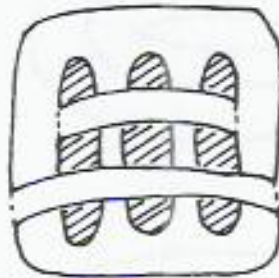


(iii)



[2]

(iv)



[3]

Question 9 – 15 marks

- (i) For each of the subdivisions obtained in Question 8, write down the corresponding number of vertices (N_0), edges (N_1) and faces (N_2). [4]
 - (ii) For each of the above subdivisions, calculate the corresponding value of the Euler characteristic χ . [3]
 - (iii) For each surface in Question 8, calculate the number, β , of its boundary components. [3]
 - (iv) The Euler characteristic of an n -holed torus with β boundary components is $2 - 2n - \beta$. Use this fact together with your answers to parts (ii) and (iii) to describe each surface in Question 8 as a suitable torus. In each case write down the corresponding values of n and β . You may assume that the surfaces are orientable. [5]
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