) Serin       | (Q) Ceric Ammonium Nitrate      |
| (C) Tryptophane | (R) Neutral $FeCl_3$            |
| (D) Proline     | (S) Carbylamine Test - Negative |

Select the correct set of answer :

A. A - R, B - Q, C - P, D - S

B. A - Q, B - R, C - S, D - P

C. A - R, B - P, C - Q, D - S

D. A - S, B - Q, C - P, D - R

**Answer: A**

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17. Assertion : For liquid dishwashing non-ionic type of detergent are used:

Reason : Remove greese and oil by micelle formation

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

**Answer: A**

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**18.** Assertion : Tertbutyl methyl ether React with HBr to form tert. butyl  $(CH_3)_3C - Br$  and  $CH_3OH$  methonal

Reason : It follows  $SN_1$  mechanism.

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

**Answer: A**





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19. Which will release  $NH_3$  on Reaction with NaOH.

- A. Hydrazoic acid ( $N_3H$ )
- B. ethylene diamine tetra acetic acid.
- C.  $NH_2 - OH$
- D. Triethylamine

**Answer: A**



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20. Assertion : Ferromagnetic compound is more attracted in magnetic field.

Reason : Because all electron are aligned in same direction.

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

**Answer: C**



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**21.** Assertion :  $S_2O_7^{2-}$  &  $Cr_2O_7^{2-}$  both exist.

Reason : Both have same valence electrons

- A. If both assertion and reason are true and reason is the correct explanation of assertion.

- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

**Answer: A**

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**22.** Assertion :  $ZrI_4$  is useful in purification of Zirconium (Zr)

Reason :  $ZrI_4$  sublimise at room temperature.

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false.

D. If both assertion and reason are false.

**Answer: C**

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**23. MnO is :**

- A. Ferromagnetic
- B. Antiferromagnetic
- C. Ferrimagnetic
- D. Dimagnetic

**Answer: B**

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24. Assertion : Pure  $N_2$  is obtained from  $Ba(N_3)_2$  but not from  $(NH_4)_2Cr_2O_7$

Reason : On decomposition  $(NH_4)_2Cr_2O_7$  gives  $O_2$  gas.

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

**Answer: C**



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25. Which have melting point below  $500^\circ C$

- A. Ag, Cu

B. Zn, Cd

C. Cd, Cu

D. Ag, Zn

**Answer: B**



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**26.** Strong oxidizing agent used in purification of water

A.  $Cl_2O$

B.  $NO_3^-$

C.  $NO_2^-$

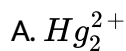
D.  $OF_2$

**Answer: A**



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27. Which give colored carbonate precipitate?



**Answer: C**

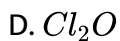
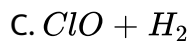


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28. Yellow color of chlorine water fades because of

A. Form HCl & HOCl

B. Chlorine gas escapes



**Answer: A**

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**29.** Which has least covalent radius

A. Mn

B. Cu

C. Zn

D. Ni

**Answer: D**

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**30.** Which is least soluble

A.  $Na_2S$



B.  $MgS$

C.  $MgCl_2$

D.  $NaCl$

**Answer: B**

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31. Which of the following reacts most slowly with nitric acid.

A. Phosphorus

B. Chlorine

C. Sulphur

D. Iodine

**Answer: B**

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32. In processing of steel which of the following allotropes of carbon is used.

- A. Carbon black
- B. Charcoal
- C. Coke
- D. Graphones

**Answer: C**

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33. Assertion ,  $d_5$  configuration is more stable than  $d_4$

Reason :  $d_5$  has more exchange energy as compared to  $d_4$  because 10 & 6 exchanges are possible in  $d_5$  &  $d_4$  respectively.

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- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

**Answer: A**

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**34.** Which of the following is incorrect about cyanogen gas?

- A. It has bent structure
- B. It is psuedohalogen
- C. Its behavior is similar to halides.
- D. both carbon are  $sp$  hybridised

**Answer: A**

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35. Assertion :  $I_2O_5$  is used to detect CO.

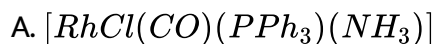
Reason : In  $I_2O_5$  the oxidation number of I is 5.

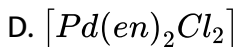
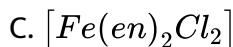
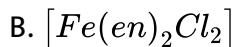
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- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

**Answer: B**

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36. Which of the following complex is optically inactive





**Answer: A**



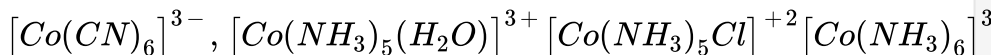
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**37.** Correct increasing order for the wavelength of absorption in the visible region for the complexes of  $Co^{3+}$  is:

A.



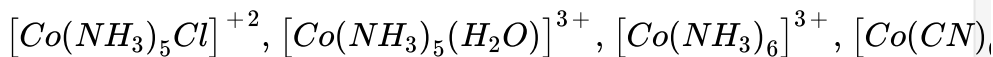
B.



C.



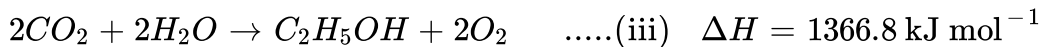
D.



**Answer: A**

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**38.**



Find the standard enthalpy of formation of  $C_2H_5OH(l)$

A. 281.1 kJ mol<sup>-1</sup>

B. -281.1 kJ mol<sup>-1</sup>

C. 562.2 kJ mol<sup>-1</sup>

D. -562.2 kJ mol<sup>-1</sup>

**Answer: B**

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39. If Boiling point of water is  $100^{\circ}C$ . How much gram of NaCl is added in 500 g of water to increase its boiling point of water by approx  $1^{\circ}C$ .  $(K_b)_{H_2O} = 0.52 \text{ K x kh/mole}$ .

- A. 2.812 g
- B. 28.12 g
- C. 14.06 g
- D. 7.03 g

Answer: B

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40. In isolated system, find the condition for spontaneous reaction:

- A.  $\Delta U = 0, \Delta S = 0, \Delta G = 0$
- B.  $\Delta U < 0, \Delta S > 0, \Delta G < 0$

C.  $\Delta U = 0, \Delta S > 0, \Delta G < 0$

D.  $\Delta U < 0, \Delta S < 0, \Delta G < 0$

**Answer: C**

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41. A bulb is emitted electromagnetic radiation of 660 nm wave length.

The Total energy of radiation is  $3 \times 10^{-18} J$  The number of emitted photon

will be : ( $h = 6.6 \times 10^{-34} J \times s, C = 3 \times 10^8 m / s$ )

A. 1

B. 10

C. 100

D. 1000

**Answer: B**

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42. A hydrogen gas electrode is made by dipping platinum wire in a solution of HCl or  $pH = 10$  and by passing hydrogen gas around the platinum wire at one atm pressure . The oxidation potential of electrode would be ?

A. 0.59 V

B. 0.118 V

C. 1.18 V

D. 0.059 V

**Answer: A**



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43. The decomposition of  $NH_3$  on Pt surface is a zero order reaction. If the value of rate constant is  $2 \times 10^{-4}$  mole liter<sup>-1</sup> sec<sup>-1</sup> . The rate of

appearance of  $N_2$  and  $H_2$  are respectively

	$N_2$	$H_2$
(1)	$1 \times 10^{-4} \text{ mol l}^{-1}\text{sec}^{-1}$	$3 \times 10^{-4} \text{ mol}^{-1}\text{sec}^{-1}$
(2)	$3 \times 10^{-4} \text{ mol l}^{-1}\text{sec}^{-1}$	$1 \times 10^{-4} \text{ mol}^{-1}\text{sec}^{-1}$
(3)	$2 \times 10^{-4} \text{ mol l}^{-1}\text{sec}^{-1}$	$6 \times 10^{-4} \text{ mol}^{-1}\text{sec}^{-1}$
(4)	$3 \times 10^{-4} \text{ mol l}^{-1}\text{sec}^{-1}$	$3 \times 10^{-4} \text{ mol}^{-1}\text{sec}^{-1}$



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**44.** Assertion: Some salts are sparingly soluble at room temperature.

Reason : The entropy increases on dissolving the salts.

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

**Answer: B**



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45. What is the activation energy (KJ/mol) for a reaction if its rate constant doubles when the temperature is raised from 300 K to 400 K ?

$$\left( R = 8.314 \text{ J mol}^{-1}\text{K}^{-1} \right)$$

A. 68.8

B. 6.88

C. 34.4

D. 3.44

Answer: B



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46. When 0.05 M dimethyl amine is dissolve in 0.1 M NaOH solution then the percentage dissociation of dimethyl amine is :

$$(K_b)_{(CH_3)_2NH} = 5 \times 10^{-4}$$

A.  $5 \times 10^{-5}$

B.  $5 \times 10^{-3}$

C.  $5 \times 10^{-1}$

D.  $5 \times 10^{-2}$

**Answer: C**

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**47.** Assertion: A spherical water drops become flaton flatter surface.

Reason : It become flat due to gravity.

- A. If both assertion and reason are true and reason is the correct explanation of assertion.
- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false.

D. If both assertion and reason are false.

**Answer: A**

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**48.** A chemical reaction :  $A + B \rightarrow AB$  , B is acting as limiting reagent then choose the correct option. The limiting reagent is

A	B
(1) 50 atom	100 atom
(2) 100 atom	200 atom
(3) 50 atom	30 atom
(4) 50 atom	200 atom

A. 1

B. 2

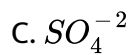
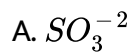
C. 3

D. 4

**Answer: C**

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49. Which of the following can react with  $K_2Cr_2O_7$



**Answer: A**



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