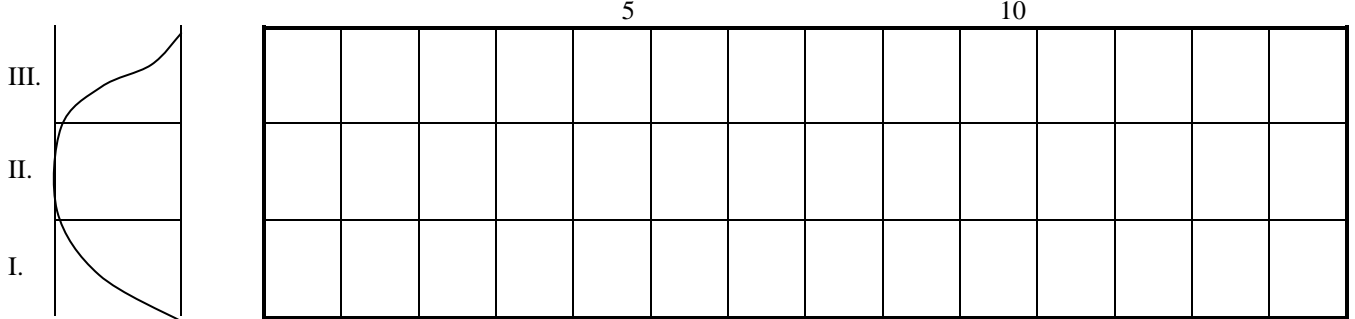
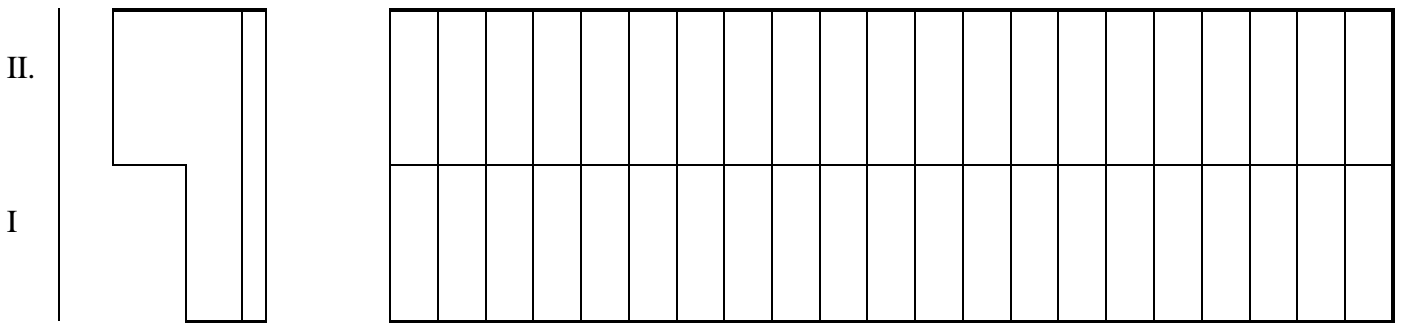


1.5 At an access-road construction a 300 m-s long hollow (cut-through) excavation is to be performed. Due to the varying depth the site engineer estimated the likely duration of processes for three sections (I, II, III) within it, separately. Durations of mass excavation performed by heavy equipments are estimated to be 2, 6 and 1 days – respectively. Duration of refinery excavation (progression of which is less effected by the depth and is to be performed by live labour) is estimated as 9 days for the total of 300 m-s. When should the refinery excavation be started for to provide at least a day succession time after the mass excavation and the labourers performing it with no break.



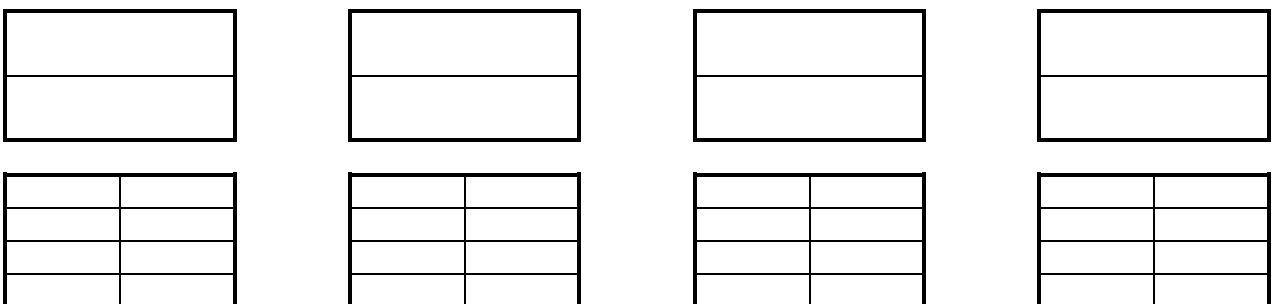
1.6 A retaining wall is to be constructed. According to the varying height the site engineer divided the overall length of it into two sections (I, II). Foundation is not changing along the wall. Minimum succession time should be at least one day. There are specialized groups (workers and/or equipments) assigned to the tasks to be performed, listed below, one for each. Do prepare a schedule of performances in form of a Gantt-Chart and of a two-dimensional time-route chart („Cyclogram”) too.

Task	Durations		Working days																				
	I.	II	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Excavation	12																						
Foundation	12																						
Formwork	4	8																					
Concreting	3	6																					
Formw. removal	2	4																					



1.7 For to perform a complex job („technology” or „structural” process) different kinds of sub-ordinate processes necessitating special resources for each (a, b, c, ...) are to be done in the same time, simultaneously („synchronized resources”). Knowing the quantities, and the available capacities (time standards or performances) do determine the likely duration of the job.

1.8 At an embankment construction it is necessary to build a sheetwall barrier. To keep up with the deadline it is necessary to apply two sets of equipments (two pile-driver machines and their staffs). Do develop as many variants in starting location and in progress direction for the two machines working simultaneously as you can.



2.6 At a construction site the main tasks are organized into four succeeding processes (A, B, C, D). Assigned resources and estimated durations of each are listed below:

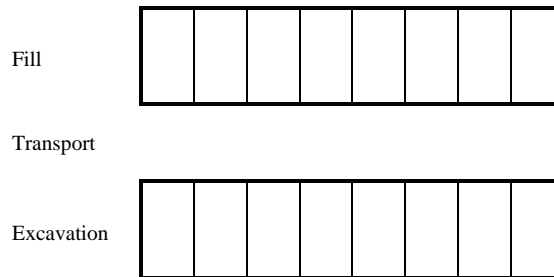
- process A 5 workers 14 days,
- process B 10 workers 24 days,
- process C 8 workers 12 days,
- process D 6 workers 24 days.

Minimum succession time is a day. Do plot a schedule for the performances.

Prepare a proposal for shortening the overall execution time keeping in mind that neither more working hours (shifts) in a day nor more workers for any of the processes are available? (Minimum capacity to be assigned to any process is 2 workers.)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29

3.1 In case of building a retaining wall the refill behind is to be performed in four layers. The soil for fill is excavated at a near-by pit, and transported by trucks to the foot of the wall. There the dumped soil is manipulated by a loader-excavator and is poured behind the wall, where rollers are used for compacting. Do plot the progression curves (cyclograms) of excavation and of fill.



3.2 At a public supply-line construction the refill of the trench of 1000 m-s is to be scheduled. Do plot the progression curves (cyclograms) of the performances in cases below. (In both cases the overall execution time should be 8 days.)

- a; The trench is refilled in four layers, one layer along the total length at a time.
- b; The trench is refilled in four layers, in four equal sections, one layer along a section at a time.

1	2	3	4	5	6	7	8

1	2	3	4	5	6	7	8

Do plot cyclograms for the cases above, but with two groups (of workers and/or machines) working simultaneously. The overall execution time should be 8 days in these cases too.

1	2	3	4	5	6	7	8

1	2	3	4	5	6	7	8

1	2	3	4	5	6	7	8

1	2	3	4	5	6	7	8