

KL

Q1

The graph below can be optimally partitioned using the **KL algorithm**. The dotted line represents the initial partitioning. Assume all the **edges** have the **same weight**.

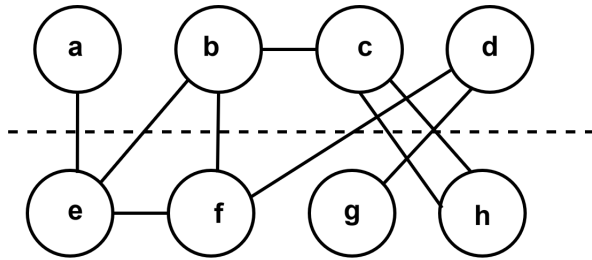


Figure 1

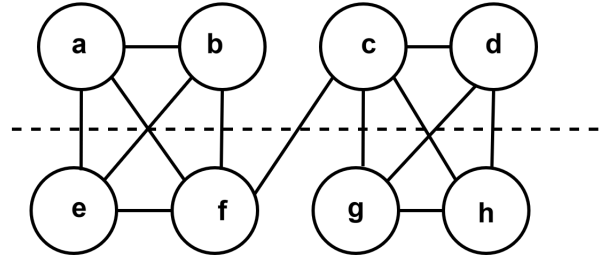


Figure 2

(a)	What are the common steps of Physical Design ?	[2]
(b)	Find the iteration number in the first pass of the KL algorithm for Figure 1 . Calculate the costs of moving each node from one partition to another in Figure 1 .	[2]
(c)	Perform the first iteration of the KL algorithm for Figure 1 and swap the best pair of nodes. After that, find the old cut cost and the new cut cost.	[7]
(d)	For Figure 2, the best gain value of different iterations is given below, $\Delta g_1 = 3$ $\Delta g_2 = 5$ $\Delta g_3 = -6$ $\Delta g_4 = -2$ (i) Calculate the cumulative gain of every iteration of the first pass. (ii) Are any further passes necessary? State the reason for your answer.	[4]