MECHANICAL ENGINEERING DEPARTMENT
INDIAN INSTITUTE OF TECHNOLOGY, DELHI
MEL 760 PROJECT MANAGEMENT
MAJOR TEST

Date: 28th November 2006 **Time: 10.30 – 12.30 P.M**
Maximum marks 30

Note: Attempt any four questions. All questions carry equal marks.

1. The following data is given for the activities in a project.

Job	a	b	c	d	e	f	g	h	i
Predecessors	b,d	h	e	e	--	c	c	--	g
Duration (days)	6	4	2	1	8	3	6	9	5

(a) Draw the A-O-A network
(b) Determine all the four floats for all the activities.
(c) What is the critical path?
(d) If activity b increases in duration by 2 days what is the critical path?
(e) If the increase in duration of activity b is by 4 days what is the critical path?

2. For the network shown in Fig 1 all activities follow a uniform distribution with parameters indicated in the Table below.

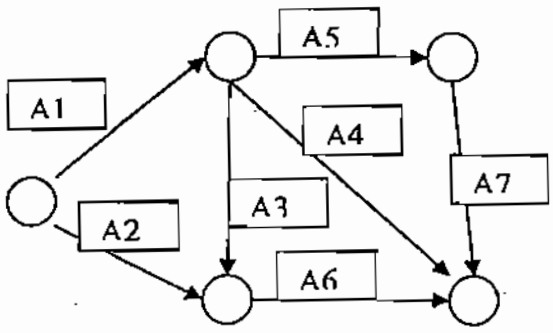

Fig. 1

Activity	Lower duration, Upper duration
A1	10, 20
A2	20, 30
A3	10, 20
A4	20, 40
A5	10, 30
A6	10,20
A7	20,30

Compute the 90 % confidence times to reach each of the five nodes under both PERT and CCP.

3 The normal and crash durations for the activities of a project are given below. Determine the Project Cost Curve. Use either Fulkerson's procedure or the Heuristic approach.

Arc	Crash duration	Normal duration	Cost slope
(1,2)	4	6	8
(1,3)	4	8	9
(1,4)	3	5	3
(2,4)	3	3	infinity
(2,5)	3	5	4
(3,6)	8	12	20
(4,6)	5	8	5
(5,6)	6	6	infinity

4. A project has the following data:

Actitity	Predecessors	Duration (days)	Men/day
A1	--	2	4
A2	--	1	2
A2	A1	3	2
A4	A1	2	4
A5	A2, A3	1	4

(a) For both the ES/LS schedules perform resource aggregation and compare the peak and average resource load.
(b) If the resources were limited to 4 men per day and the project duration could be anywhere between 6-9 days develop and ILP for minimizing the project duration under resource constraints.

5. Write short notes on any four of the following:

(a) Project identification and screening
(b) Financial appraisal of projects
(c) Teamwork and Leadership in projects
(d) Problems at project completion
(e) Matrix organization for projects.