The pattern for SA-Part B questions has been changed.

SA – PART B sample questions are given below. For the SA part A and SB/SX questions the SA 2009 and SB 2009 questions can be taken as model questions.

Question: Let P be an interior point of a triangle ABC. Extend AP, BP, CP to meet BC, CA, AB respectively in D, E, F. Suppose the areas of the triangles APE, APF and BPD are equal, prove that P is the centroid of triangle ABC. (5 marks)

Question: A pendulum consists of a light rope of length *l* which carries a spherical bob of mass *m*. The bob is imparted a horizontal velocity $v_0 = \sqrt{4gl}$ when it is at its lowest point.

a. What is the speed of the bob when the rope is horizontal? (1 mark)

b. What is the tension in the string at that point? (1 mark)

c. What is the angular acceleration of the bob at this point? (1 mark)

d. At what height of the bob (measured from the lowest point) does the rope slacken? (2 marks)

Question: A sodium salt (X) on reaction with HCl (aq) gives CO_2. On gentle heating, X gives Y, which also on reaction with HCl (aq) gives CO_2, which when passed into water, makes it acidic. CO_2 is also absorbed in KOH. Fill in the blanks.

a. X is _____ (1 mark)

b. Y is _____ (1 mark)

c. The compound that is formed in water is _____ (1 mark)

d. A chemical reaction that is suitable for the identification of CO_2 is _____ (1 mark)

e. The compound formed when CO_2 is absorbed by KOH is _____ (1 mark)

Question: The fingerprints of identical twins are about 85%(+/-5%) similar, non-identical twins 57% (+/-4%), non-twin siblings 60% (+/-7%), and unrelated individuals 27% (+/-13%). Indicate whether you agree, partially agree or disagree with the following statements,

giving reasons.

a. Fingerprints are genetically determined (2 marks)

b. The uterine environment affects fingerprints (2 marks)

c. Random processes are involved in shaping fingerprints (1 mark)