MINISTERUL EDUCATIEI CERCETARII SI TINERETULUI
UNIVERSITATEA TEHNICA "GH. ASACHI" IASI
FACULTATEA DE CONSTRUCTII

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CONSTRUCTION MANAGEMENT

DISCIPLINA: CONSTRUCTION MANAGEMENT
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1. Labour performance rate (N_{Ti}) is:

a. Time needed for an optimum size team to carry out a unit of measure of a given work;
b. Time needed for an optimum size team to carry out a construction work;
c. Time needed for a team to carry out a unit of measure of a given work;
d. Time needed for a team to carry out a construction work.

2. Productivity rate Np is:

a. Quantity of work of the process made in one hour ;
b. Quantity of work completed by an optimal team or plant per unit of time ;
c. Quantity of work of the process made by one plant per unit of time;

3. Labour performance rate for an optimum team size is expressed as:

a. Unit of measure of the work (U.M.W.) b. Unit of measure of the work per unit of time. c. man·hours/U.M.W d. hours

4. The relationship between labour performance rate N_{Ti} and productivity rate N_{Tpi} is given by:

a. $N_{Pi} = m / N_{Ti}$ b. $N_{Pi} = N_{Ti}$ c. $N_{Pi} = 1 / N_{Ti}$

5. Productivity rate of the team per shift is given by:

a. $N_{PFSi} = N_{Pi} \cdot d_S$ b. $N_{PFSi} = \frac{g \cdot m_i}{N_{Ti}}$ c. $N_{PFSi} = \frac{g \cdot d_S \cdot m_i}{N_{Ti}}$ d. $N_{PFSi} = g \cdot N_{PSi}$

6. Plant performance rate N_{Tu} is:

a. The time needed for a plant to perform a hand made process;
b. The time needed for a plant to carry out a unit of measure of a given work;
c. The time needed for a certain plant to perform the mechanical processes for a construction.

7. Plant performance rate N_{Tu} is expressed in:

a. hours b. Unit of measure of the work (U.M.W.) c. plant · hours / U.M.W

8. The relationship between labour performance rate N_{Ti} and plant performance rate $N_{TU\,i}$ is given by:

a. $N_{TUi} = N_{Ti}$ if $m_i \geq 2$ b. $N_{TUi} = \frac{N_{Ti}}{m_i}$ c. $N_{TUi} = \frac{m_i}{N_{Ti}}$ d. $N_{TUi} = N_{Ti}$ if $m_i = 1$

9. The team size M in construction industry is:

a. Team equivalent b. Optimum team size c. Multiple of personal norme

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10. The labour productivity factor express:

a. The ratio between working days and the number of days within a month ;
b. The rate of the contractor which accomplish the designated work tasks on time;
c. The ratio between the standard time and real time for a specific work volume.

11. The rate of progress (t) is:

a. The necessary time to perform a construction process.
b. The necessary time to perform a process on specific field.
c. The necessary time to perform a certain work volume.

12. The rhytmically chain is characterized by:

a. Different rhytm from one sector to other
b. The constant rhytm on all sectors
c. $T_i = n \cdot t_i$
d. $T_i = \sum_{i=1}^{m} t_i$

13. The unrhytmically chain is characterized by:

a. The constant rhytm on all sectors
b. Different rhytm from one sector to other
c. $T_i = n \cdot t_i$
d. $T_i = \sum_{i=1}^{m} t_i$

14. The chain step is:

a. The time between the beginning of the same process on two successive sectors by two team size(having the same speciality)
b. The time between the beginning of two succesive processes on the same sector;
c. The time between the same process finish on two successive sectors.

15. The relation between the main organization parameters is:

a. $M_i = Q_i \cdot N_{Ti} \cdot I$
b. $Q_i = M_i \cdot N_{Pi} \cdot t \cdot I$
c. $Q_i = N_{Ti} \cdot M_i \cdot t \cdot I$

16. The performing time(expressed in shifts) for a construction process is given by the following equation:

a. $t_i = \frac{Q \cdot N_{Ti}}{d_S \cdot M_i \cdot I}$
b. $t_i = \frac{Q \cdot N_{Ti}}{d_S \cdot M_i \cdot I \cdot \gamma}$
c. $t_i = \frac{Q}{d_S \cdot N_{Pi} \cdot M_i \cdot I}$

17. When the time is known,the total number of workers for accomplish a process has the following relation:

a. $M_i = \frac{Q_i \cdot N_{Ti}}{d_S \cdot t_i \cdot I}$
b. $M_i = \frac{Q_i \cdot N_{Ti}}{d_S \cdot t_i \cdot I}$
c. $M_i = \frac{Q}{d_S \cdot N_{Pi} \cdot t_i \cdot I}$

18. The work place is defined by:

a. Boundaries where a gang will perform its work and having provided enough space for handling and temporary stacking the materials being used;
b. Area where a construction work is carried out, with regard to the whole structure;
c. Area where a construction work is performed.

19. The minimum dimension of the place of work on the basis of technological requirements (L_t) is given by:

a. the space needed by an optimum gang to perform a simple construction process safely and efficiently;
b. the space needed by a given gang to perform a simple construction process safely and efficiently;
c. the area where a construction work is carried out.

20. The advantages of the parallel method consist in:

a. Low costs for site facilities, easy job for site management;
b. Reduced overall duration ;
c. Doesn't require the whole working area (Z).

21. Time – Cost optimisation for a project involves:

a. to minimise the project total cost and consequently to find the optimum duration;
b. to increase to project overall duration to obtain the minimum cost;
c. to obtain the minimum duration and cost for the project

22. The cost slope of an activity represents:

a. the reducing of the activity cost due to decreasing the activity duration by one unit of time;
b. the increasing, of the activity cost due to decreasing the activity duration by one unit of time ;
c. the increasing of the activity cost due to increasing the activity duration by one unit of time.

23. In order to construct a time chart, the following considerations should be engaged:

a. all activities should be drawn at the earliest possible start time;
b. in case of more than one activity emerging a node , the critical activity will be scheduled first, and than the
c. non – critical activities, according to their latest time in an increasing fashion;
all activities should he drawn according to their earliest time, in an increasing fashion.

24. A critical activity is characterized by:

a. it is bordered by nodes having equal the earliest time and the latest time;
b. it has total float equal to zero;
c. it is bordered by nodes having different values for the earliest and latest time.

25. The earliest event time for an event is given by:

a. $E_j = L_j - T_{ij}$;
b. $E_j = \max \{ E_i + T_{ij} \}$, for all activities (ij) entering to node "j";
c. $E_j = \min \{ E_i + T_{ij} \}$, for all activities (ij) entering to node "j".

26. In case of m = 4 construction cycles having $t_1 = 3$; $t_2 = 2$; $t_3 = 1$; $t_4 = 2$, and n = 4 sections, performed under the Balance method, the total duration is :

a. D = 20 units of time;
b. D = 16 units of time;
c. D = 14 units of time.
The result should be sustained by the graphic representation

27. The minimum dimension of the place of work on the basis of technological requirements (L_t) is given by:

a. the space needed by an optimum gang to perform a simple construction process safely and efficiently;
b. the space needed by a given gang to perform a simple construction process safely and efficiently;
c. the area where a construction work is carried out.

28. The overall duration for a given work under the subsequent method is given by:

a. $D = D_1 + D_2 + \ldots\ldots D_n = n \cdot \sum t_i$
b. $D = T_1 + T_2 + \ldots\ldots T_m = n (t_1 + t_2 + \ldots\ldots T_m)$;
c. $D = \sum t_i + \sum \tau_{ij} + (n - 1) t_m$.

29. The balance method is :

a. a combination between the subsequent method and the parallel method, collecting the advantages of the latest two methods;
b. a method of managing the construction works such as each gang goes subsequently to each section;
c. at each moment of time, on site, only a single gang is present.

30. The modulation factor is given by:

a. $K_0 = \max (t_i)$;
b. $K_0 = \text{h.c.f.} (t_i)$;
c. $K_0 = \min (t_i)$.

31. Programming by C.P.M. – time oriented involves

a. Study the project and define activities; draw the network; perform the time analysis; draw the time chart.
b. Calculate de duration of activities; estimate the event and activities times;
c. Study the execution of a given construction work.

32. The latest event time for a node " i " having only one activity is given by:

a. $L_i = L_j - T_{ij}$
b. $L_i = E_j - T_{ij}$
c. $L_i = E_I - T_{ij}$

33. The total amount of a given resource for a single activity is given by:

a. multiplying the resource rate by the activity duration;
b. $R_{ij}^{k} = r_{ij}^{k} \cdot T_{ij}$;
c. Ratio between R_{ij}^{k} and the project duration.

34. The smoothing of a resource, using Burgess – Killembrew algorithm refers to :

a. $\sum (R_z)^2$ ___ min
b. $\sum (R_z)^2$ ___ max
c. $\sum (R_z)^2$ ___ const

35. The time – chart for a network refers to :

a. plotting the activities, as horizontal bars, with no regard to their duration;
b. plotting the activities, as horizontal bars, wits regard to calendar, outlining the start and finish times for each
c. activity and consequently the start and finish time of the project;
outlining the total floats of activities.

36. The total float of an activity is given by :

a. $TF_{ij} = E_j - (E_i + T_{ij})$
b. $TF_{ij} = L_j - (L_i + T ij)$
c. $TF_{ij} = L_j - (L_i + T_{ij})$

37. The critical path is :

a. the smallest path which spans the network;
b. the longest path which spans the network;
c. any path which spans the network.

38. A rhythmically cycle is defined by:

a. the some rate of progress for all the sections ;
b. D = (m + n –1) ;
c. Different rates of progress on the structure's sections

39. The minimum dimension of the place of work on the basis of operating a complete shift (L_0) is given by:

a. the place needed by a optimum gang to operate a complete shift;
b. the place needed by a given gang to operate a complete shift;
c. $L_0 = \dfrac{N_p . I}{q_u}$

40. In case of parallel method, the overall duration is :

a. D = max (D_1 ; D_2 ; ….; D_n) ; in case of $t_i^1 \neq t_i^2 \neq \ldots \neq; t_i^n$
b. $D = \sum_{i=1}^{m} t_i$; when $t_i^1 = t_i^2 = \ldots. = t_i^n$
c. D = (m + n – 1) . t .

41. In case of balance method , the overall duration is :

a. $D = \sum t_i + \sum \tau_{ij} + (n-1)t_m$;
b. D = (m + n – 1) t;
c. $D = n . \sum t_i$

42. The total float of an activity refers to:

a. the maximum amount of time by which on activity could be extended or delayed without disturbing the total float of the subsequent activity;
b. the maximum amount of time by which on activity could be extended or delayed without disturbing the entire project ;
c. The maximum amount of time by which on activity could be extended or delayed without disturbing the free float.

43. The advantages of the subsequent method are:

a. The team continuity
b. Low level of resources needed on site.A relative low rate of supplying materials appears and limit deposit on site are needed .
c. The performing time is short.

44. The free float of an activity is given by:

a. $R_{Lij} = t_j^m - t_i^m - t_{ij}$
b. $R_{Lij} = t_j^M - t_i^m - t_{ij}$
c. $R_{Lij} = t_j^m - t_i^m - t_{ij}$

45. The purpose of the project time chart is:

a. Placing the activities from the network graph in to horizontal bars representation, time independent.
b. Establish the exact data for beginning and ending of the activities, taking account the minimum performing time.
c. Establish the floats of the activities from the network structure.

46. Between the cost and time execution of the activity there is a liniar dependency:

a. $c_{ij} = a_{ij} + b_{ij} \cdot t_{ij}$;
b. $c_{ij} = a_{ij} - b_{ij} \cdot t_{ij}$;
c. $c_{ij} = a_{ij} \cdot t_{ij} + b_{ij}$.

47. The main principles of the balance method are:

a. Continuity, Division of work, Synchronizing , Proportionality,Rhytmicity
b. The method assumes that each cycle will be carried out continuously by specialized teams, and also where possible the execution of the construction works will be overlapped on some of the structure's sections.
c. It is not necessary to respect the specific method principles.