

Questions

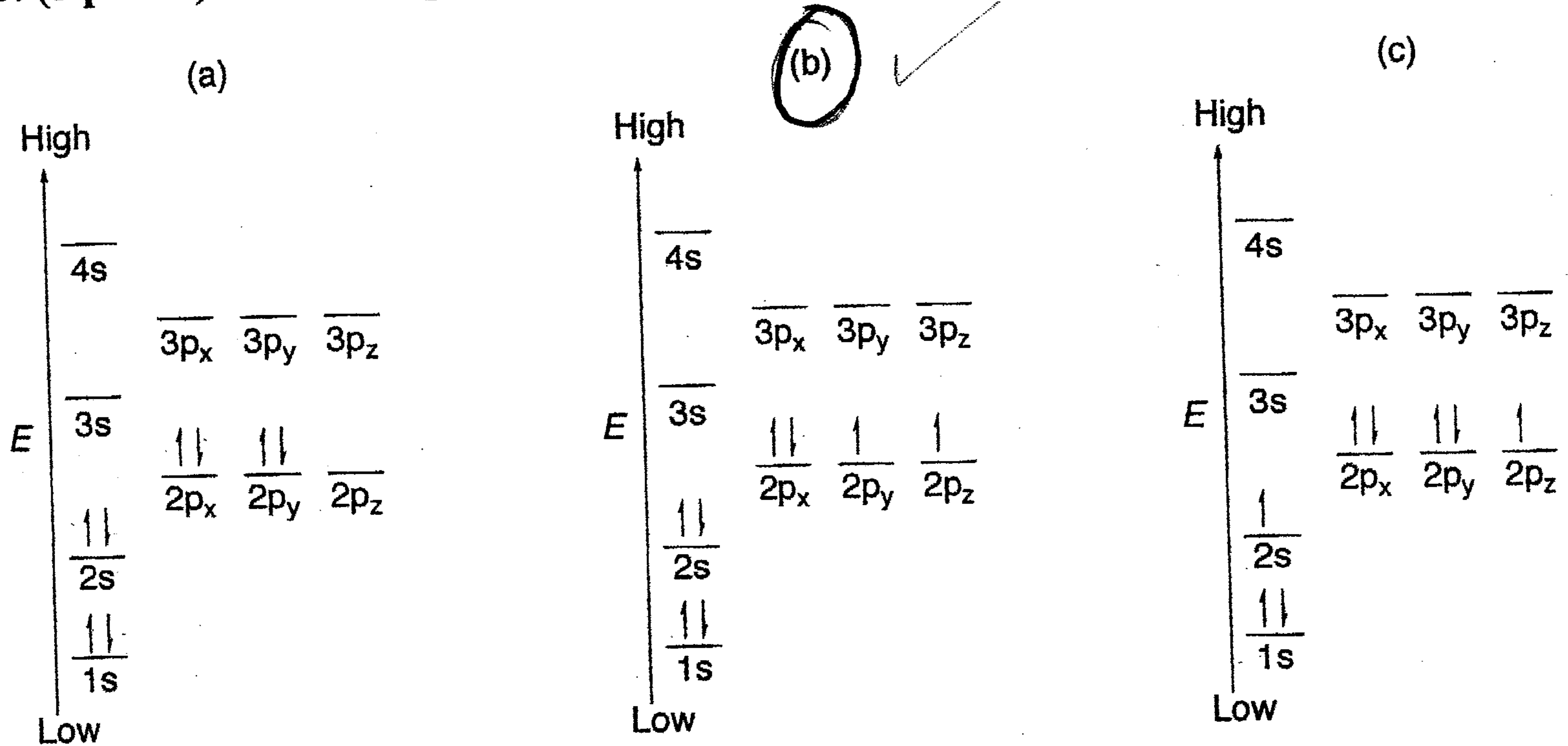
1. (5 points). How many valence electrons does a neutral nitrogen atom have?

- (a) 7 (b) 14 (c) 15 (d) 5

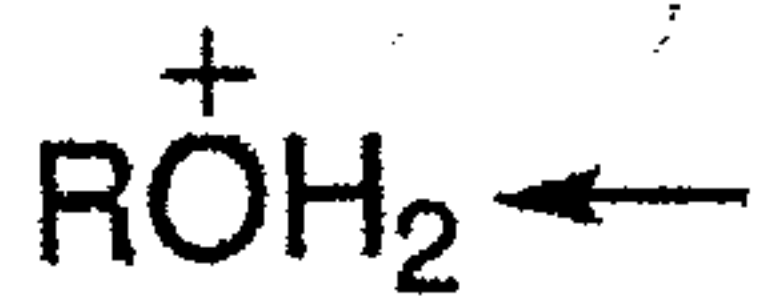
2. (5 points). How many valence electrons does a neutral iodine atom have?

- (a) 7 (b) 53 (c) 127 (d) 17

3. (5 points). Which diagram shows the ground-state electronic configuration for O?

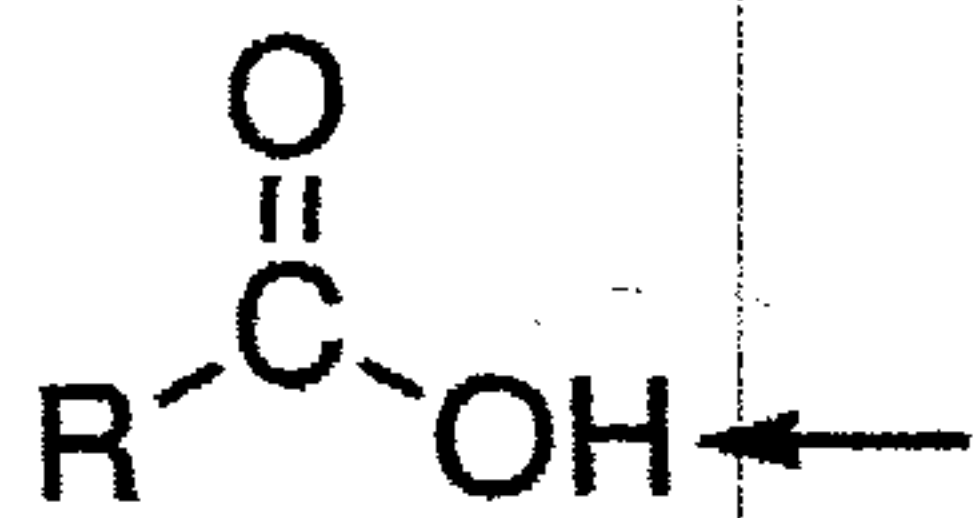


4. (5 points). What is the approximate pK_a value of the indicated proton?



- (a) < 0 (b) ~ 5 (c) ~ 10 (d) ~ 15

5. (5 points). What is the approximate pK_a value of the indicated proton?



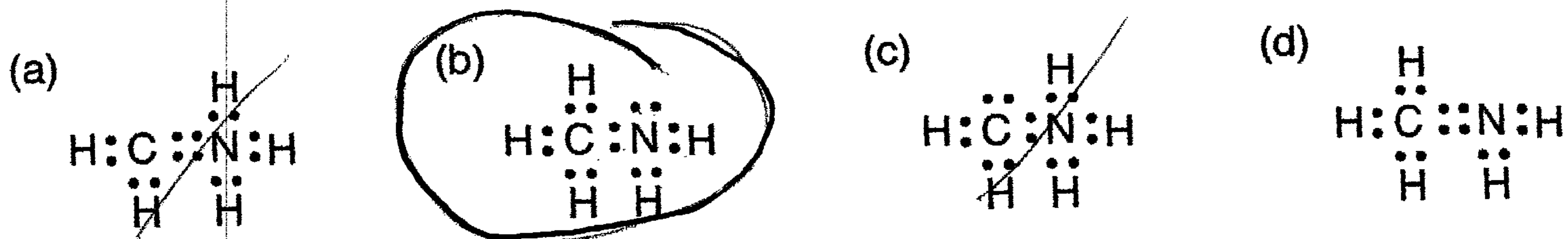
- (a) < 0 (b) ~ 5 (c) ~ 10 (d) ~ 15

6. (5 points). What is the approximate pK_a value of the indicated proton?



- (a) < 0 (b) ~ 5 (c) ~ 10 (d) ~ 15

7. (5 points). Which Lewis structure is correct for CH_3NH_2 ?



8. (5 points). What is the hybridization of the indicated atom?



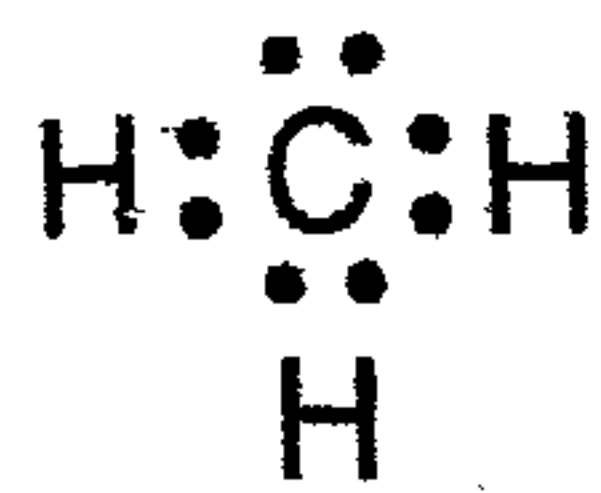
- (a) sp (b) sp^2 (c) sp^3 (d) p

9. (5 points). What is the formal charge of the oxygen atom?



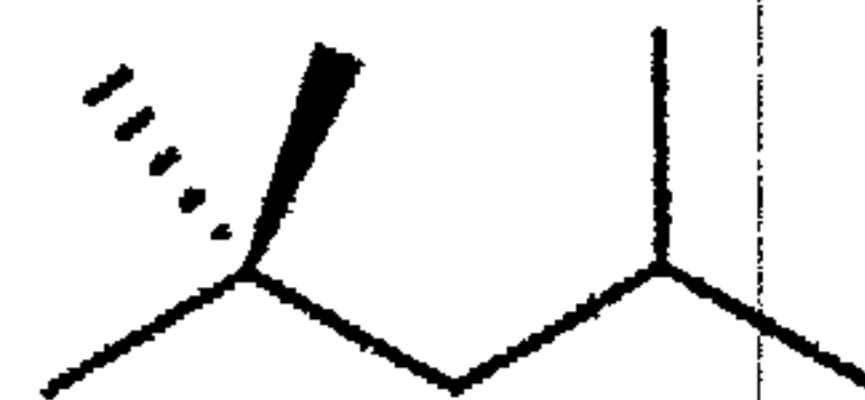
- (a) -1 (b) 0 (c) +1 (d) +2

10. (5 points). What is the formal charge of the carbon atom?



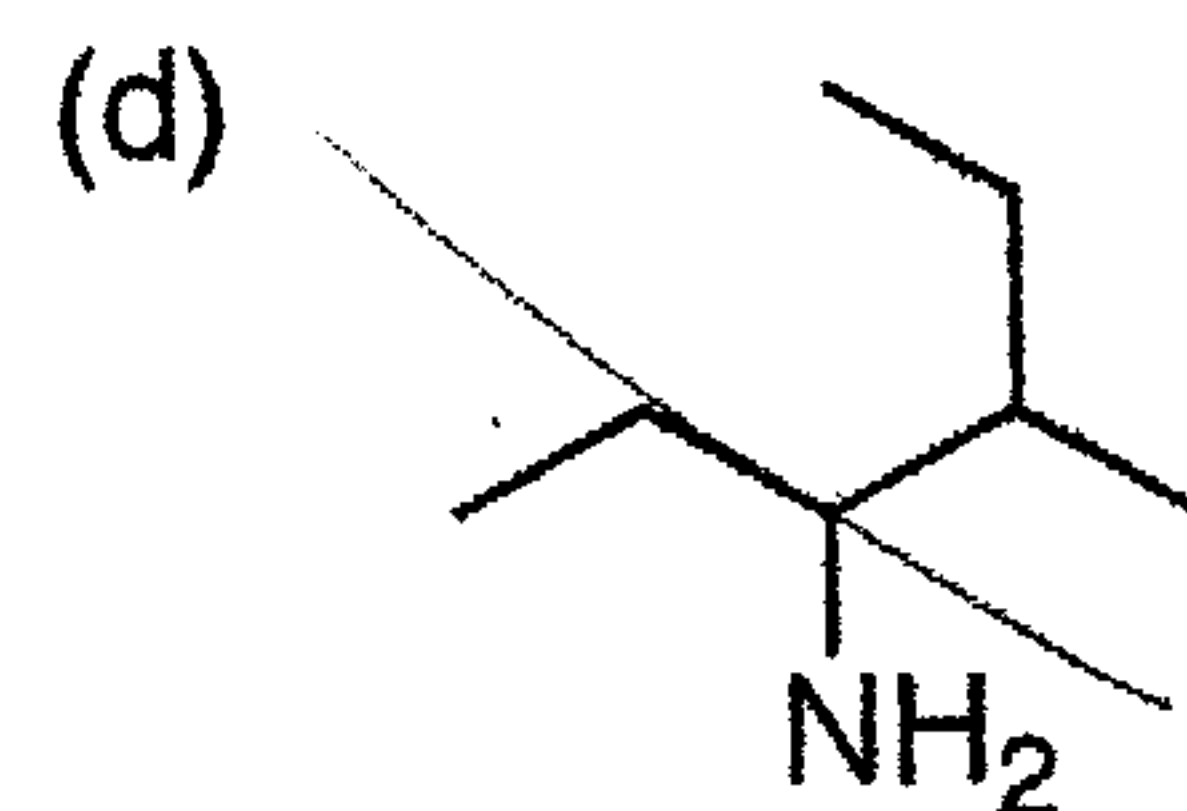
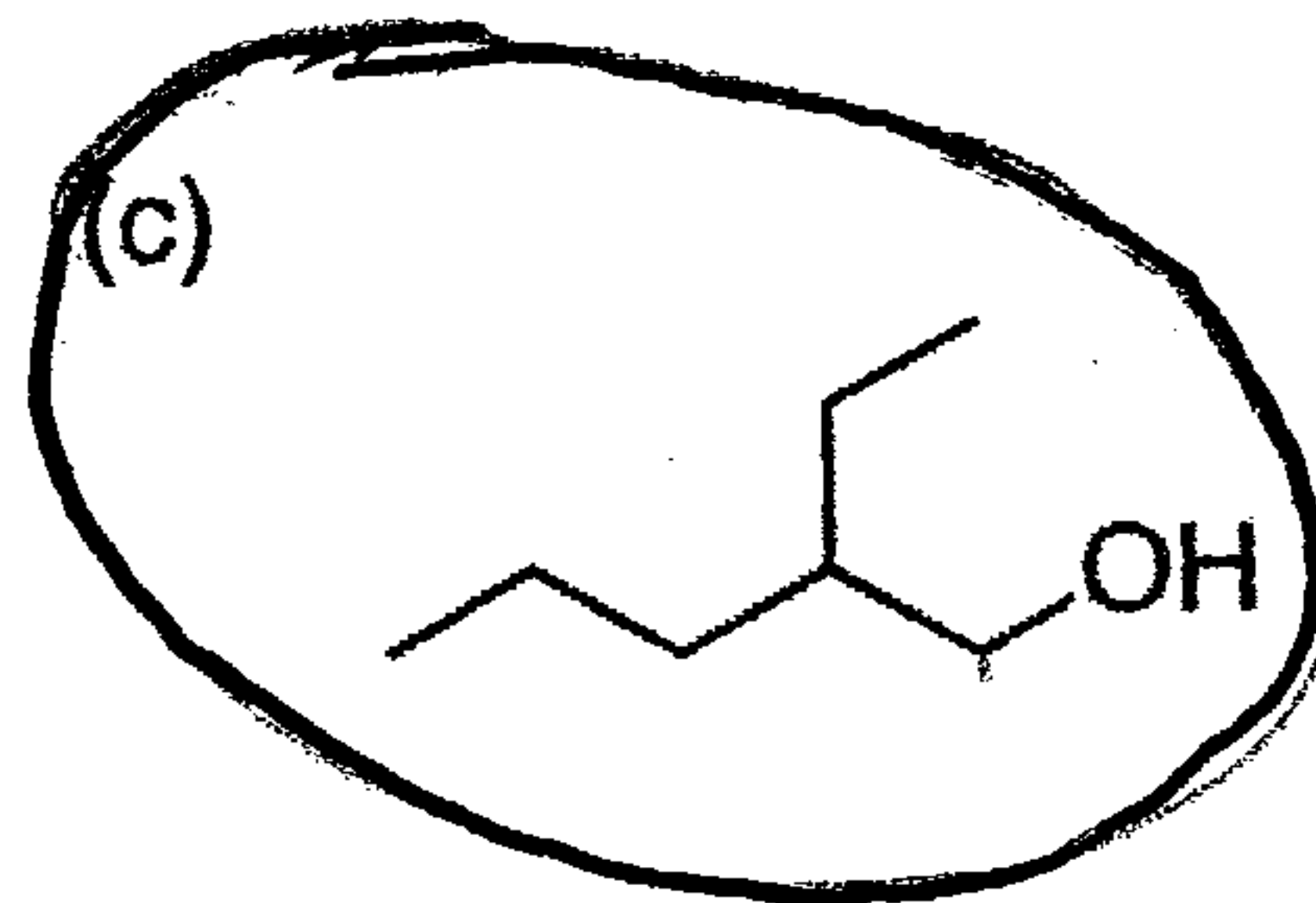
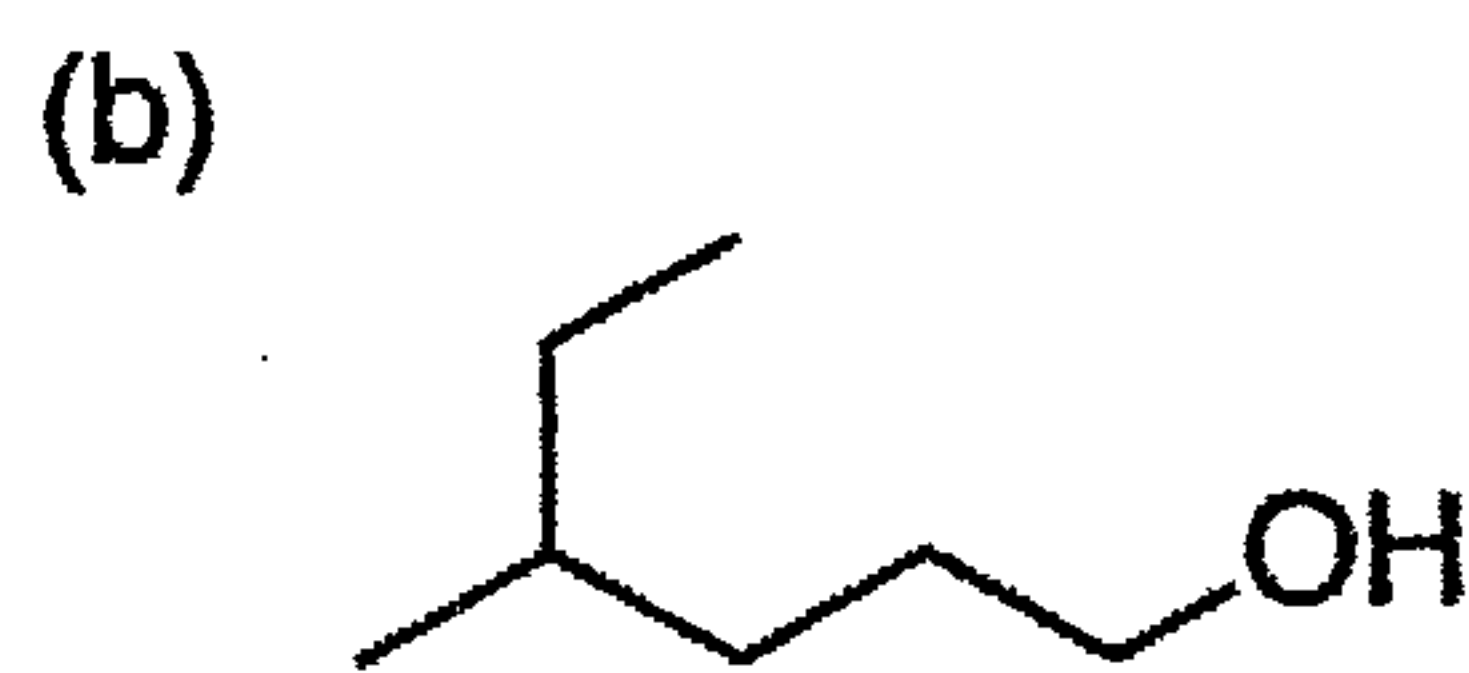
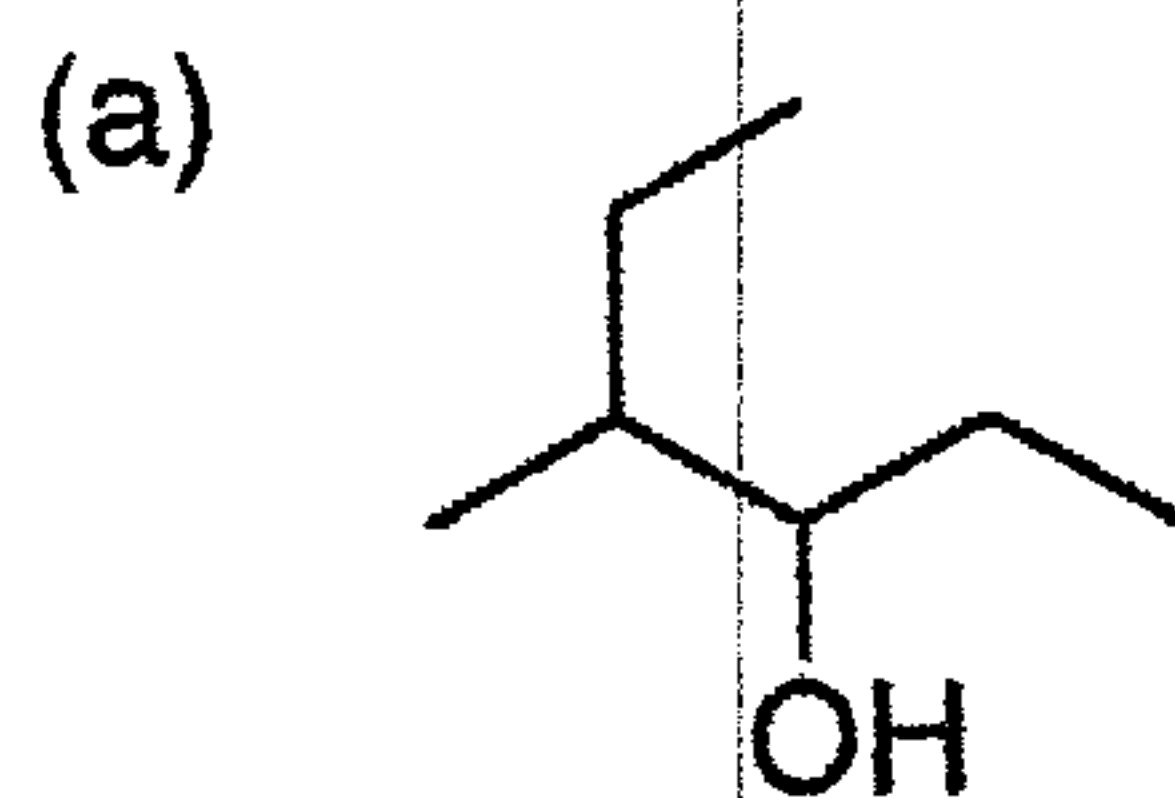
- (a) -1 (b) 0 (c) +1 (d) +2

11. (5 points). Please choose the correct systematic name (IUPAC) for:

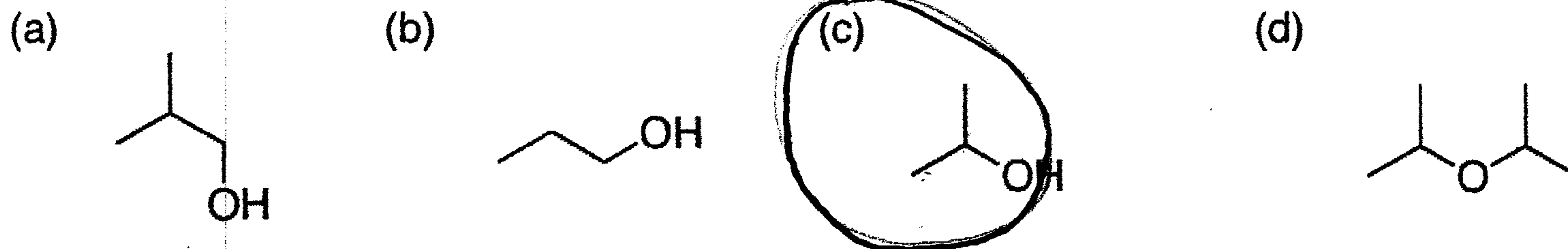


- (a) 2,4,4-trimethylpentane (b) 2,2,4-trimethylpentane (c) 2,2-dimethylisohexane
(d) 1,1,1-trimethylisopentane

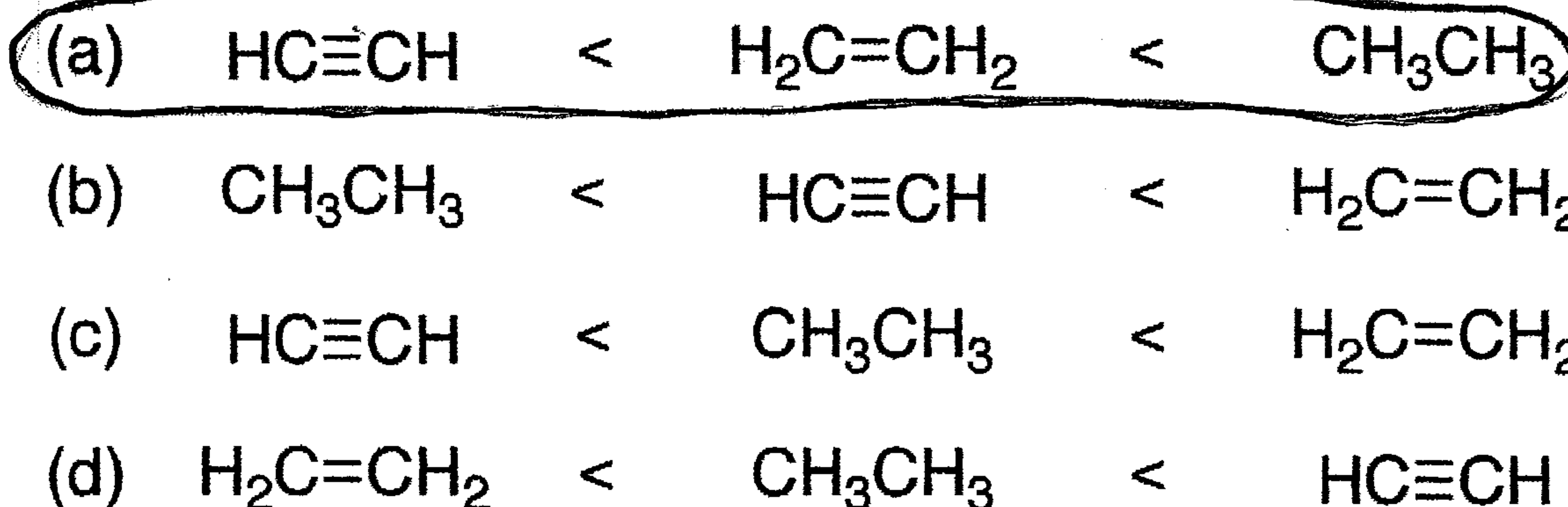
12. (5 points). Please choose the correct skeletal structure for 2-ethyl-1-pentanol.



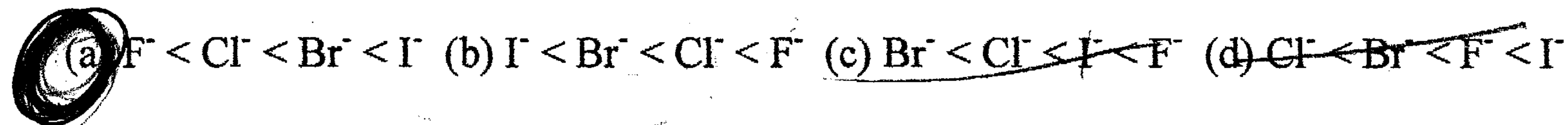
13. (5 points). Please choose the correct skeletal structure for isopropyl alcohol (common name).



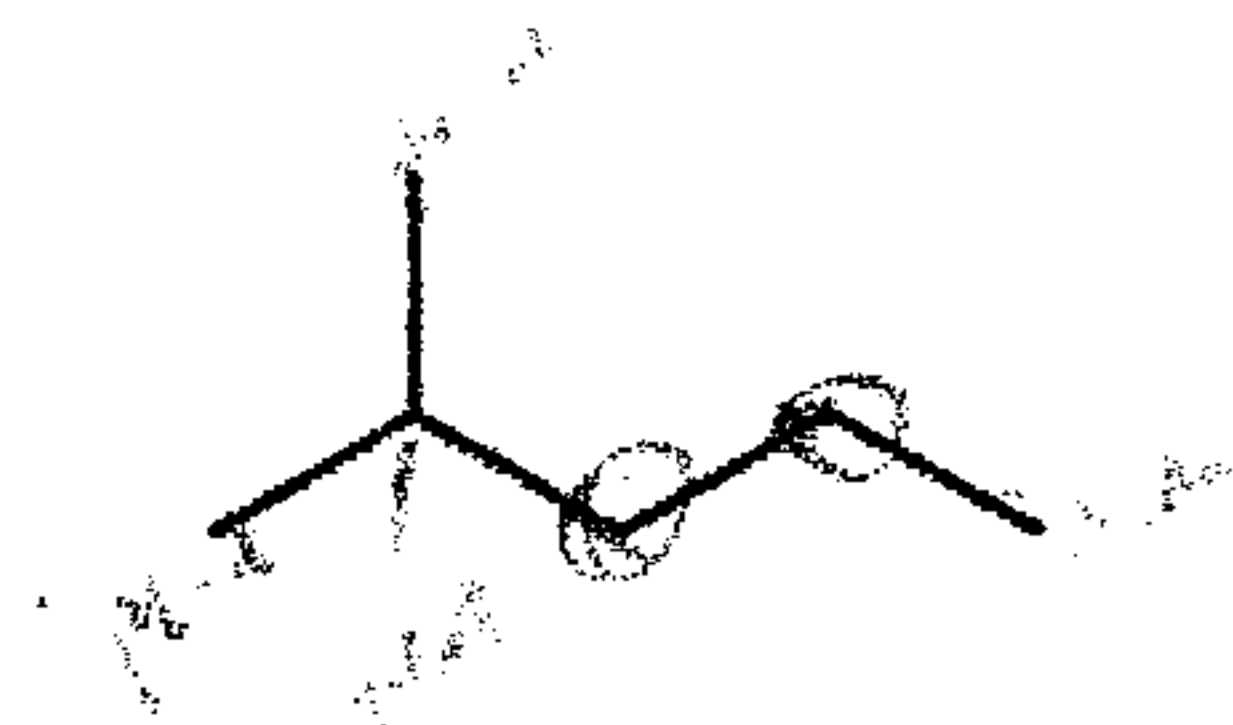
14. (5 points). Please choose the list that is in order of increasing pKa value of the most acidic hydrogen atom within the molecule (i.e. the smallest pKa value is listed first).



15. (5 points). Please choose the list that is in order of increasing stability (i.e. the least stable one is listed first).



16. (5 points). How many secondary carbons does the following compound have?

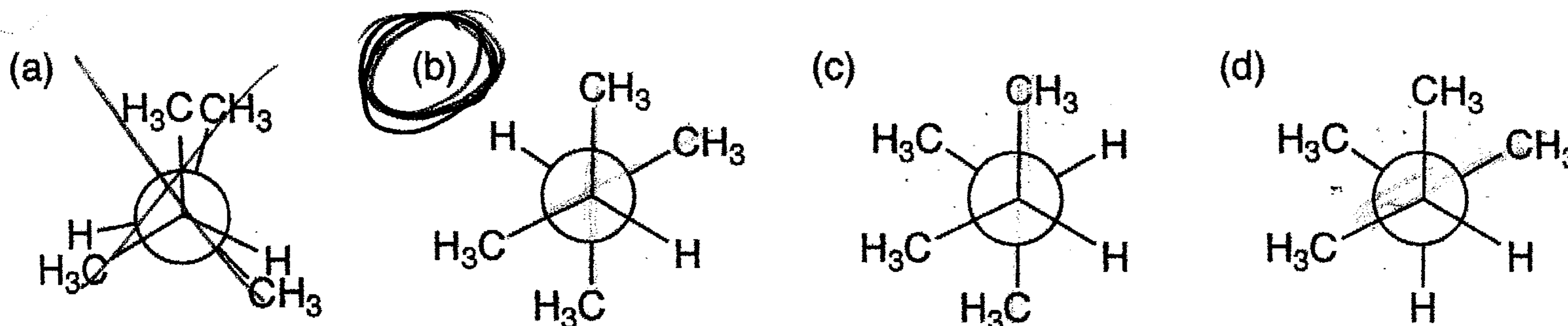


- (a) 3 (b) 6 (c) 2 (d) 5

17. (5 points). Which of the following pairs has the higher boiling point: 1-butanol or 1-pentanol?

- (a) 1-butanol (b) 1-pentanol (c) both boiling points are same.

18. (5 points). Which of the following conformers is most stable?



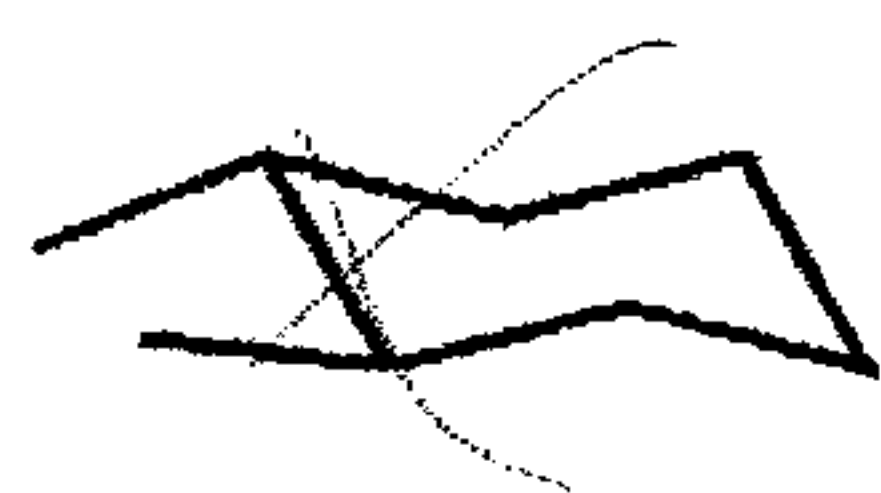
2 ch₃

3 ch₃

3 ch₃

19. (5 points). Which of the following structure represents a *cis* isomer?

(a)



(b)



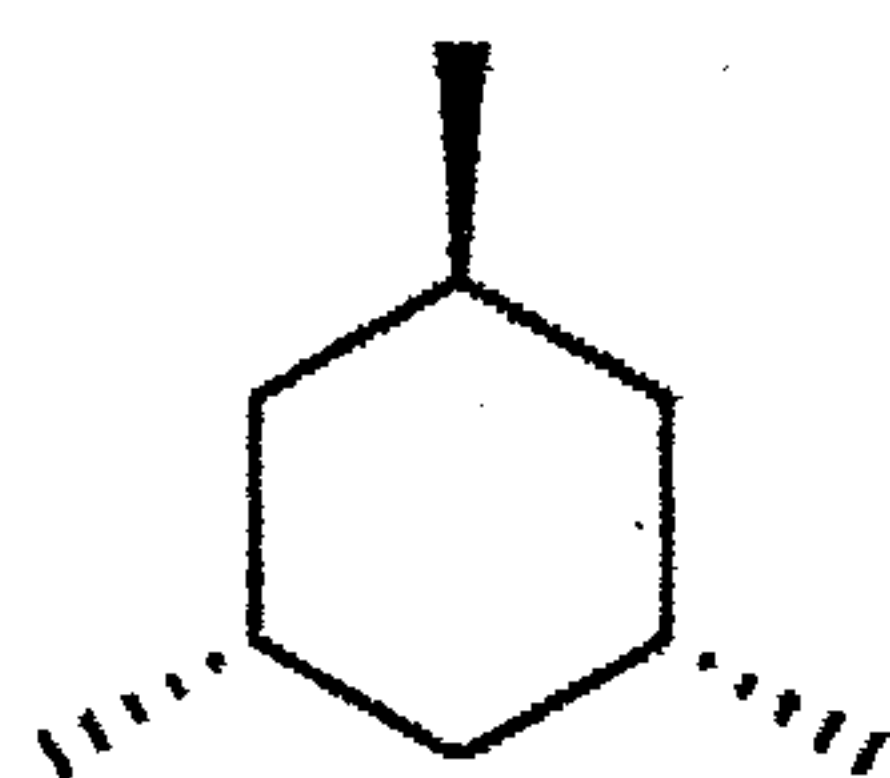
(c)



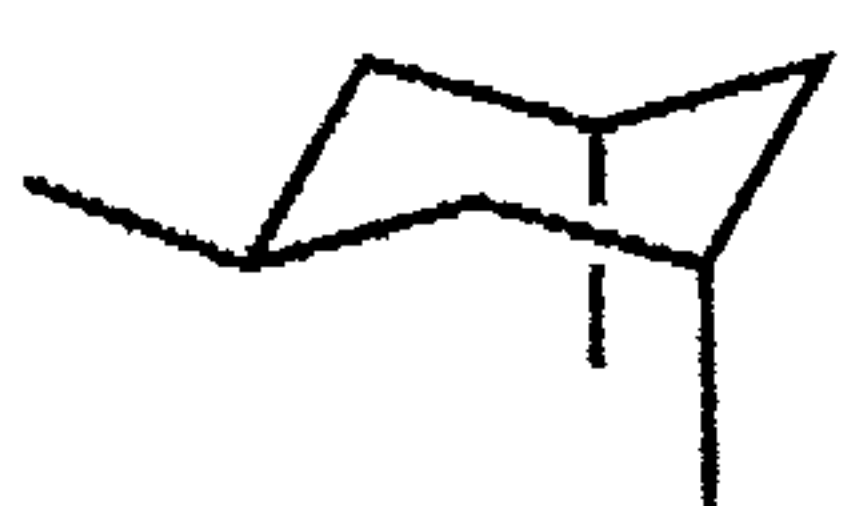
(d)



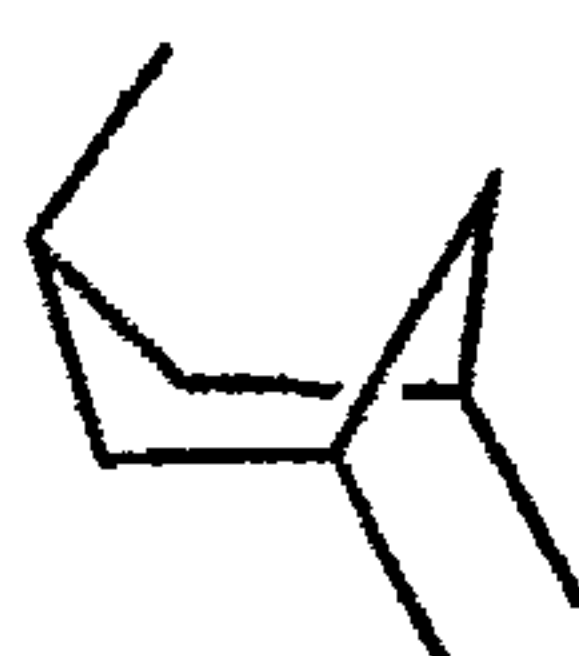
20. (5 points). Please choose the most stable conformer of the following molecule:



(a)



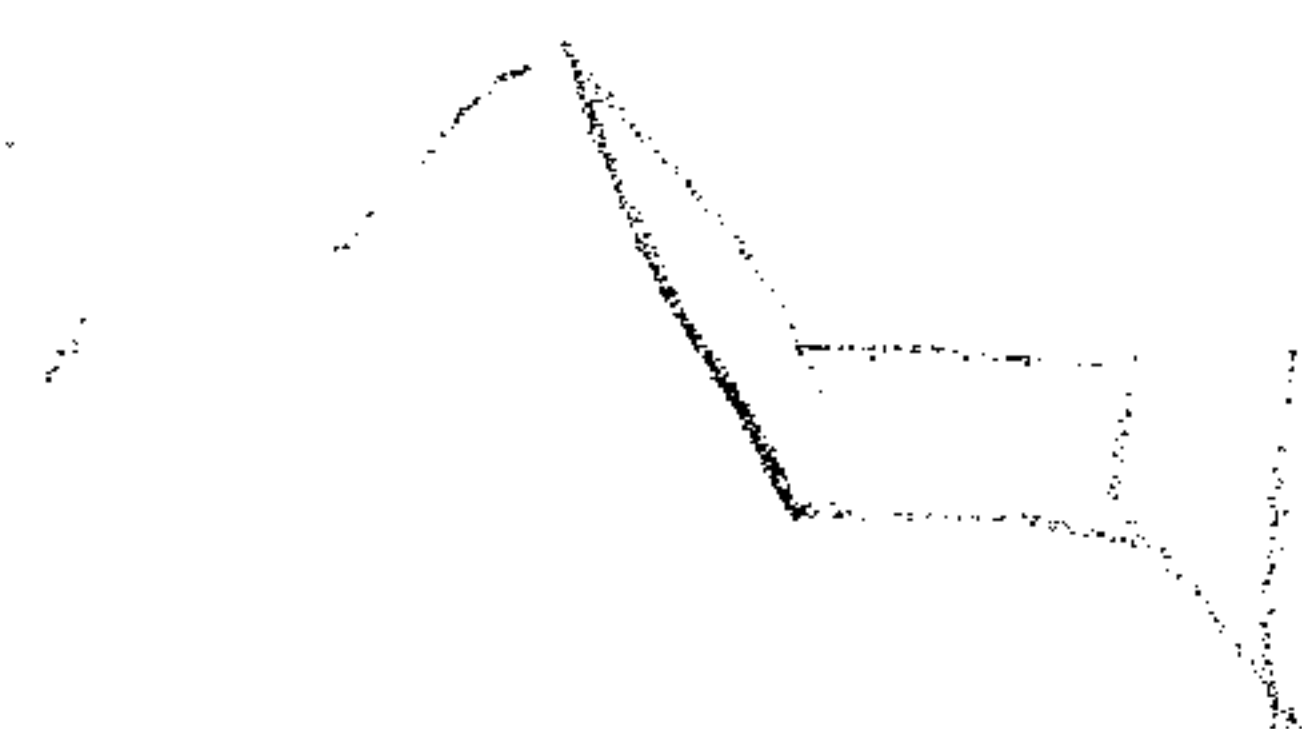
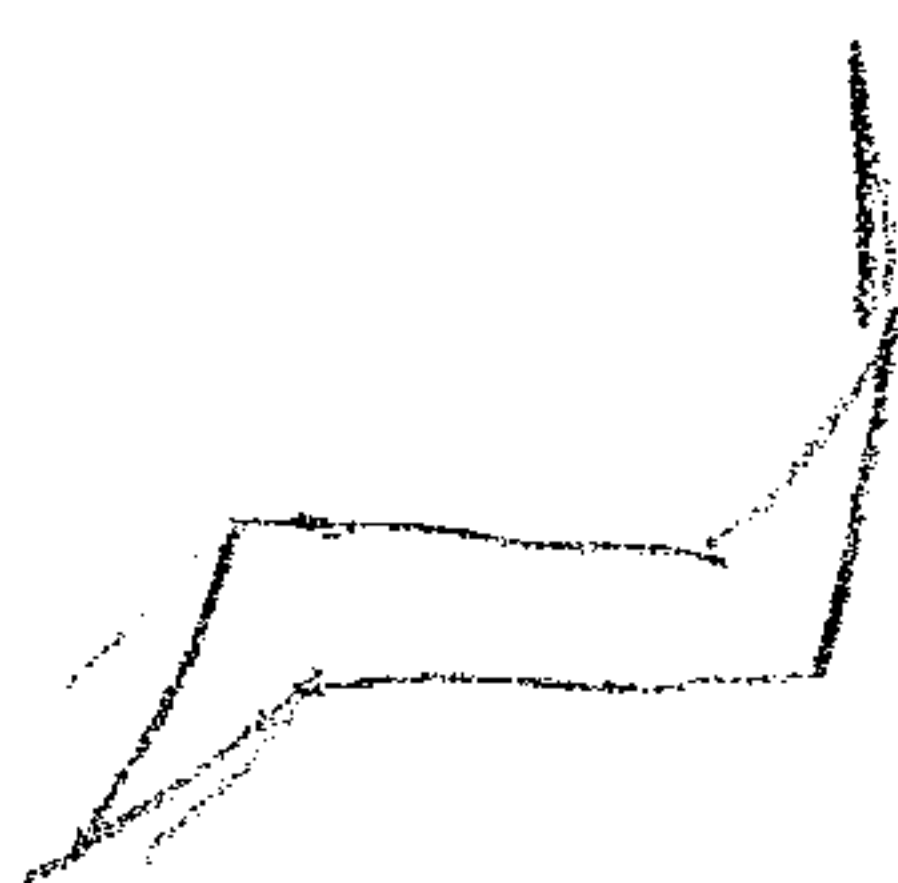
(b)



(c)



(d)



Electronic Configuration of

