

紫外光谱

(一) 判断题

1. × 2. √ 3. × 4. √ 5. × 6. × 7. × 8. × 9. √ 10. ×

(二) 单选题

1. D 2. B 3. B 4. D 5. B 6. D 7. D 8. C 9. C 10. A
11. A 12. C 13. B 14. D 15. C 16. A 17. C 18. B 19. C 20. B
21. C 22. A 23. D 24. C 25. D 26. C 27. B 28. A 29. B 30. A

(三) 问答题

略。

(四) 结构解析题

1. $\lambda_{\max} = 235\text{nm}$ ($\epsilon = 12000$) 为结构 (B), 无强吸收的为结构 (A)。

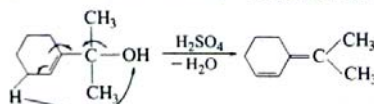
2. 结构为 (A)。

(A) 结构: $\lambda_{\max} = \text{五元环烯酮母体} + \alpha\text{-OH} + \beta\text{-R} + \beta\text{-OR}$
 $= 202 + 35 + 12 + 30 = 279$

(B) 结构: $\lambda_{\max} = \text{烯酯母体} + \alpha\text{-OH} + 2 \times \beta\text{-R} + \text{环内双键}$
 $= 193 + 35 + (2 \times 12) + 5 = 257$

3. 极性溶剂水中, 酮式异构体占优势; 非极性溶剂己烷中, 烯醇式异构体比率上升。

4. $\lambda_{\max} = \text{无环二烯母体} + 3 \times \text{R} = 217 + 3 \times 5 = 232\text{nm}$, 与实测值不符。脱水过程:



$\lambda_{\max} = \text{无环二烯} + 4 \times \text{R} + \text{环外双键} = 217 + 4 \times 5 + 5 = 242\text{nm}$, 符合实测结果。

5. 结构为 (B): $\lambda_{\max} = \text{六环烯酮} + 1 \times \beta\text{-R} + 1 \times \alpha\text{-R} = 215 + 12 + 10 = 237\text{nm}$

6.

(A) $\lambda_{\max} = 227$; (B) $\lambda_{\max} = 239$; (C) $\lambda_{\max} = 283$; (D) $\lambda_{\max} = 284$

(E) $\lambda_{\max} = 240$; (F) $\lambda_{\max} = 278$; (G) $\lambda_{\max} = 353$; (H) $\lambda_{\max} = 303$ 。

7. 结构为 (A):

$\lambda_{\max} = \text{六环烯酮} + 1 \times \alpha\text{-R} + 1 \times \beta\text{-R} + 1 \times \gamma\text{-R} + 1 \times \delta\text{-R} + \text{同环二烯} + \text{共轭双键} + 2 \times \text{环外双键}$
 $= 215 + 12 + 10 + 18 + 18 + 39 + 30 + 2 \times 5 = 352\text{nm}$ 。

8. $\lambda_{\max} = \text{六环烯酮} + 1 \times \alpha\text{-R} + 1 \times \beta\text{-R} = 215 + 10 + 12 = 237\text{nm}$



9. (A) 为 β , (B) 为 α 。

10.

(A) $\lambda_{\max} = 237$; (B) $\lambda_{\max} = 249$; (C) $\lambda_{\max} = 249$; (D) $\lambda_{\max} = 242$

(E) $\lambda_{\max} = 286$; (F) $\lambda_{\max} = 285$; (G) $\lambda_{\max} = 259$; (H) $\lambda_{\max} = 346$; (I) $\lambda_{\max} = 356$

红外光谱

(一) 判断题

1. √ 2. √ 3. √ 4. × 5. × 6. √ 7. × 8. √ 9. × 10. ×
11. × 12. × 13. √ 14. √ 15. √

(二) 选择题

1. C 2. C 3. A 4. A 5. D 6. D 7. C 8. B 9. A 10. D
11. B 12. A 13. C 14. A 15. C 16. A 17. B 18. B 19. B 20. C
21. D 22. B 23. C 24. C 25. D 26. D 27. B 28. A 29. A 30. A
31. A 32. C 33. D 34. B 35. A 36. B 37. C 38. B 39. B 40. B

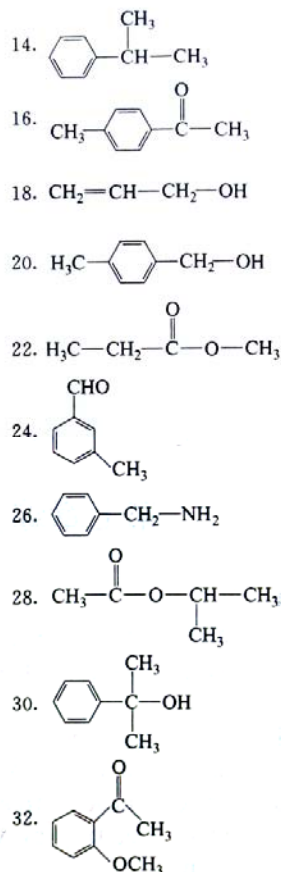
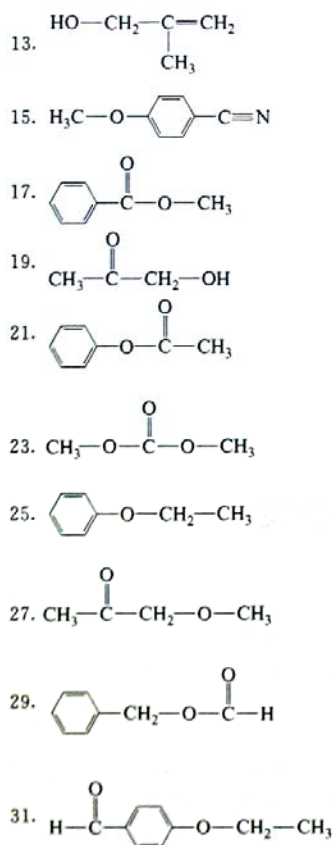
(三) 问答题

略。

(四) 结构解析题

1~10. 略。 11. $\text{CH}_3\text{-CH(CH}_3\text{)-CH}_2\text{-CH=CH}_2$

12.



核磁共振氢谱

(一) 判断题

1. \checkmark 2. \times 3. \times 4. \times 5. \checkmark 6. \times 7. \checkmark 8. \times 9. \checkmark 10. \checkmark
 11. \checkmark 12. \checkmark 13. \checkmark 14. \times 15. \times

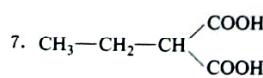
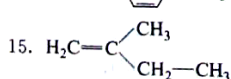
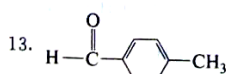
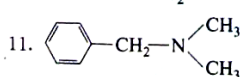
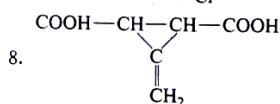
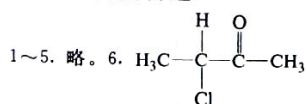
(二) 选择题

1. C 2. C 3. A 4. B 5. B 6. A 7. C 8. D 9. C 10. B
 11. C 12. C 13. B 14. A 15. C 16. B 17. C 18. D 19. A 20. B
 21. A 22. B 23. B 24. B 25. D 26. B 27. C 28. C 29. C 30. B
 31. A 32. C 33. B 34. B 35. D

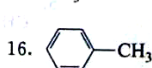
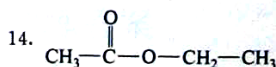
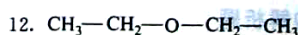
(三) 简答题

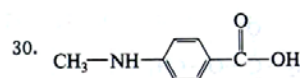
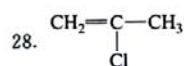
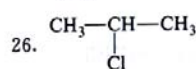
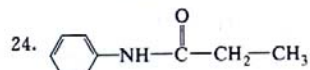
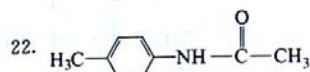
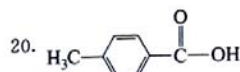
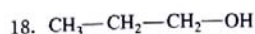
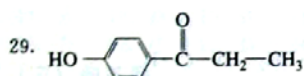
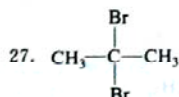
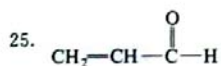
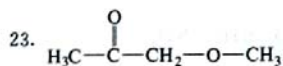
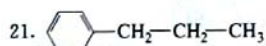
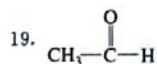
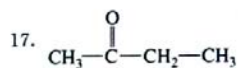
略。

(四) 结构解析题



9. 略。 10. 略。





(五) 计算题

1. (1) $\delta_{\text{H}}=4.45$; (2) $\delta_{\text{H}}=4.25$; (3) $\delta_{\text{H}}=3.95$;

(4) $\delta_{\text{H}}=3.25$; (5) $\delta_{\text{H}}=3.75$; (6) $\delta_{\text{H}}=4.25$ 。

2. (1) $\delta_{\text{H}_1}=6.63$; $\delta_{\text{H}_2}=5.18$; $\delta_{\text{H}_3}=5.65$;

(2) $\delta_{\text{H}_1}=5.26$; $\delta_{\text{H}_2}=6.30$;

(3) $\delta_{\text{H}_1}=6.12$; $\delta_{\text{H}_2}=5.84$; $\delta_{\text{H}_3}=6.43$ 。

3. (1) $\delta_{\text{H}_1}=7.19$; $\delta_{\text{H}_2}=7.05$;

(2) $\delta_{\text{H}_1}=7.89$; $\delta_{\text{H}_2}=7.37$; $\delta_{\text{H}_3}=7.52$;

(3) $\delta_{\text{H}_1}=7.22$; $\delta_{\text{H}_2}=7.13$;

(4) $\delta_{\text{H}_1}=7.15$; $\delta_{\text{H}_2}=7.51$; $\delta_{\text{H}_3}=7.69$ 。

核磁共振碳谱

(一) 判断题

1. × 2. × 3. × 4. ✓ 5. ✓ 6. ✓ 7. ✓ 8. × 9. × 10. ×

(二) 选择题

1. B 2. C 3. B 4. B 5. B 6. D 7. C 8. D 9. C 10. D

11. A 12. B 13. D 14. D 15. B 16. D 17. C 18. B 19. C 20. D

(三) 简答题

略。

(四) 结构解析题

1. $(\text{CH}_3)_2\text{CHOH}$

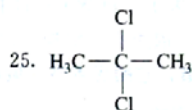
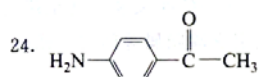
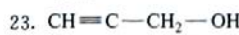
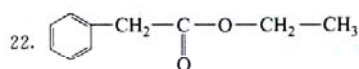
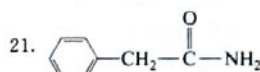
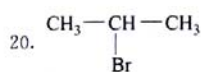
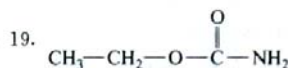
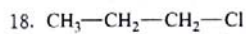
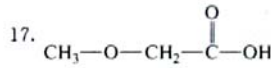
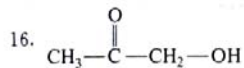
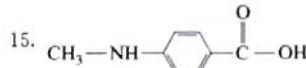
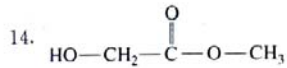
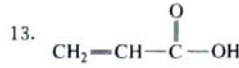
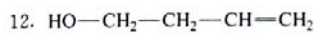
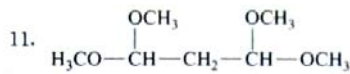
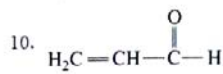
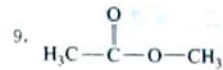
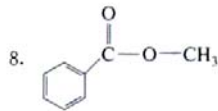
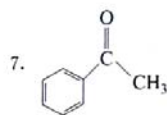
2. $\text{CH}_3-\text{O}-\text{CH}_2-\text{CH}_2-\text{O}-\text{CH}_3$

3.

4. $\text{H}-\overset{\text{O}}{\parallel}{\text{C}}-\text{O}-\text{CH}_2-\text{CH}_3$

5. $\begin{array}{c} \text{OH} \\ | \\ \text{CH}_3-\text{CH}-\text{CH}_2-\text{CH}_3 \end{array}$

6.



(五) 计算题

1.

(1) $\delta_{\text{C}}^1=29.1$; $\delta_{\text{C}}^2=30.6$; $\delta_{\text{C}}^3=36.6$; $\delta_{\text{C}}^4=8.7$;

(2) $\delta_{\text{C}}^1=21.9$; $\delta_{\text{C}}^2=27.9$; $\delta_{\text{C}}^3=41.2$; $\delta_{\text{C}}^4=19.9$; $\delta_{\text{C}}^5=13.6$;

(3) $\delta_{\text{C}}^1=20.7$; $\delta_{\text{C}}^2=34.1$; $\delta_{\text{C}}^3=39.8$; $\delta_{\text{C}}^4=27.0$; $\delta_{\text{C}}^5=11.6$;

(4) $\delta_{\text{C}}^1=12.7$; $\delta_{\text{C}}^2=23.0$; $\delta_{\text{C}}^3=43.9$; $\delta_{\text{C}}^4=25.4$; $\delta_{\text{C}}^5=32.9$;

2.

(1) $\delta_{\text{C}}^1=8.9$; $\delta_{\text{C}}^2=30.8$; $\delta_{\text{C}}^3=75.8$; $\delta_{\text{C}}^4=30.8$; $\delta_{\text{C}}^5=8.9$;

(2) $\delta_{\text{C}}^1=23$; $\delta_{\text{C}}^2=63$; $\delta_{\text{C}}^3=45$; $\delta_{\text{C}}^4=58$;

(3) $\delta_{\text{C}}^1=13.6$; $\delta_{\text{C}}^2=22.4$; $\delta_{\text{C}}^3=28.3$; $\delta_{\text{C}}^4=33.7$; $\delta_{\text{C}}^5=41.9$;

(4) $\delta_{\text{C}}^1=12.8$; $\delta_{\text{C}}^2=27.3$; $\delta_{\text{C}}^3=35.8$;

3.

(1) $\delta_{\text{C}}^1=137.6$; $\delta_{\text{C}}^2=149.1$;

(2) $\delta_{\text{C}}^1=147.6$; $\delta_{\text{C}}^2=115.5$; $\delta_{\text{C}}^3=145.4$; $\delta_{\text{C}}^4=118.4$; $\delta_{\text{C}}^5=129.7$; $\delta_{\text{C}}^6=113.3$;

(3) $\delta_{\text{C}}^1=155.4$; $\delta_{\text{C}}^2=115.8$; $\delta_{\text{C}}^3=129.9$; $\delta_{\text{C}}^4=121.2$;

(4) $\delta_{\text{C}}^1=167.1$; $\delta_{\text{C}}^2=98.7$; $\delta_{\text{C}}^3=136.9$; $\delta_{\text{C}}^4=121.1$;

有机质谱

(一) 判断题

1. ✓ 2. ✓ 3. × 4. × 5. ✓ 6. ✓ 7. ✓ 8. ✓ 9. ✓ 10. ✓
 11. × 12. ✓ 13. ✓ 14. ✓ 15. × 16. ✓ 17. ✓ 18. ✓ 19. × 20. ✓

(二) 单选题

1. D 2. C 3. C 4. B 5. B 6. A 7. D 8. B 9. C 10. B
 11. C 12. A 13. B 14. B 15. C 16. B 17. B 18. B 19. C 20. C
 21. A 22. A 23. B 24. C 25. C 26. B 27. C 28. B 29. B 30. C

(三) 问答题

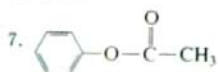
略。

(四) 结构解析题

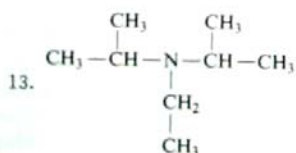
1. $C_9H_{10}O_2$

3. (A),

5. (C),



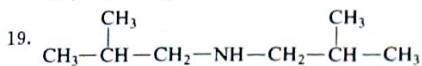
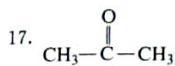
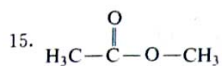
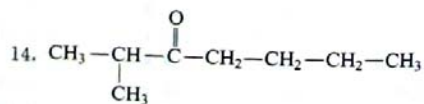
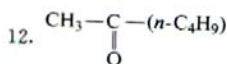
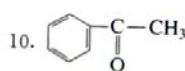
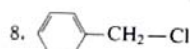
11. $Br-CH_2-Br$



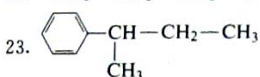
2. $CH_3CH_2COOCH_3$ 。

4. (A), (B), (C), (E), (F)。

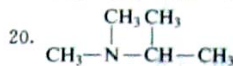
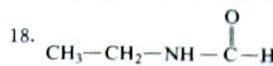
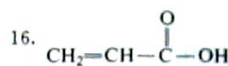
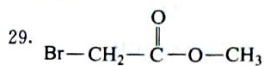
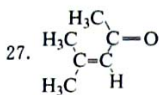
6. 略。



21. $CH_3-CH_2-CH_2-O-CH_3$

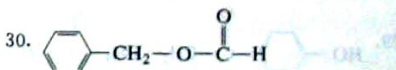
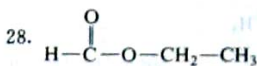
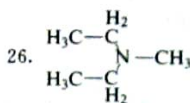


25. (A) CH_2Cl_2 (B) $CH_2=CHCl$



22. $CH_3-CH_2-CH_2-O-CH_2-CH_3$

24. $H_3C-O-CH_2-NH_2$



波谱综合解析

