

TUTORIAL 4 - IFS233 (2025) – For Marks

This tutorial period will be divided into the following sessions:

Session 1: Task/activity – 35 min [Answering the questions]

Session 2: Admin/Q&A – 10 min [Admin & group assignment related questions/queries]

AIMS

This tutorial will assess students' understanding of sequencing project activities using the project schedule management frameworks, particularly the activity-on-node network work diagram.

TOPIC

Project schedule management

Guidelines for giving the tutorial task



- ✓ Some students may not have attended classes regularly, so they might feel less prepared. As there is limited time during the tutorial to go over background content, kindly encourage them to complete the task during the session and hand it in for marking.
- ✓ Display the student page on the screen so everyone can follow and work from it.
- ✓ Remind students that tasks must be completed and submitted during their allocated tutorial session. Submissions outside of this time will not be accepted.
- ✓ Gently explain that tasks not submitted cannot be awarded marks.
- ✓ Reassure students that their understanding will improve as they attend lectures and tutorials regularly and as they engage with the resources available on iKamva.

Session 1 – Complete tutorial task

Time allocation = 35 minutes

Mobile App Development Project Scenario

You have joined a project team at a small technology start-up that has just secured funding to develop a mobile app for local businesses. The team is excited but aware that project work rarely goes as planned. Some tasks may take less time if everything goes smoothly, while others could face unexpected delays. To manage this uncertainty, your project manager asks the team to use the **Program Evaluation and Review Technique (PERT)**. This method is valuable in IT project management because it integrates **uncertain task estimates** into planning, reducing the risk of unrealistic schedules. It also supports more accurate forecasting of project timelines, essential for balancing resources, costs, and stakeholder expectations.

The team has estimated the duration of each project activity, including the best case, the most likely case, and the worst case, as shown in the activity list table below. Your task is to calculate each activity's expected time (TE) or PERT weight average and then use these values to construct an activity on node (AON) network diagram that will guide the project's scheduling and critical path.

Activity	Best	Likely	Worst	Expected time (TE)	Predecessors
A	5	5	10		---
B	3	5	9		---
C	7	11	15		A
D	4	4	4		B, C
E	8	13	18		B
F	3	15	16		C, D
G	6	9	11		E
H	9	12	17		F
I	6	8	10		G, H
J	2	8	10		I

Questions

Total Marks [30]

1. Use the PERT weighted average formula to calculate the expected time for each activity and round the duration to the nearest whole number.
2. Draw an AON network diagram and calculate early start, early finish, late start and late finish times, floats (Free and total) for each activity. Make sure you fully label all nodes in the network.
3. Identify the project's critical path and its length.
4. Identify 'burst' and 'merge' activities.
5. If activity G is delayed by 6 days, what effect will the delay have on activity I?

Session 2 – Discuss group assignment and address other issues

Time allocation = 10 minutes

Closing

- Remind students to read the additional resources placed on Ikamva.
- Remember to take the attendance register.

You can end any way you wish, but try to always end on a high note so that the students look forward to the next class ☺.

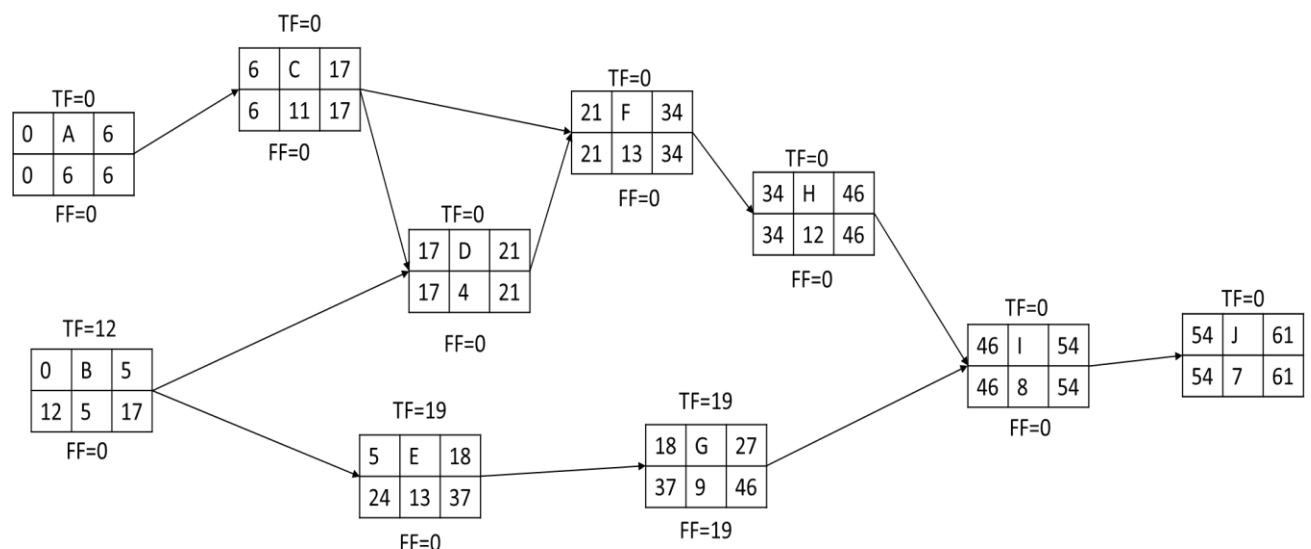
Memo - Total Marks

[30 marks]

1. Use the PERT weighted average formula to calculate the expected time for each activity and round the duration to the nearest whole number. [5 marks]

Activity	Best	Likely	Worst	Expected time (TE)	Predecessors	Marks
A	5	5	10	6	---	$\frac{1}{2}$
B	3	5	9	5	---	$\frac{1}{2}$
C	7	11	15	11	A	$\frac{1}{2}$
D	4	4	4	4	B, C	$\frac{1}{2}$
E	8	13	18	13	B	$\frac{1}{2}$
F	3	15	16	13	C, D	$\frac{1}{2}$
G	6	9	11	9	E	$\frac{1}{2}$
H	9	12	17	12	F	$\frac{1}{2}$
I	6	8	10	8	G, H	$\frac{1}{2}$
J	2	8	10	7	I	$\frac{1}{2}$

2. Draw an AON network diagram and calculate its early start, early finish, late start and late finish times, floats (Free and total) for each activity. Make sure you fully label all nodes in the network. [19 marks]



Marking guide

- ✓ $\frac{1}{2}$ mark for both correct ES and EF in every activity
- ✓ $\frac{1}{2}$ mark for both correct LS and LF in every activity

Example

TF=0 1/2		
6	C	17 1/2
6	11	17 1/2

$$FF=0 \quad \frac{1}{2}$$

Take note: This means it is 1 mark per activity if they got correct ES, EF, LS and LF

- ✓ $\frac{1}{2}$ mark for correct Total float for each activity
- ✓ $\frac{1}{2}$ mark for correct free float for each activity except for activity J
- ✓ 1 mark for Total Float for activity J

3. Identify the project's critical path and its length. [2 marks]

Critical path: A-C-D-F-H-I-J [1 mark]

Length: 61 days [1 mark]

4. Identify 'merge' and 'burst' activities. [2 marks]

Burst activities: B; C [1 mark]

Merge activities: D; F; I [1 mark]

5. If activity G is delayed by 6 days, what effect will the delay have on activity I? [2 marks]

Answer

No effect on Activity I, because the delay is within the free float of G. The 6-day delay of Activity G will not affect the start or duration of Activity I. Activity I can start on time, and the overall project schedule remains unaffected by this 6-day delay [2 marks]