

OPSC 2019

Odisha Public Service Commission

Civil Engineering

Objective Practice Sets

Construction Practice, Planning & Management

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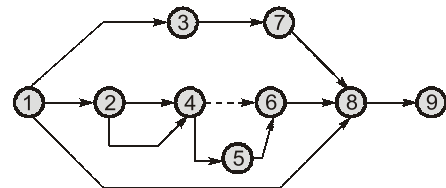
- Q.1 Activity on node type of network analysis involves
- PERT scheduling
 - OPST scheduling
 - CPM scheduling
 - Bar chart scheduling

- Q.2 Mile stone chart is an improvement over
- Bar chart
 - CPM scheduling
 - PERT scheduling
 - All of the above

- Q.3 $T_L^j - T_E^i - t_{ij}$ represent



- Total Float
 - Free Float
 - Independent Float
 - Interfering Float
- Q.4 Which of the following is not a weakness of bar chart?
- Suitable only for small job.
 - Cost control can not be achieved.
 - Optimum use of men and machines can not be done.
 - None of these
- Q.5 There are four consecutive activities in a simple linear network, each with mean duration μ and first two with '2k' as the standard deviation, third with 'k' as the standard deviation and fourth has 'zero' standard deviation. The overall project duration through these activities is likely to be in the range
- $4\mu \pm 2k$
 - $4\mu \pm 3k$
 - $4\mu \pm 5k$
 - $4\mu \pm 9k$
- Q.6 The total number of errors in the given A-O-A network are



- 1
- 2
- 3
- zero

- Q.7 The time by which a particular activity can be delayed without affecting the preceding and succeeding activities is known as
- Total Float
 - Free Float
 - Interfering Float
 - Independent Float

- Q.8 Which of the following is not a PERT event?
- Site investigation started.
 - Sessional work completed.
 - Bus starts from Jaipur.
 - Class is being attended.

- Q.9 Consider the following statements regarding AON diagram:

- Each activity is represented by a circle.
- The successor of the activity is connected by a directed arrow.
- The number of the activity and the amount of time required for its completion are inserted in the job node.
- An AON network contains a node for the start and a node for a finish of the project.

Which of these statements are correct?

- 1, 2 and 3
- 2, 3 and 4
- 1, 3 and 4
- 1, 2, and 4

- Q.10** The independent float affects only
 (a) preceding activities
 (b) succeeding activities
 (c) the particular activity involved
 (d) none of the above

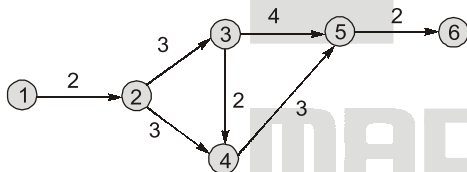
Q.11 Match **List-I** with **List-II** and select the correct answer using the codes given below the lists:

List-I	List-II
A. Total float	1. $T_E^j - T_E^i - t_{ij}$
B. Independent float	2. $T_L^j - T_E^i - t_{ij}$
C. Free float	3. $T_E^j - T_L^i - t_{ij}$
D. Interfering float	4. S_j

Codes:

	A	B	C	D
(a)	1	2	3	4
(b)	2	4	1	3
(c)	2	3	1	4
(d)	2	1	3	4

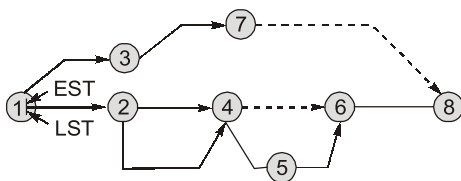
Q.12 In the network shown in figure, total float for the activity 2-4 will be activity duration (in days) is shown in arrow.



- (a) 3
 (b) 2
 (c) 1
 (d) zero

- Q.13** Probability of finishing of a project earlier than expected time is
 (a) 100% (b) less than 50%
 (c) more than 50% (d) None of these

Q.14 The total number of errors in the given AOA network is



- (a) 1 (b) 2
 (c) 3 (d) 4

- Q.15** Whenever an activity has zero total float, then
 (a) free float of the activity must be zero but independent float need not be zero
 (b) independent float need not be zero
 (c) free float and independent float both must be zero
 (d) free float and independent float both need not be zero

- Q.16** A critical path has
 (a) zero slack (b) minimum slack
 (c) maximum slack (d) infinite slack

- Q.17** Interfering float is the difference between
 (a) total float and free float
 (b) total float and independent float
 (c) free float and independent float
 (d) none of the above

- Q.18** If the scheduled completion time for a particular project is 18 weeks and its earliest expected time is 20 weeks, then the slack time for the project is
 (a) 2 weeks
 (b) 0
 (c) -2 weeks
 (d) none of the above

- Q.19** Slack time in PERT analysis
 (a) is minimum for critical activities
 (b) can never be less than zero
 (c) can never be greater than zero
 (d) is always zero for critical activity

Common Data for Q. 20 to Q. 23

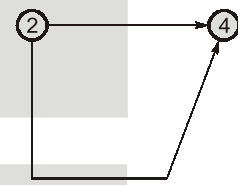
For a small project with five jobs, the following data is given:

Job	Immediate Predecessor	Duration (Days)	Mean Standard
A	-	10	2
B	-	5	1
C	A	16	2
D	A	12	2
E	B,C	15	1

Answers		CPM & PERT							
1. (c)	2. (a)	3. (a)	4. (d)	5. (b)	6. (b)	7. (d)	8. (d)	9. (c)	10. (d)
11. (c)	12. (b)	13. (b)	14. (c)	15. (c)	16. (b)	17. (a)	18. (c)	19. (a)	20. (d)
21. (d)	22. (d)	23. (d)	24. (a)	25. (d)	26. (c)	27. (c)	28. (b)	29. (d)	30. (d)
31. (c)	32. (c)	33. (b)	34. (d)	35. (d)	36. (a,b)	37. (d)	38. (a)	39. (d)	40. (a)
41. (b)	42. (c)	43. (b)	44. (c)	45. (c)	46. (c)	47. (a)	48. (c)	49. (d)	50. (a)
51. (c)	52. (d)	53. (b)	54. (b)	55. (d)	56. (b)	57. (a)	58. (b)	59. (c)	60. (d)
61. (b)	62. (c)	63. (a)	64. (b)	65. (a)	66. (a)	67. (b)	68. (b)	69. (a)	70. (c)
71. (c)	72. (b)	73. (c)	74. (c)	75. (b)	76. (b)	77. (c)	78. (a)	79. (b)	80. (b)
81. (a)	82. (c)	83. (a)	84. (d)	85. (c)	86. (d)	87. (c)	88. (d)	89. (d)	90. (c)
91. (b)									

Explanations CPM & PERT

2. (a)
Milestone chart is a modification over the original Gantt chart. When a particular activity, represented by a bar on bar chart is very long, the details lack. If however, the activity is broken or subdivided into a number of subactivities each one of which can be easily recognized during the progress of the project, controlling can easily be done and interrelationships between other similar activities can easily be established.



(i)

(ii) Dummy is not required because the relation is maintained by real activities.

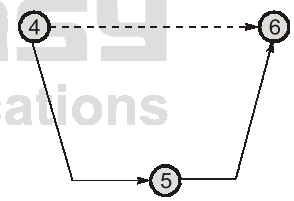
5. (b)
 $1 \xrightarrow{\frac{\mu}{2k}} 2 \xrightarrow{\frac{\mu}{2k}} 3 \xrightarrow{\frac{\mu}{k}} 4 \xrightarrow{\frac{\mu}{0}} 5$
 Over all project duration = $T_E \pm \sigma$

$$\sigma = \sqrt{(2k)^2 + (2k)^2 + k^2}$$

$$\sigma = 3k$$

$$T_E = \mu + \mu + \mu + \mu = 4\mu$$

Hence overall project duration is $4\mu \pm 3k$



(ii)

6. (b)
 (i) Two activities can not start and end at the same nodes.

7. (d)
 Total float affects both preceding and succeeding activities.
 Free float affects only succeeding activities.

8. (d)
 Work is going on hence it is an activity