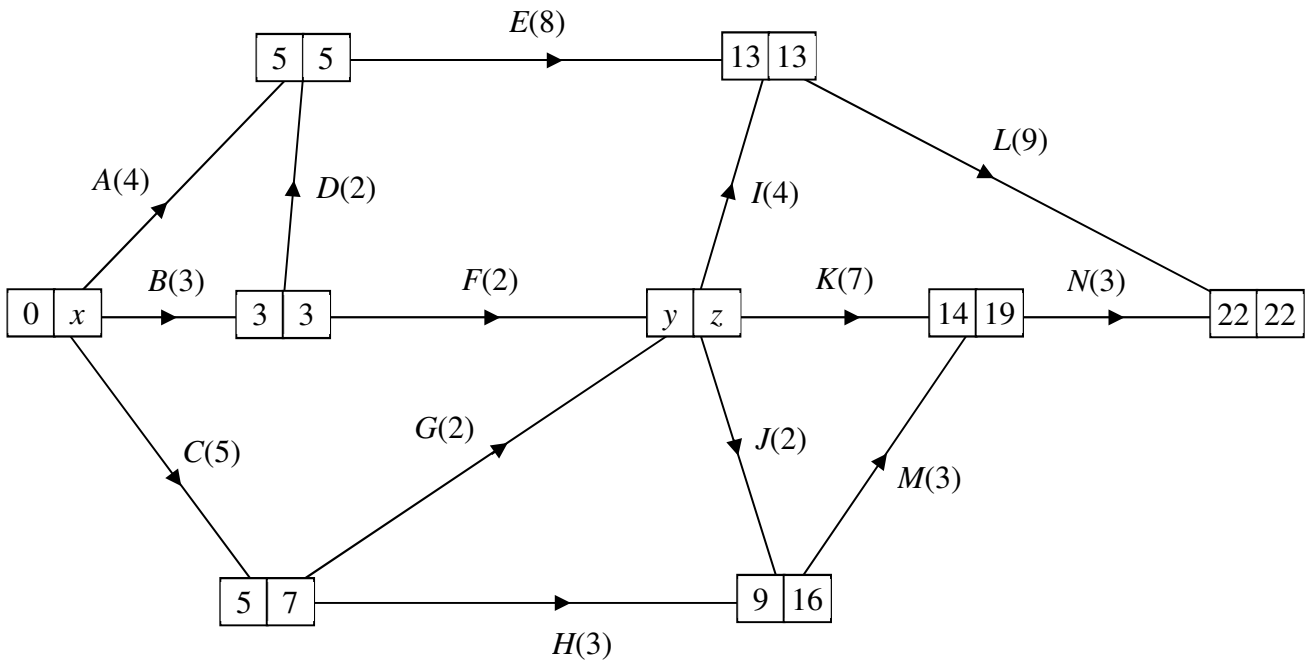


1. The precedence table shows the activities involved in a project.

Activity	Immediately preceding activities
A	-
B	-
C	-
D	A
E	A
F	B
G	B
H	C, D
I	E
J	F, H
K	G, J
L	G
M	L
N	L

- (a) Draw the activity network for this project, using activity on arc and using two dummies. (4)
- (b) Explain why each of the two dummies is necessary. (2)

2.



A trainee at a building company is using critical path analysis to help plan a project. The diagram shows the trainee's activity network. Each activity is represented by an arc and the number in brackets on each arc is the duration of the activity, in hours.

- (a) Find the values of x, y and z. (3)
- (b) State the total length of the project and list the critical activities. (2)
- (c) Calculate the total float time on
 - (i) activity N,
 - (ii) activity H. (3)

The trainee's activity network is checked by the supervisor who finds a number of errors and omissions in the diagram. The project should be represented by the following precedence table.

Activity	Must be preceded by:	Duration
<i>A</i>	-	4
<i>B</i>	-	3
<i>C</i>	-	5
<i>D</i>	<i>B</i>	2
<i>E</i>	<i>A, D</i>	8
<i>F</i>	<i>B</i>	2
<i>G</i>	<i>C</i>	2
<i>H</i>	<i>C</i>	3
<i>I</i>	<i>F, G</i>	4
<i>J</i>	<i>F, G</i>	2
<i>K</i>	<i>F, G</i>	7
<i>L</i>	<i>E, I</i>	9
<i>M</i>	<i>H, J</i>	3
<i>N</i>	<i>E, I, K, M</i>	3
<i>P</i>	<i>E, I</i>	6
<i>Q</i>	<i>H, J</i>	5
<i>R</i>	<i>Q</i>	7

(d) By adding activities and dummies amend the diagram on the sheet so that it represents the precedence table. (The **durations** of activities *A, B, ..., N* are all correctly given on the diagram in the answer book.) (4)

(e) Find the total time needed to complete this project.

(2)
Jan 04