

**CENTRAL PUBLIC WORK DEPARTMENT**  
**DEPARTMENTAL EXAMS FOR AEE'S**  
**DECEMBER 2017**

Civil Engineering Paper-I  
(Without Books)

Time: 3 Hours

Maximum Marks: 100

**Attempt all questions**

1. Briefly explain PERT and CPM and write three main differences between PERT and CPM. (10)

2. Consider a project with following activities for developing a site. Draw the network and number the events. (5)

A: Clean the site

B: Survey and layout

C: Excavation for the sewer

D: Excavation for the electrical poles

E: Lay sewer and backfill

F: Install electrical poles

G: Construct boundary wall

3. Draw the network of the following activities. Indicate the critical path. Node 1 denotes start and node 5 denotes end. Calculate total free and independent floats of all activities. (10)

Activity	1-2	1-3	2-4	4-5	3-5
Dependence upon	none	none	1-2	1-3, 2-4	1-3
Durations (days)	3	5	4	5	8

1/2



Also draw the network and find critical path and duration of project.

4. Describe Green Building Norms. Briefly mention about roof top rain water harvesting. (5+5)
5. State the components involved for analysis of rates for the following items- (5+5+5+5)
- (a) Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundation etc in layers not exceeding 20 cm in depth, consolidating each deposited layer by ramming and watering, lead upto 50 m and lift upto 1.5 m.
  - (b) Brick work with F.P.S. brick of class designation 75 in foundation and plinth in cement mortar 1:4 ( 1 cement: 4 coarse sand)
  - (c) 12 mm Cement plaster of mix 1:6 ( 1Cement:6 Fine sand)
  - (d) Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-All works upto plinth level (a) 1:1:2( 1Cement:1 coarse sand:2 graded stone aggregate 20mm nominal size)
- 6 What is cost index and how it is calculated? ( 2+3)
- 7 Write short notes on following- (5+5)
- (a) Construction Joints
  - (b) Workability of Concrete
- 8 Write specifications for the following with suitable sketches whenever necessary. (5+5)
- (a) Cavity Wall
  - (b) Damp Proof Course
- 9 Write short notes on following with reference to valuation of cost of construction. (5+5)
- (a) Plinth Area Rate and Cost Index Method.
  - (b ) Accounts Method
- 10 Write detailed specification for pointing on brick work, tile work and stone work. (10)