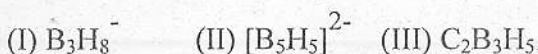


**EASTERN UNIVERSITY, SRI LANKA**  
**SECOND EXAMINATION IN SCIENCE (2003/2004)**  
**EXTERNAL DEGREE**  
**SECOND SEMESTER (OCT/NOV 2007)**  
**EXTCH 205 BORON CHEMISTRY AND SILICATES**

Time: 01 Hour

Answer All Questions

1. (a) (i) Classify, giving reasons, the following boranes /carboranes into their structural groups.



- (ii) Sketch their predicted geometry  
 (iii) Discuss the nature of bonding in them

- (b) How can the following transformation be effected through organometallic intermediate?

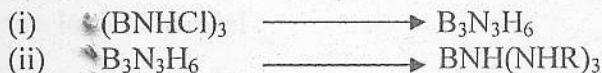


- (c) Draw the 'styx' number for  $B_2H_6$

2. (a) (i) List the structural types of silicates  
 (ii) Classify the following silicates into their structural types.

- I.  $Ca_2Mg_5(Si_4O_{11})_2$  (Tremolite)  
 II.  $Be_3Al_2Si_6O_{18}$  (Beryl)  
 III.  $Mg_3(OH)_2Si_4O_{10}$  (Talc)  
 IV.  $Be_2SiO_4$  (Phenacite)

- (b) Show by means of equations how the following transformations could be effected via organometallic intermediates.



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