SHABHUNATH INSTITUTE OF ENGG. & TECHNOLOGY

SOLUTION OF FIRST SESSIONAL EXAMINATION (2019-20)

Quantity Estimation & Management (RCE502)

SECTION-A

Q1)

(a) Types of Scheduling are :—

1) Activity Schedule
2) Material Schedule
3) Labour Schedule.
4) Equipment Schedule.
5) Financial Schedule.
6) Milestone event Schedule.

(b) Dummy is an artificial activity represented on arrow diagram by dotted arrow which indicates that an activity following the dummy cannot be started until activities preceding the dummy are completed.

(c) Bar chart are the pictorial chart developed by Henry Gantt. It consist of two coordinate axes one (horizontal axis) representing the time

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elapsed and other (vertical axis) represents the jobs or activities to be performed.

(d). Roofing → m^3

Steel work → quintal.

DPC → m^2

(e) Centre line method : Refer to notes.

SECTION-B

(9)

CPM	PERT
(1) It is built up of activity-oriented diagram.	(1) It is built up of event-oriented diagram.
(2) It is having deterministic approach.	(2) It is having probabilistic approach.
(3) One time estimate is required for each activity.	(3) Three time estimates is required for each activity.
(4) It is recommended for repetitive nature of work such as construction projects etc.	(4) It is recommended for research and development projects.
(5) Controlling factors are time & cost.	(5) Controlling factor is only time.

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(5)

AOA System	AON System
(1) Activity is graphically represented by an arrow.	(1) Activity is represented by a circle or a node.
(2) AOA uses dummy activities	(2) AON eliminates the use of dummy activities.
(3) Event times (EOT & LOT) depicted are main parameters	(3) EST, LST, EFT, LFT are main parameters.
(4) Not helpful for projects having more overlapping activities.	(4) More helpful for projects having overlapping activities
(5) Revision & modification are not easier.	(5) Revision & modification are easier.

(c) Refer to notes.

(d) Refer to notes.

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(Q4)

(a).

Activity	to	tm	tp	T_e	σ	σ^2
1-2	1	1	7	2	1	1
1-3	1	4	7	4	1	1
1-4	2	2	8	3	1	1
2-5	1	1	1	1	0	0
3-5	2	5	14	6	2	4
4-6	2	5	8	5	1	4
5-6	3	6	15	7	2	4

$$T_e = \frac{t_o + 4t_m + t_p}{6}$$

$$\sigma = \frac{t_p - t_o}{6}.$$

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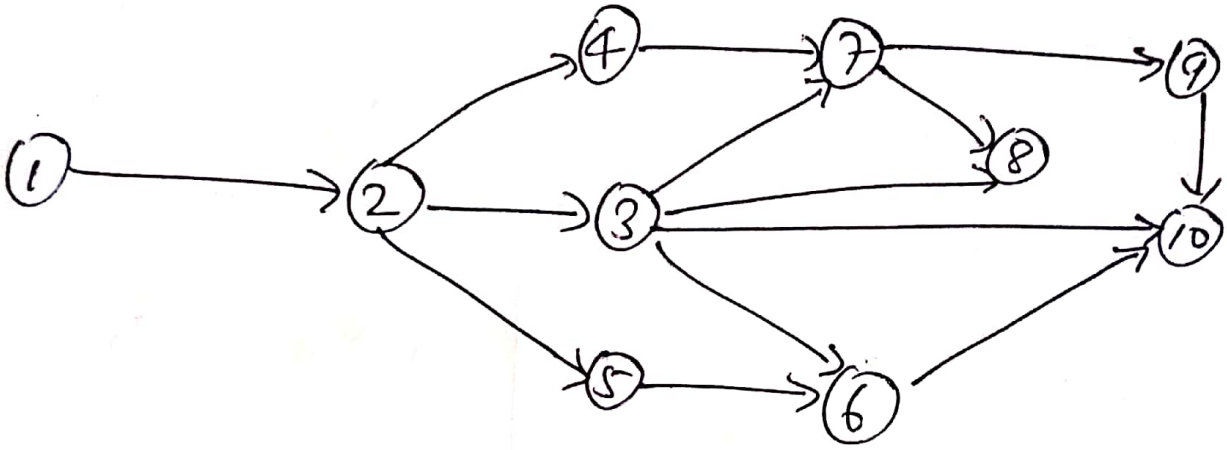
(5)



Final Network.

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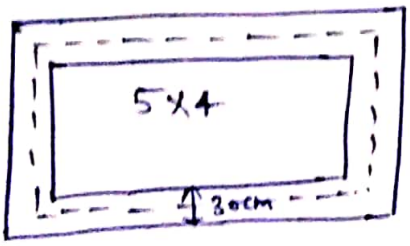
4. (c) Centre line method :- This method is suitable for walls of similar cross sections. There the total centre line length is multiplied by breadth and depth respective item to get the total quantity at a time. When cross walls or partitions or verandah walls joins with main all, the centre line length get reduced by half of breadth for each junction. Such junctions or joints are studied carefully while calculating total centre line length. The estimates prepared by this method are most accurate and quick.

5. (b) All dimension in meter

Que:-



Length of Long wall = 5.3 m

Total Length of Long wall = 2 × 5.3 = 10.6 M

Length of Short wall = 4.3 m

Total Length of Short wall = 2 × 4.3 = 8.6 m

Total Length of wall = Total Length of Long wall + Total Length of Short wall

Total Length of wall = 10.6 + 8.6 = 19.2 M

S.No	Particulars/Item	Length(m)	B(m)	D/H(m)	Quantity
1.	Excavation	19.2	0.90	1.20	20.736 cum
2.	Concrete in Foundation	19.2	0.90	0.30	5.184 cum
2.	Brick work				
(i)	I^st footing	19.2	0.6	0.2	2.304 cum
(ii)	II^nd footing	19.2	0.5	0.2	1.92 cum
(iii)	III^rd footing	19.2	0.4	0.1	0.768 cum
(iv)	Plinth level	19.2	0.4	0.4	3.072 cum
4.	Brick work in Super Structure	19.2	0.3	4	23.04 cum
			Total Brickwork		= 31.104 cum

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Q:-5(a). Capacity of students = 300

Per student carpet area = 1.2 sq m.

Total carpet area = 300 × 1.2

= 360 m^2.

Let plinth area of building = P sq m.

P = Total carpet area + Area for entrance, verandah + Toilet.

$$P = 360 + \frac{20}{100} \times P + \frac{15}{100} \times P$$

$$P = 360 + 0.2P + 0.15P$$

$$0.65P = 360$$

$$P = 553.85 \ m^2.$$

Cost of building for 553.85 m^2 = Plinth area × Rate

= 553.85 × 5000

= Rs. 27,69,250

for water supply and Sanitary installation = 5 %

= 27,69,250 × $\frac{5}{100}$

= Rs. 1,38,462.50

for electrical installation = 14 %

= 27,69,250 × $\frac{14}{100}$

= Rs. 3,87,695

for boundary wall, gate & approch road = 6%.

= 27,69,250 × $\frac{6}{100}$

= Rs. 1,66,155.

Total = Rs. 34,61,562.50

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say = Rs. 3461563

for contingencies = 3 %.

$= 3461563 \times \frac{3}{100}$

= Rs. 103846.89

for supervision charges = 8%,

$= 3461563 \times \frac{8}{100}$

= Rs. 276925.04

Grand Total = Rs. 30,42,334.93

Say = Rs. 3042335 Ans.

Q:-3 (a). Total quantity of B.W. = L x B x H

= (4 x 0.3 x 3) m^3.

= 3.6 m^3.

Total quantity of plaster = 2 x L x H

(Both faces) = 2 x 4 x 3

= 24 m^2.

Total cost for brick work = Quantity x Rate

= 3.6 x 2000

= Rs 7200

Total cost for plaster = Quantity x Rate

= 24 x 79

= Rs. 1896

Total cost for B.W. + Plaster = 7200 + 1896

= Rs. 9096 Ans.

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