QUIZ # 3 SOLUTION

**Question #1:** **(06 points)**

**Find the pre-order, in-order and post-order traversal of the tree in figure 1.**

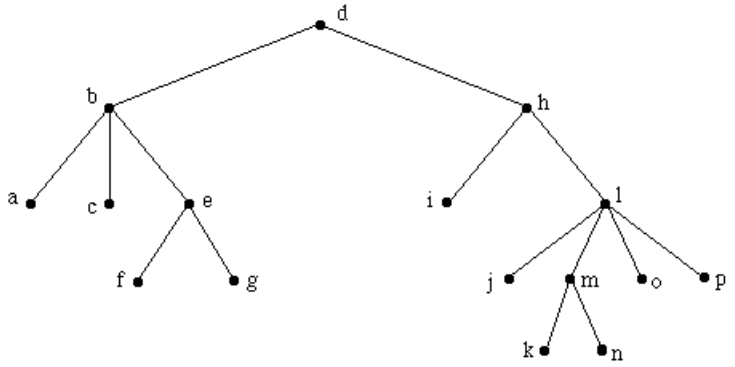


**Figure 1: A Tree Graph**

**Solution:**

**Sequence: Pre-order, In-order, and Post-order**

53. $d\ b\ a\ c\ e\ f\ g\ h\ i\ l\ j\ m\ k\ n\ o\ p$

54. $a\ b\ c\ f\ e\ g\ d\ i\ h\ j\ l\ k\ m\ n\ o\ p$

55. $a\ c\ f\ g\ e\ b\ i\ j\ k\ n\ m\ o\ p\ l\ h\ d$

**Question # 2:** **(05 points)**

Find a minimal spanning tree (MST) for this weighted graph (figure 2) using Prim's algorithm. Show the steps of adding edges to the MST. What is the final total weight of MST?

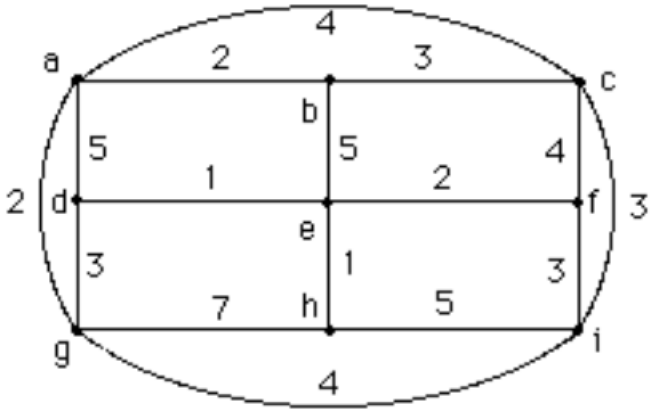


**Figure 2: A Weighted Graph**

**Solution:**

In order, the following edges are added: $\{d, e\}$, $\{e, h\}$, $\{e, f\}$, $\{d, g\}$, $\{g, a\}$, $\{a, b\}$, $\{b, c\}$, $\{c, i\}$. The weight of the minimal spanning tree is 17.

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**Question # 3:** **(04 points)**

The following string is postfix notation for an algebraic expression. Write the expression in prefix and infix notations.

(Note: "." represents multiplication and "↑" represents power sign (^))

$$2\ 3\ a \cdot x + 4 \uparrow + 7 \uparrow$$

***Solution:***

***Prefix and Infix***

60. $\uparrow + 2 \uparrow + \cdot\ 3\ a\ x\ 4\ 7$
61. $2 + 3 \cdot a + x \uparrow 4 \uparrow 7$

***BEST OF LUCK!***