

CENTRAL PUBLIC WORKS DEPARTMENT
DEPARTMENTAL EXAMINATION FOR AEE (CIVIL)

Feb 2021

Civil Engineering Paper-I

(Without Books)

Time: 3 hours

Maximum Marks: 100

Attempt any 10 questions

1. (i) What is a PERT Chart? (ii) How is a PERT Chart different from a Gantt Chart? (iii) What should a PERT Chart Template include? (iv) What are the 4 steps to create a PERT Chart?
(2x3+4)
2. (i) What is Online Computerized Monitoring System (OCMS) for project monitoring? (ii) What is present threshold limit for monitoring of projects in OCMS? (iii) What is objective of this tool? (iv) What are the likely benefits of OCMS?
(2x2+2x3)
3. Describe specification for item of brick work 230 mm thick wall in mortar 1:6 (1 cement:6 coarse sand) with details of mandatory tests required to be carried out.
(7+3)
4. Draft Analysis of Rates for (i) 18 mm cement plaster in two coats under layer 12 mm thick cement plaster 1:5 (1 cement: 5 coarse sand) finished with a top layer 6 mm thick cement plaster 1:6 (1 cement: 6 fine sand) and (ii) Providing and laying vitrified tile in flooring with polymer modified adhesive with 3 mm average bed thickness. (Coefficients & Rates may be assumed suitably).
(2X5)
5. (i) What kind of soil investigations are carried for construction of buildings? (ii) Which investigations are suitable for different kind of soils? (iii) What is liquefaction of soil?
(2X3+4)
6. Prepare a concept plan and design a scheme for artificial recharge to ground water for a proposed building plot with following parameters:
Catchments area of (i) Roof Top area: 4000 Sqm (ii) Pavement area: 3000 Sqm (iii) Normal monsoon rainfall: 200 mm (iv) Maximum hourly rainfall intensity: 15 mm/hour
(10)
7. (i) What are types of glasses used in buildings? (ii) Describe the different types of safety glass with its applicability.
(2X5)

8. (i) What are the methods of determining the density of soil? (ii) Describe Sand Replacement method for determining the density of soil by adopting the suitable values of parameters. (4+6)
9. Describe the following disinfection techniques for treatment of water with their applicability:
(a) Chlorination (b) Ozonation (c) Active Carbon (d) Water softening (e) Desalination (2X5)
10. (a) What are different types of retaining walls and also indicate the suitability of each types?
(b) Describe the principles of design of retaining walls. (2X5)
11. What are National Disaster Management Authority (NDMA)'s guidelines for Design and Safety of Hospital Buildings? How different are these guidelines from design of normal buildings? (2X5)
12. (i) Define market value and fair market value in valuation of properties. What is the difference between these two values? (2+1)
- (ii) Which is the commonly used method for determination of cost of construction of a building for valuation? (1)
- (iii) Which is the commonly used method for determination of Fair Market Value of a property? (1)
- (iv) Find out weighted cost index and percentage progress of the work in different years using following details:

S. No.	Period of construction of a work	Expenditure shown by the assessee	Average cost index for the period on base of 01.10.2012	Amount reduced to base 100 of 01.10.2012	Percentage progress of work
1	2	3	4	5	6
1	2013-14	2,00,000	110		
2	2014-15	3,00,000	120		
3	2015-16	1,00,000	130		
4	2016-17	4,00,000	140		
5	Total	10,00,000			