



Past papers

Subject : Organic 233

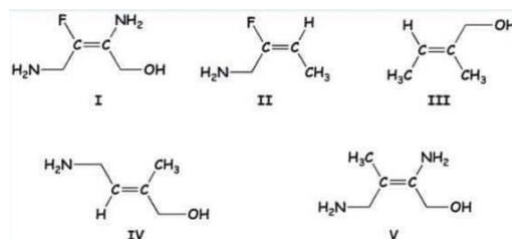
Exam: Mid term

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1-Assume that (2S , 3S) -2,3 - dichlorobutane has a specific rotation of + 14 ° . What would be the specific rotation of the (2R , 3R) -2,3 – dichlorobutane:

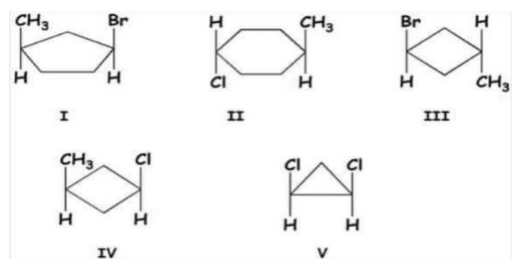
- A) + 14 °
- B) 0 °
- C) + 7
- D) -14 °
- E) + 28 °

2-Which of the following alkenes has Z - configuration ?
(Atomic number H = 1 ; C = 6 ; N = 7, O = 8 , F = 9)



- A) IV
- B) V
- C) II
- D) III
- E) I

3-Which of the following compounds is chiral?



- A) I
- B) II
- C) III
- D) IV
- E) V

4-Which of the following groups have the highest priority according to priority rules? (atomic number H = 1; C = 6; N = 7; O = 8) :

- A) -C≡CH
- B) -CH = CH₂
- C) -CH₂NH₂
- D) -C≡N
- E) -CH = C(CH₃)₂

5-If the observed optical rotation of an unknown sample is zero.
which of the following conclusions(s) is (are) true:

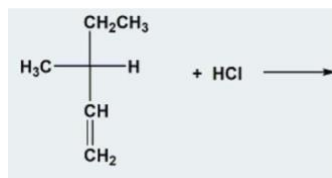
- I) The sample is a racemic mixture
- II) The sample is a meso compound
- III) The sample is a pure enantiomer

- A) I only
- B) I and II only
- C) II and III only
- D) I and III only
- E) II only

6-The observed rotation for 100 ml. of an aqueous solution containing 6.0g of sucrose, placed in a 2-decimeter sample tube, is +1.2 at 25°C. What is the specific rotation of Sucrose?

- A)+ 50
- B)+ 30
- C)+ 20
- D)+40
- E)+10**

7-The product (s) obtained from the following reaction is:



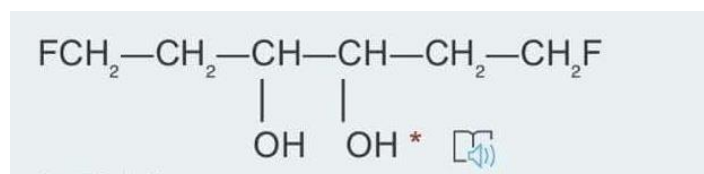
- A)pair of diastereomers
- B)racemic mixture**
- C)meso compound
- D)pair of enantiomers
- E)achiral

8-What is the relationship between these two compounds?



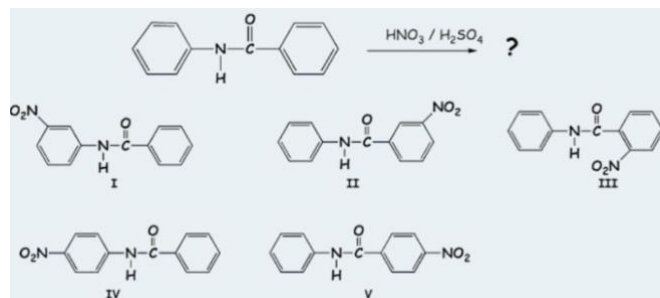
- A)diastereomers
- B)enantiomers**
- C)identical
- D)constitutional isomers
- E)conformations

9-what are the possible number stereoisomers of ?



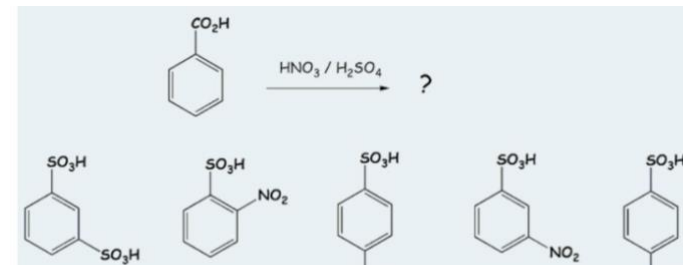
- A)5
- B)4
- C)2
- D)3**
- E)1

10-What is the major product of the following reaction?



- A) I
- B) II**
- C) III
- D) IV
- E) V

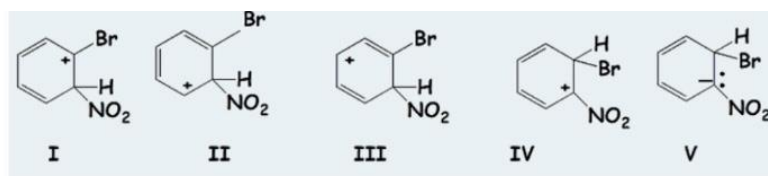
11- What is the major product of the following reaction?



- A) I
- B) II
- C) III
- D) IV
- E) V

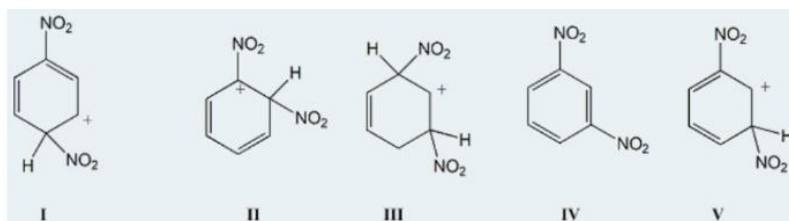
12- Which of the following is (are) correct resonance structure(s) for the intermediate formed in the nitration of bromobenzene :

- A) I, II, IV AND V
- B) III ONLY
- C) I, II AND III
- D) II ONLY
- E) I ONLY



13-The intermediate in the nitration of nitrobenzene is :

- A) I
- B) II
- C) III
- D) IV
- E) V



14-which of the following names is correct :

- A) p-aminochlorobenzene
- B) m-nitroaniline
- C) p-bromodroxybenzene
- D) chlorobenzoic acid-5
- E) dichlorolbenzene-1,6

15- Which of the following statements about benzene is FALSE :

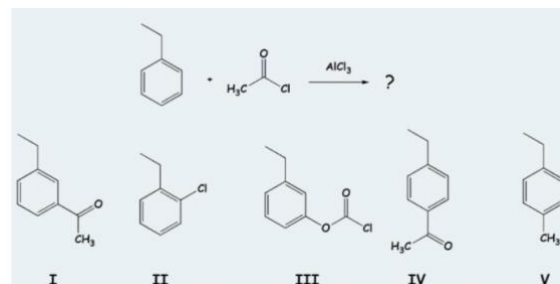
- A) The bond angles are all 120o and all carbon carbon bonds have the same length
- B) The typical mechanism by which reactions occur is by addition
- C) The molecule is planar and each carbon is at a corner of regular .hexagon
- D) Each carbon in the benzene ring is sp² hybridized
- E) There are two resonance structures of equivalent energy

16- In an electrophilic aromatic substitution reaction, which group is both ortho, para ?directing, and ring deactivating:

- A) anisole
- B) chlorobenzene
- C) benzoic acid
- D) nitrobenzene
- E) aniline

17- What is the major product of the following reaction?

- A) I
- B) II
- C) III
- D) IV
- E) V

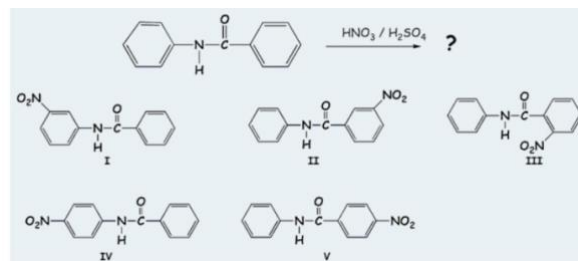


18- Which of the following compounds would be most reactive towards ring nitration :

- A) chlorobenzene
- B) benzene
- C) nitrobenzene
- D) phenol
- E) benzoic acid

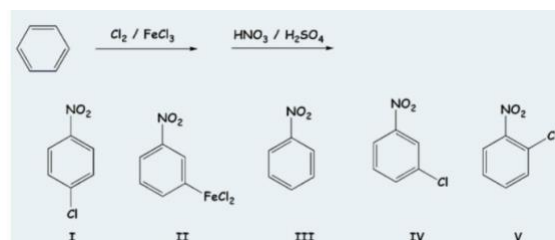
19- What is the major product of the following reaction?

- A) I
- B) II
- C) III
- D) IV
- E) V



20- What is the major product of the following reaction?

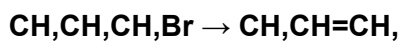
- A) I & V
- B) II & III
- C) I & II
- D) III & V
- E) IV



21- Which statement is true for $\text{S}_{\text{N}}2$ reactions:

- A) The rate of reaction is dependent only on substrate
- B) The fastest reaction will occur with a tertiary halide
- C) The mechanism is a two-step process
- D) Substitution occurs with inversion of configuration
- E) The rate of the reaction is dependent on the stability of a carbocation

22- Which reagent would you choose for the following reaction :



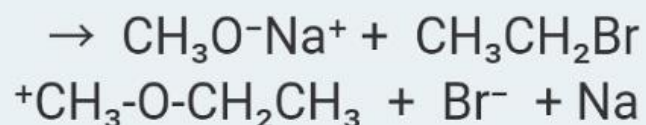
- A) -OH
- B) -CH₃(CO)₃
- C) -SH
- D) -CH₃CH₂O
- E) -CH₃O

23- Which of the following is an incorrect representation of relative nucleophile strength:

- A) $\text{H}_3\text{C}^- > \text{HO}^-$
- B) $\text{HO}^- > \text{HS}^-$
- C) $\text{CH}_3\text{O}^- > \text{CH}_3\text{OH}$
- D) $\text{I}^- > \text{Br}^-$
- E) $\text{H}_2\text{N}^- > \text{F}^-$

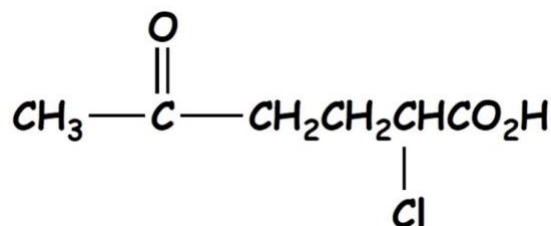
24- What is the leaving group in the following Reaction:

- A) CH₃CH₂Br
- B) CH₃-O-CH₂CH₃
- C) Br⁻
- D) Na⁺
- E) CH₃O-NA⁺



25- Name the following compound

- A) carboxy-5-chloro-2-hexanone-6
- B) chloro-6-oxoheptanoic acid-3
- C) chloro-5-oxohexanoic acid-2
- D) carboxy-3-chloro-5-hexanone-1
- E) chloro-2-oxohexanoic acid-5

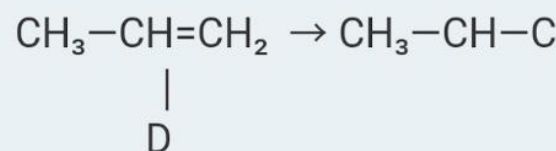


26- Which of the following is protic solvent

- A) acetonitrile, CH₃C≡N
- B) dimethyl sulfoxide, (CH₃)₂S=O
- C) dimethylformamide, (CH₃)₂NCHO
- D) acetone, (CH₃)₂C=O
- E) Methanol, CH₃OH

27 -Which would be the best way to carry out the following synthesis

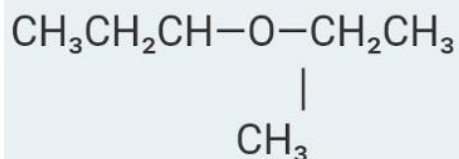
- A) Br₂ (2) Mg, ether (3) D₂O (1)



- B) HBr (2) Mg, ether (3) D₂O (1)
- C) H₂O / H⁺ (2) Mg, ether (3) D₂O (1)
- D) D₂O (2) Mg, ether (1)
- E) D₂O (2) Br₂, AlBr₃ (1)

28-What is the IUPAC name for the following molecule

- A) ethyl isobutyl ether
- B) ethoxy-3-methylpropane-3
- C) ethoxybutane-3
- D) butyl ethyl ether
- E) ethoxybutane-2

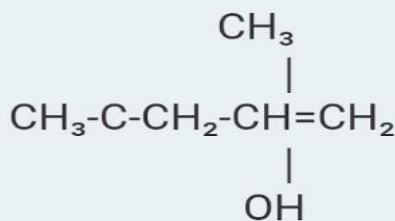


29→ *CH₃CH₂MgBr + CO₂ then H₃O

- A) CH₃COOH
- B) CH₃CH₂OH
- C) CH₃CH₂CH₃
- D) CH₃CH₂COOH
- E) CH₃CH₂CH₂OH

30-The correct name for this molecule:

- A) penten 2-methyl-2-ol-4
- B) methyl-1-penten-2-ol-4
- C) hydroxy-4-methyl-1- pentene-4
- D) methyl-4-penten-2-ol-2
- E) methyl-1-penten-4-ol-4



31-Which of the following is the weakest acid

- A) ClCH₂CH₂COOH
- B) CHCl₂CH₂COOH
- C) CH₃CCl₂COOH
- D) CH₃CH₃COOH
- E) CH₃CHClCOOH

32-which of the following alcohols would react most rapidly under SN₁ conditions

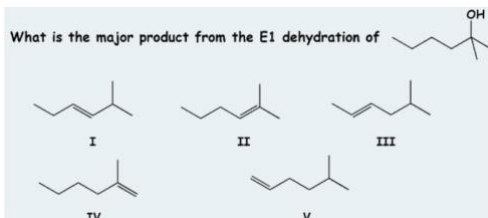
- A) CH₃)₂CHCH₂OH)
- B) CH₃CH₂OH
- C) CH₃CH₂CH₂OH
- D) CH₃CH₂CH(CH₃)OH
- E) CH₃)₃COH)

33-The rate-determining step in the following reaction is



- A) Ionization of alcohol to give carbocation
- B) Displacement of water from the protonated alcohol by bromide ion
- C) **Protonation of alcohol**
- D) Capture of a carbocation by bromide ion
- E) Loss of water from the protonated alcohol to give a carbocation

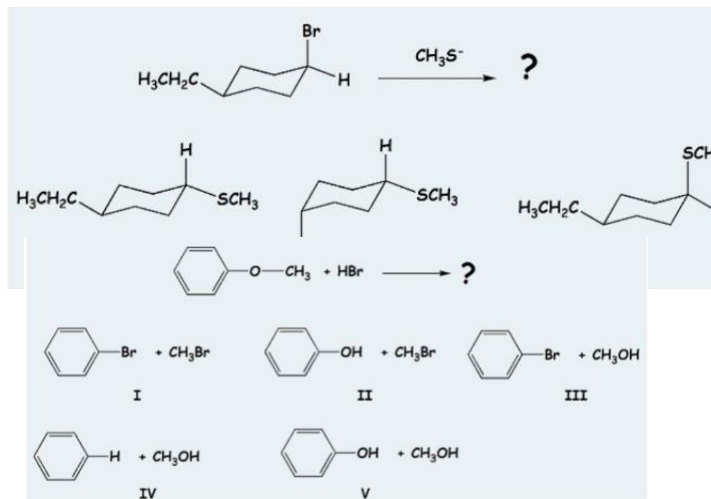
34-



- A) I
- B) **II**
- C) III
- D) IV
- E) V

35-The product(s) of the following reaction is (are) :

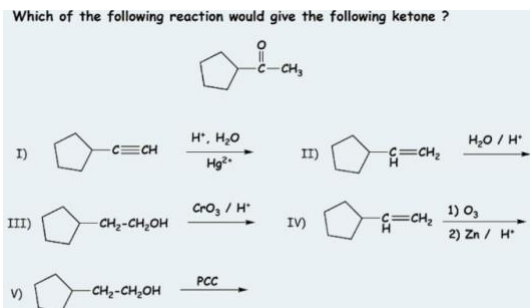
- A) II & III
- B) I & III
- C) **II ONLY**
- D) III ONLY
- E) I ONLY
- F)



36-The product(s) of the following reaction is (are):

- A) I
- B) **II**
- C) III
- D) IV
- E) V

37-

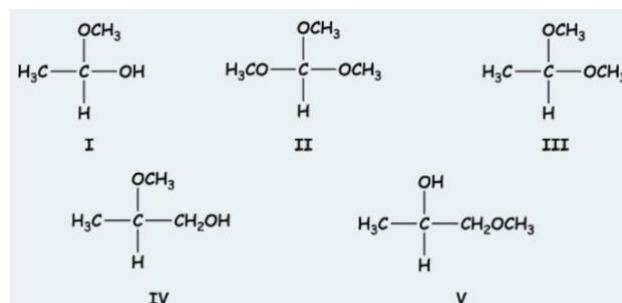


- A) I

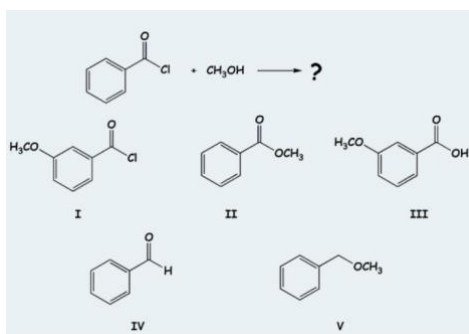
- B) II
- C) III
- D) IV
- E) V

38-Which of the following is hemiacetal :

- A) I
- B) II
- C) III
- D) IV
- E) V

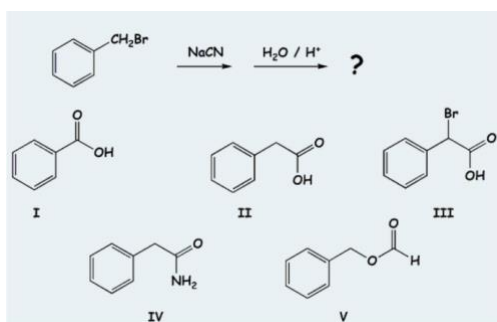


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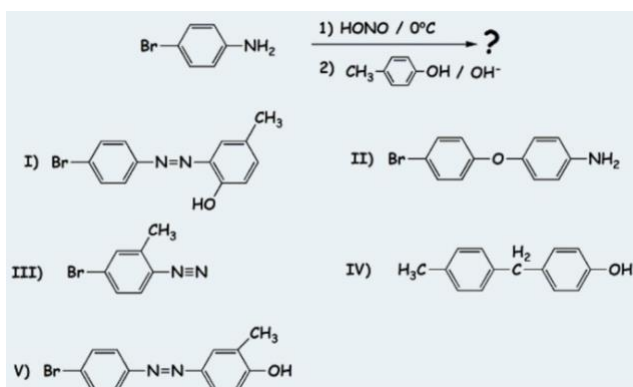
- A) I
- B) II
- C) III
- D) IV
- E) V

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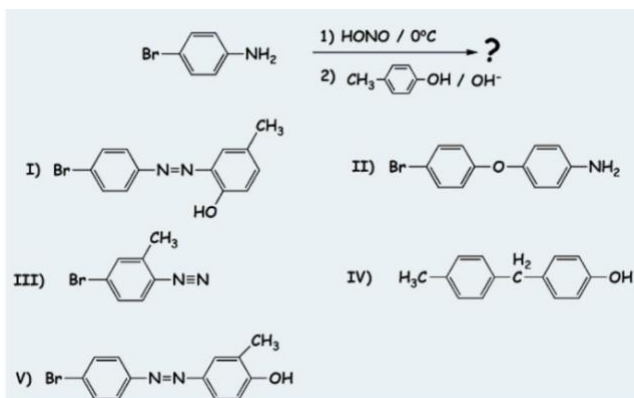
- A) I
- B) II
- C) III
- D) IV
- E) V

41-



- A) I
- B) II
- C) III
- D) IV
- E) V

42-



- A) I
- B) II
- C) III
- D) IV
- E) V

Done