Estimating and Costing

P. Pages : 4   **NKT/KS/17/7433**

Time : Four Hours   ‖‖‖‖‖‖‖‖‖‖‖ *0082*   Max. Marks : 80

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Notes : 1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Solve Question 11 OR Questions No. 12.
8. Assume suitable data whenever necessary.
9. Illustrate your answers whenever necessary with the help of neat sketches.
10. Use of non programmable calculator is permitted.

1. a) What is the principle of units? Enlist the units of measurement for some important materials and items of building work.   **6**

b) Enlist the various methods of calculating earthworks in roads. Explain any one with a tabular Proforma.   **7**
The following table is an extract from the longitudinal section of a road earthwork survey. Calculate the volume of earth work.
a) Formation width of a road: 12m
b) Side slopes i) In banking – 2:1 ii) In cutting – 1.5:1

Chainage	200	230	260	290	320	350	380
R.L. of Ground (m)	98.70	98.80	99.30	99.50	99.80	99.90	99.60
R. L. of Formation (m)	99.50	------(+) (1in 300) ----->I<------(-) (1 in 150) ------>I					

OR

2. a) Prepare a preliminary estimate of a multistoried office building having carpet area of 2200 sq.m. 35% of total built up area will be taken up by corridors, verandah, lavatory, and staircase etc. 10% of total built up area is occupied by walls. Assume plinth area rate as Rs.3000.00 per square metre. Consider 8% of building cost for water supply and sanitation fitting, 10% for electrical fitting, 8% for other services and 2% for architectural treatment.   **6**

b) The ground levels at various chainages along centre line of a proposed road are   **7**

Chainage	21	22	23	24	25
Distance	0	30	60	90	120
RL Ground	180.50	183.36	185.52	187.10	186.50

The ground has uniform cross slope of 1 in 8. The length of chain is 30m. The road formation is proposed at uniform gradient passing through the G.L. at the end chainages with formation width as 8 m and side slope in cutting is 1:1. Estimate the quantity of earthwork for the proposed road section in a tabular form.

3. a) The accompanying drawing shows a building plan and a typical wall section. Prepare centre line plan and estimate the quantities of the following items of work in standard perform.   **8**
1) Earthwork in Excavation in foundation.
2) Brickwork in foundation up to plinth level.

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b) Workout the quantity of steel reinforcement in bar bending schedule for a RCC Beam of size 230mm x 300 mm x 4000 mm. It has 2 Nos. of 12 mm φ straight and 2 nos. 12 mm φ bent up at bottom and 2nos. 8 mm φ at top M. S. Reinforcement with 6 mm φ stirrups @ 200 mm c/c. Assume cover as 25 mm throughout (top, bottom, side). **6**

OR

4. a) The accompanying drawing (Q. 3 (a)) shows a building plan and a typical wall section. Prepare centre line plan and estimate the quantities of the following items of work in standard proforma. **8**
   1) Brickwork in superstructure.
   2) Internal plaster to walls.

   b) A RCC Slab, overall size 3300 mm x 6800 mm x 130 mm is provided with 16 mm Φ as a main steel reinforcement bent up alternately and placed @ 140 c/c. Alternate bars are bent up at 540 mm from outer edge of slab. Distribution steel bars are of 6 mm Φ @ 180 c/c. Assume cover as 20 mm throughout. (All steel bars are of Mild steel) Calculate the quantities of Steel Reinforcement **6**

5. a) Explain in brief, various methods of carrying out Civil Engineering works in government departments. **7**

   b) What are the various conditions of valid contracts. **6**

OR

6. a) Enlist the various documents to be submitted along with tender form while submitting them as tender documents in government department. **7**

   b) Write short notes on **any two.** **6**
   i) Earnest Money Deposits
   ii) Security Deposits
   iii) Arbitration
   iv) Defect Liability Period

7. a) What is specification? What are the objects of specification? **6**

   b) Write a detailed specification for the following **any two.** **7**
   i) Earthwork in excavation in soft soil.
   ii) Brick Masonry in Superstructure.
   iii) Cement Plastering.

OR

8. a) Enlist the different types of specifications. Explain the points to be considered while drafting specification. **6**

   b) Write short notes on the following **any two.** **7**
   i) Classification of Cost.
   ii) Direct and Indirect charges
   iii) MAS Account.

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9. a) What do you mean by rate analysis? Explain the major and minor factors affecting it. **6**

b) Analyse the rate for any two of following items in standard format **8**
   i) RCC work (1:2:4) in slab with 1% steel reinforcement.

   ii) Brick Masonry (Brick size 190 mm x 90 mm x 90 mm) in C. M. 1:4

   iii) 15mm thick cement plaster in C. M. 1:2.

OR

10. a) Write short notes on: **6**

   i) Overhead costs.

   ii) Taskwork of a labourer

b) Calculate the rate per unit item of the following **any two.** **8**

   i) R. C. C. work (1: 1 ½ : 3) in column with 5% steel reinforcement including shuttering in column.

   ii) 15 cm thick Cement concrete flooring (1:3:6)

   iii) Stone masonry in super structure in C.M. 1:3

11. a) Differentiate clearly with suitable examples between Cost, Value and Price. **6**

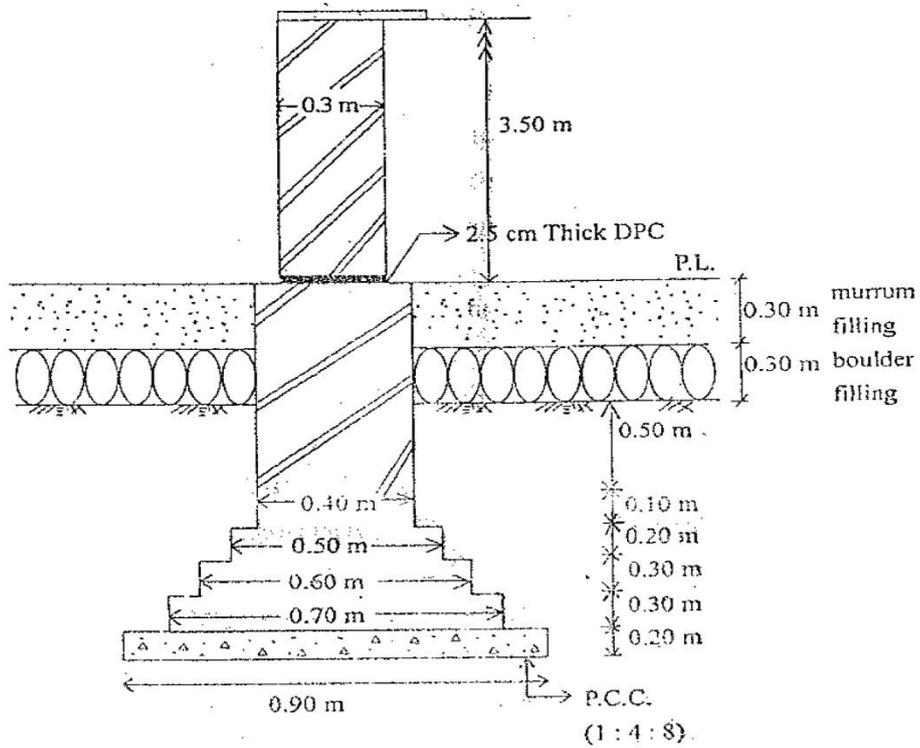b) What is valuation? Explain in brief, the purposes of valuation. **7**

OR

12. a) What are the factors affecting the value of property? **6**

b) Write short notes on **any two.** **7**

   i) Types of value

   ii) Sinking fund

   iii) Depreciation and obsolescence.
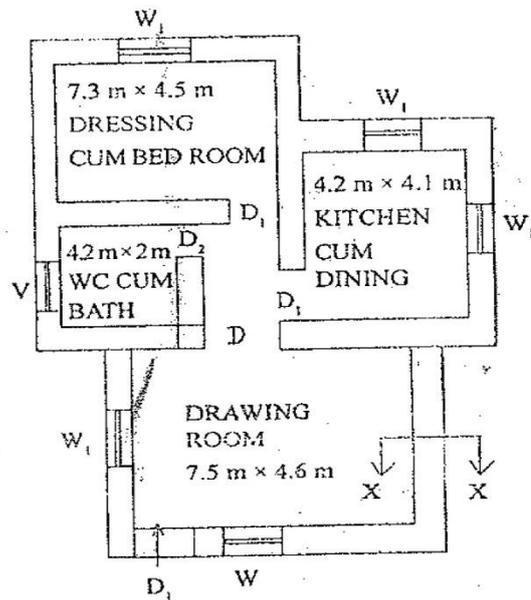
DOORS: $D_1 \rightarrow 1.20 \times 2.1$ M $D \rightarrow 1.50 \times 2.10$ M
$D_2 \rightarrow 1.00 \times 2.1$ M
WINDOW: W $\rightarrow 1.2 \times 1.5$ M
W$_1 \rightarrow 1.0 \times 1.5$ M
V $\rightarrow 0.25$ M $\times 0.25$ M.

Fig. I(A)

Section at X—X

$(Q.3(a) \& Q.4(a))$

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