|  |  |
| --- | --- |
| **1. Boolean Algebra**  =  =  =  =  =  = 1 | **1.** 1 |
| **2. Boolean Algebra**  =  =  =  =  If , then . So and both cannot be 1.  Therefore (0,1,0), (0,1,1) and (1,1,0) make it FALSE. | **2.** (0,1,0)  (0,1,1)  (1,1,0) |
| **3. Data Structures**    The binary search  tree has a depth  of 7. The nodes at depth 6 are C, H, I, L, O. (This is the site of this year’s All-Star Contest.) | **3.** C, H, I, L, O |
| **4. Data Structures**  The stack is constructed using LIFO as follows: F, FO, FOR, FO, FOT,  FOTI, FOT, FOTE, FOTET, FOTE, FOTEH, FOTEHA, FOTEHAN,  FOTEHA, FOTEHAN, FOTEHA, FOTEH, FOTEHI, FOTEHIV,  FOTEHIVE, FOTEHIVER, FOTEHIVE, FOTEHIV, FOTEHIVS,  FOTEHIV, FOTEHI, FOTEHIA, FOTEHIAR, FOTEHIARY, FOTEHIAR,  FOTEHIA, FOTEHI, FOTEH, FOTE.  The next item popped is a E. (This is ACSL’s 40th year.) | **4.** E |
| **5. Regular Expressions**  Given: 1\*01(01)\*1100\*  A. 0010100 - fails - must start with 01 not 00  B. 101011100 - matches  C. 01010101100 - fails - missing a 1, should end with 11100  D. 1010110 - fails - should end with 1110  E. 01110 - matches | **5.** B, E |