Decision 2 Critical Path Analysis Questions

3 **[Figures 1 and 2**, printed on the insert, are provided for use in this question.]

A building project is to be undertaken. The table shows the activities involved.

Activity	Immediate Predecessors	Duration (days)	Number of Workers Required
A	—	2	3
B	*A*	4	2
C	*A*	6	1
D	*B*, *C*	8	3
E	*C*	3	2
F	*D*	2	2
G	*D*, *E*	4	2
H	*D*, *E*	6	1
I	*F*, *G*, *H*	2	3

(a) Complete the activity network for the project on **Figure 1**. *(3 marks)*

(b) Find the earliest start time for each activity. *(2 marks)*

(c) Find the latest finish time for each activity. *(2 marks)*

(d) Find the critical path and state the minimum time for completion. *(2 marks)*

(e) State the float time for each non-critical activity. *(2 marks)*

(f) Given that each activity starts as early as possible, draw a resource histogram for the project on **Figure 2**. *(4 marks)*

(g) There are only 3 workers available at any time. Use resource levelling to explain why the project will overrun and state the minimum extra time required. *(3 marks)*

1 [**Figures 1 and 2**, printed on the insert, are provided for use in this question.]

A construction project is to be undertaken. The table shows the activities involved.

Activity	Immediate Predecessors	Duration (days)
A	–	2
B	*A*	5
C	*A*	8
D	*B*	8
E	*B*	10
F	*B*	4
G	*C*, *F*	7
H	*D*, *E*	4
I	*G*, *H*	3

(a) Complete the activity network for the project on **Figure 1**. *(3 marks)*

(b) Find the earliest start time for each activity. *(2 marks)*

(c) Find the latest finish time for each activity. *(2 marks)*

(d) Find the critical path. *(1 mark)*

(e) State the float time for each non-critical activity. *(2 marks)*

(f) On **Figure 2**, draw a cascade diagram (Gantt chart) for the project, assuming each activity starts as **late** as possible. *(4 marks)*

1 [**Figure 1**, printed on the insert, is provided for use in this question.]

A building project is to be undertaken. The table shows the activities involved.

Activity	**Immediate Predecessors**	**Duration (weeks)**
A	–	2
B	–	1
C	*A*	3
D	*A*, *B*	2
E	*B*	4
F	*C*	1
G	*C*, *D*, *E*	3
H	*E*	5
I	*F*, *G*	2
J	*H*, *I*	3

(a) Complete an activity network for the project on **Figure 1**. *(3 marks)*

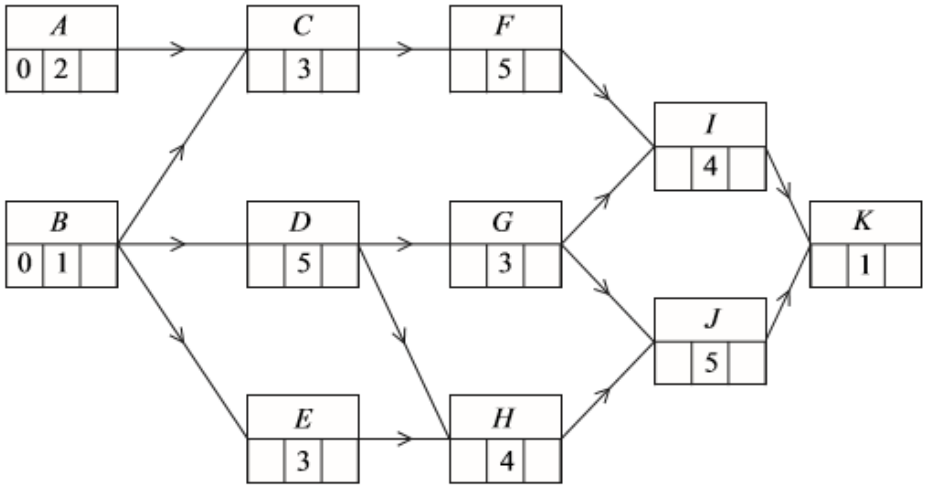
(b) Find the earliest start time for each activity. *(2 marks)*

(c) Find the latest finish time for each activity. *(2 marks)*

(d) State the minimum completion time for the building project and identify the critical paths. *(4 marks)*

1 [**Figures 1 and 2**, printed on the insert, are provided for use in this question.]

The following diagram shows an activity diagram for a building project. The time needed for each activity is given in days.



(a) Complete the precedence table for the project on **Figure 1**. *(2 marks)*

(b) Find the earliest start times and latest finish times for each activity and insert their values on **Figure 2**. *(4 marks)*

(c) Find the critical path and state the minimum time for completion of the project. *(2 marks)*

(d) Find the activity with the greatest float time and state the value of its float time. *(2 marks)*

Figure 1 (for use in part (a))

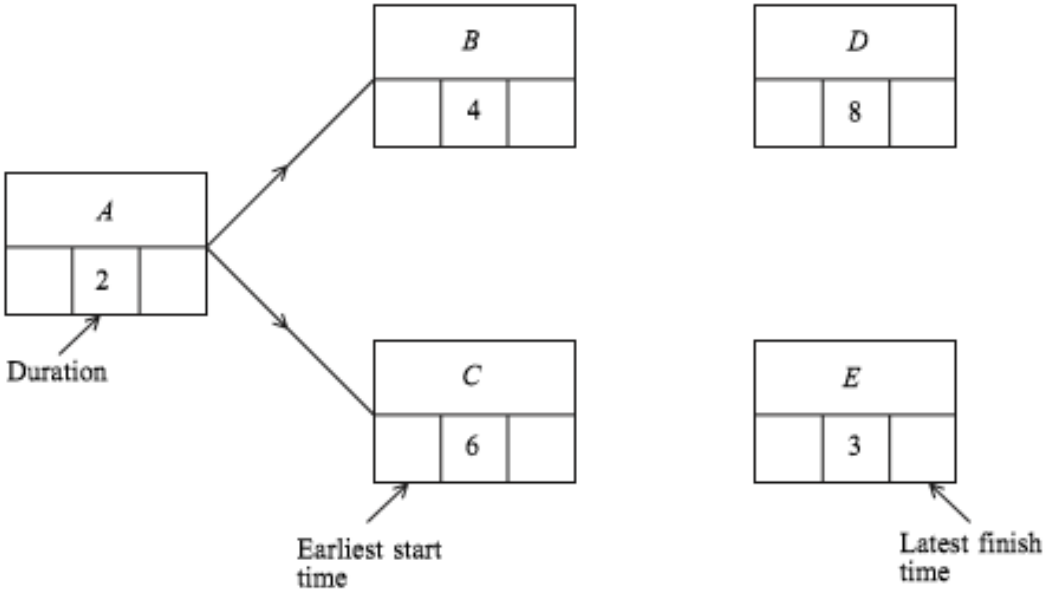


Figure 2 (for use in part (f))

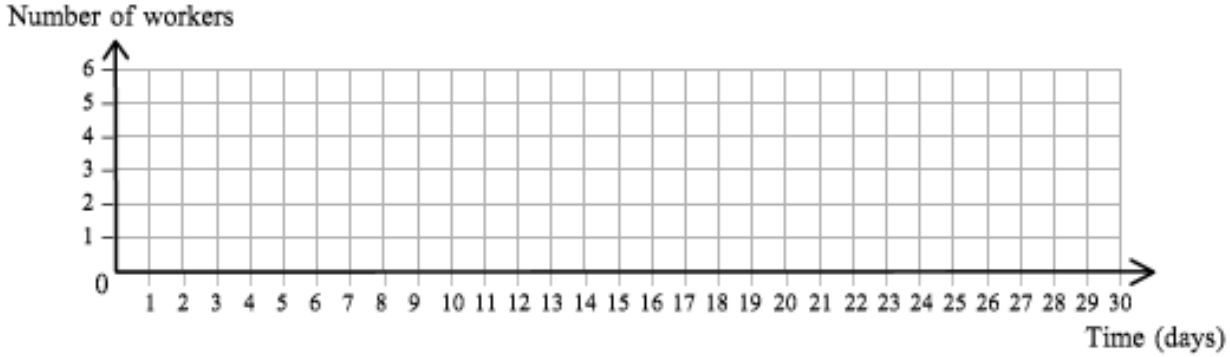


Figure 1 (for use in parts (a), (b) and (c))

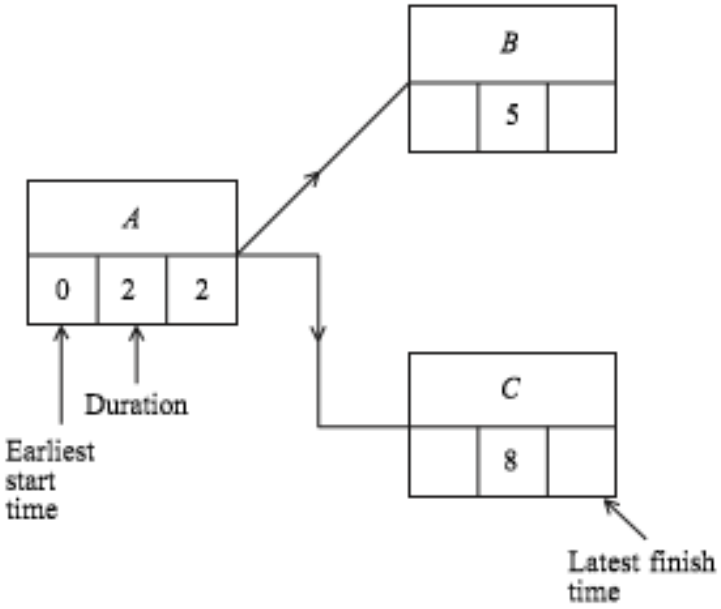


Figure 2 (for use in part (f))

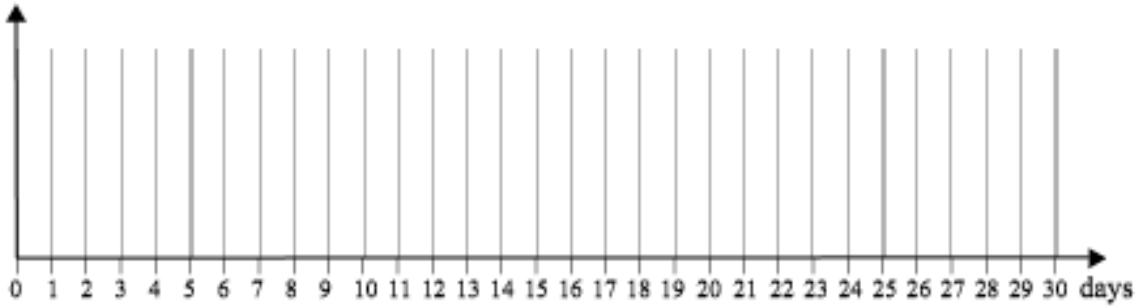


Figure 1 (for use in Question 1)

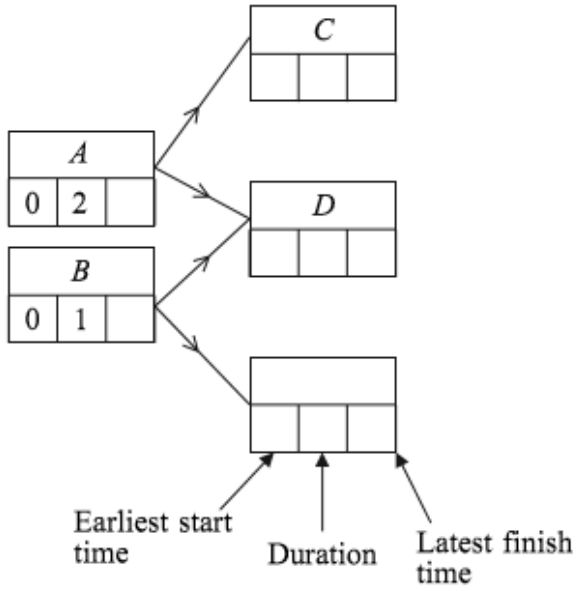


Figure 1 (for use in Question 1)

Activity	Immediate Predecessors
A	–
B	–
C	
D	
E	
F	
G	
H	
I	
J	
K	

Figure 2 (for use in Question 1)