LRDI - Class

In a sports school. the sports director was considering five energy drinks -A. B. C, D and E available in the market, for providing to the athletes in that school_ The table below gives the composition of carbohydrates, proteins, fats and minerals in the five drinks. The cost per litre of the drinks A, B, C, D and E are Rs.150, Rs.50, Rs.200, Rs.500 and Rs.100 respectively.

Drink	Composition (%)			
	Carbohydrates	Proteins	Fats	Minerals
A	20	30	20	30
B	40	10	30	20
C	10	35	30	25
D	25	20	45	10
E	20	25	15	40

1. A drink containing at least 26% protein and at least 20% carbohydrate is to be prepared. In how many different ways can one prepare such a drink by mixing two of the given drinks?
a) 3 b) 4 c) 5 d) 6

2. What is the least cost per litre incurred if any two of the given drinks are mixed to get a drink containing at least 25% each of carbohydrates and minerals?
a) Rs.57.5 b) Rs.60 c) Rs. 62.50 d) Rs. 70

3. In what proportion should one combine the drinks B and E to prepare a drink containing at least 25% minerals and having the least cost per litre?
a) 1 : 2 b) 2 : 1 c) 1 : 3 d) None of these

The following are the different steps involved in the completion of a project which is divided into various tasks - A through I. The tasks completed. The project is completed when all the tasks are completed.

Task	Duration in hrs	Tasks to be completed before
A	3	--
B	4	--
C	2	--
D	5	A, B
E	7	C
F	1	B, E, G
G	4	C, D, E
H	3	B, F
I	6	A, C, G

Q1- What is the minimum duration in which the task can be completed?

Q2- At most how many tasks can be completed in the first 9 hours from the start?

Q3- What is the shortest possible time from the start by when task F can be completed?

The following are the details of different steps involved in the opening of a store after finalization of the premises. More than one work can be calmed one simultaneously as long as all work to be completed before it are over.

Work	Code	Duration (days)	Other work that should be completed before starting the work
Planning	A	2	--
First painting	B	3	--
Work space partitioning	C	3	A, B
Networking	D	2	A
Air conditioning	E	4	D
Electrical work	F	2	B
False ceiling	G	5	D, E, I
Flooring	H	6	C
Fire safety	I	2	F
Final painting	J	6	B, E, F

Q1) What is the earliest time, from the start, by which the false ceiling work can start?
a) 7^{th} day b) 8^{th} day c) 9^{th} day d) 10^{th} day

Q2 If the work is to be finished at the earliest, then the latest by which the fire safety work can start is?
a) 6^{th} day b) 8^{th} day c) 9^{th} day d) 13^{th} day

Q3) What is the least time from the start in which all the work can be completed?
a) 12 days b) 13 days c) 14 days d) None of these

Q4) If the work is to be done in the least possible time, what can be the maximum time gap between the stall of the networking work and the start of the flooring work?
a) 4 days b) 5 days c) 6 days d) 7 days

Harsh, a contractor, landed a civil engineering project. To manage the project more effectively, he divided the project into seven tasks – Task 1 through Task 7. Among the seven tasks, certain tasks cannot be started until some prerequisite tasks are completed. Harsh assigns each of the seven tasks to exactly one person among five persons, A through E. However, only certain persons are competent to finish certain tasks and a task can be assigned only to a person competent to finish the task. For any task, any person who is competent to finish the task takes the same number of days to finish that task. Further, each person can work on only one task at a time and any person who finishes a task assigned to him takes one week's rest before he starts any other task.

The table below provides, for each task, the number of days required to finish the task, the persons who are competent to finish that task and the prerequisite tasks, if any, which need to be completed.

Task	Number of Days	Competent Persons	Prerequisite Tasks
Task 1	14	A, B	Task 5
Task 2	24	C, E	-
Task 3	23	C, D	Task 7
Task 4	16	B, D	Task, 3, Task 5
Task 5	19	C, E	Task 2, Task 7
Task 6	20	A, B	Task 1, Task 4
Task 7	25	B, C, E	-

Q1. What is the minimum number of days required for completing the project?

Q2. If the project is completed in the minimum number of days, to which of the following persons will the maximum number of tasks be assigned?

a. A b. C c. D d. All of them will be assigned equal number of tasks

Q3. If only two persons were assigned all the seven tasks, what is the minimum number of days by which Task 1 can be finished?

a. 48 b. 64 c. 80 d. 94

Q4. If only two persons were assigned all the seven tasks, what is the minimum number of days required for completing the project?

a. 144 b. 153 c. 115 d. 123

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