Technological and Higher Education Institute of Hong Kong
Faculty of Science and Technology

SBS5224 Engineering Management

Assignment 2 (Due Date: 8 April 2019)

Consider a project involving the following activities and precedence relationship. The cost of each activity is listed below:

Activity	Predecessor	Cost ($/week)	Duration (week)		
			Most likely (m)	Optimistic (a)	Pessimistic (b)
A	-	5,000	2	1	4
B	-	3,000	3	2	5
C	A	6,000	4	2	7
D	B	2,000	2	1	3
E	B	4,000	3	2	6
F	A	7,000	2	1	4
G	C	4,000	2	1	3
H	D	8,000	2	1	4
I	A	6,000	4	3	7
J	E, G, H	5,000	2	1	3
K	F, I, J	3,000	2	1	4

(i) Sketch the Activity-On-Node (AON) and the Activity-On-Arrow (AOA) network diagrams, respectively.

(14 marks)

(ii) On the AON network diagram, determine the critical path and the overall duration of the project.

(15 marks)

(iii) Plot the Gantt Chart using Earliest Start time (ES) with Float.

(11 marks)

(iv) Determine the cost distributions using Earliest Start time (ES) and Latest Start time (LS) respectively.

(15 marks)

(v) Plot the cumulative cost curve (S-Curve) of the project on Early Start, Late Start and Target Schedule.

(12 marks)

(vi) Determine the expected duration (T_e), variance (V) and standard deviation (S) of the project using a PERT network.

(26 marks)

(vii) Determine the probability that the project will complete between 10 weeks and 14 weeks.

(7 marks)