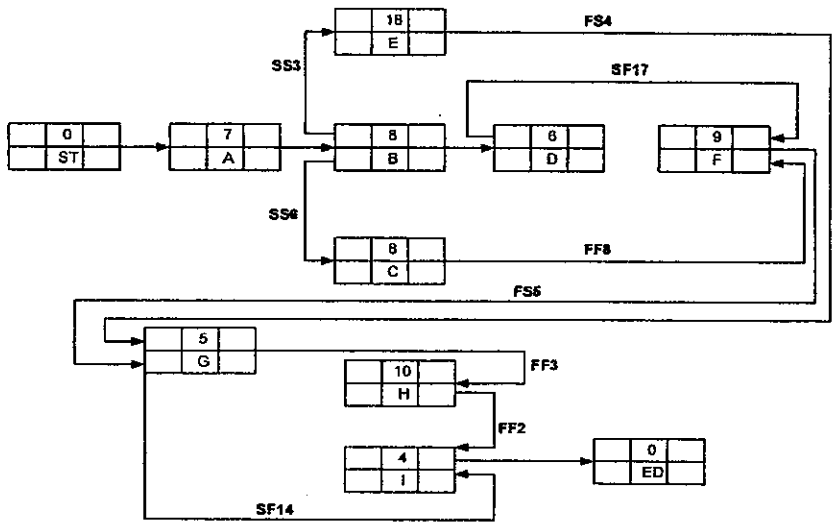
題號： 223　　國立臺灣大學 109 學年度碩士班招生考試試題

科目： 營建管理

節次： 6

1. **Given the below CPM (Critical Path Method) network, calculate the start/finish days and the total float, free float, interfering float and independent float (TF/FF/IF/IDF) for each activity.**

(35 marks)



2. **Describe the various project delivery methods in the construction market and list their pros and cons.**

(25 marks)

3. **Figure 1 shows the AOA (Activity-on-Arrow) network of a construction project, with the precedence relationships and the activity durations indicated. The total costs of the different activities are summarized in the following table:**

Activity	Duration (weeks)	Total Cost ($)
1-2	2	4,500
2-3	10	16,500
2-4	10	18,000
2-5	8	16,800
3-6	6	15,000
4-6	4	8,500
4-7	8	17,600
5-7	6	16,600
6-8	6	15,800
7-8	5	10,500
8-9	3	7,900

The mark-up for the activities on the critical path is 15% and for the other activities is 10%. Progress measurements are made every four weeks with payments due four weeks later. 10% retention money is required for the project. The work on all the activities is to start at their earliest start times and to continue without delay. The value of work in progress is to be proportional to the time spent on it.

(a) **Draw:** i) **the S-curve;**
ii) **the cumulative value vs. time curve; and**
iii) **the cumulative income curve.** **(21 marks)**

(b) **Draw the cash flow graph over the duration of the project.** **(7 marks)**

(c) **Draw a graph of working capital vs. time.** **(7 marks)**

(d) **What is the total profit expected from the project?** **(5 marks)**

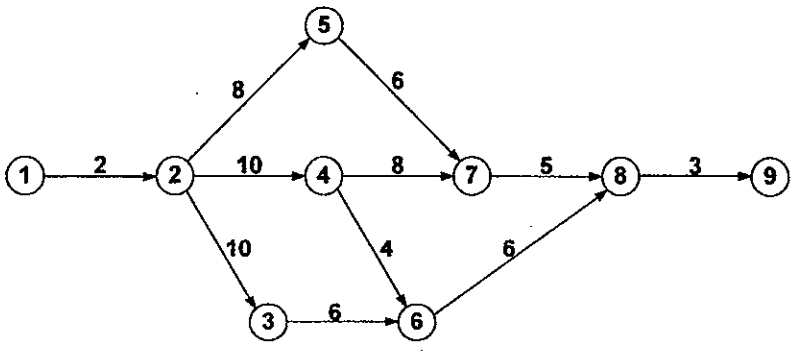


Figure 1. AOA Network Diagram

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