1. **Determine** Big-O representation for the following function: [CO3, Marks - 8]

$$f(n) = (n^3 + n^2 \log n + 7^n) + (\log(n!) + n! + 7^n)$$

2. **Determine** if the following graph (Fig - 1) is
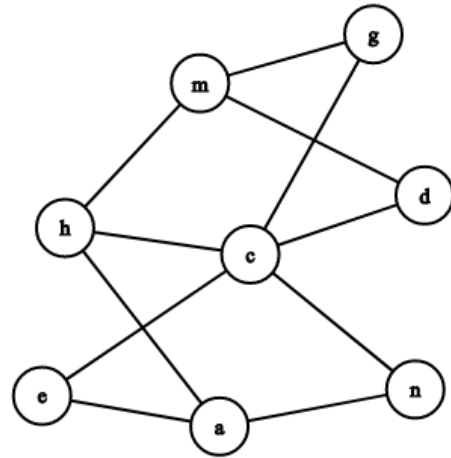bipartite or not.
[CO4, Marks – 4]

Fig - 1

3. Take the last digit of your student Id. Now draw
a tree from the following graph (in **Fig - 2**) is
whose root is the last digit of your student id,
e.g.
If your student id is 2019-3-60-187, last digit of
your student Id is 7. So, you should draw a 7-
rooted tree from the following graph.

If your student id is 2019-3-60-185, last digit of
your student Id is 5. So, you should draw a 5-
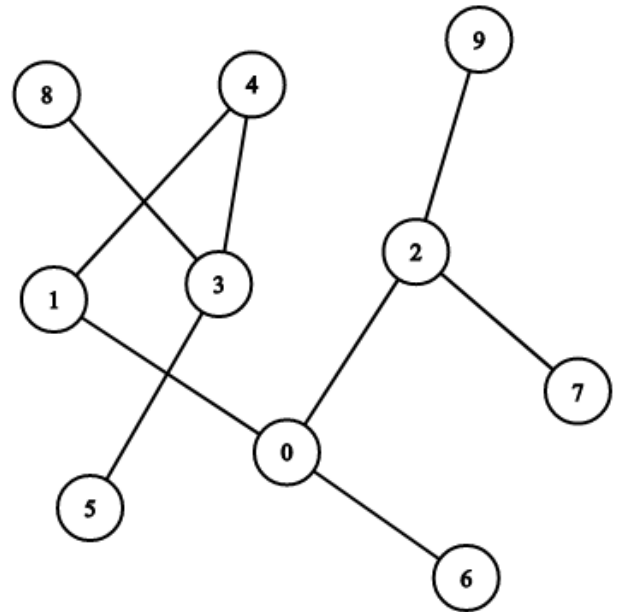rooted tree from the following graph.
[CO4, Marks – 2.5]

Fig - 2