



**SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR**  
Siddharth Nagar, Narayanavanam Road – 517583

**QUESTION BANK (DESCRIPTIVE)**

**Subject with Code :** ECV(13A01605)

**Course & Branch:** B.Tech - CE

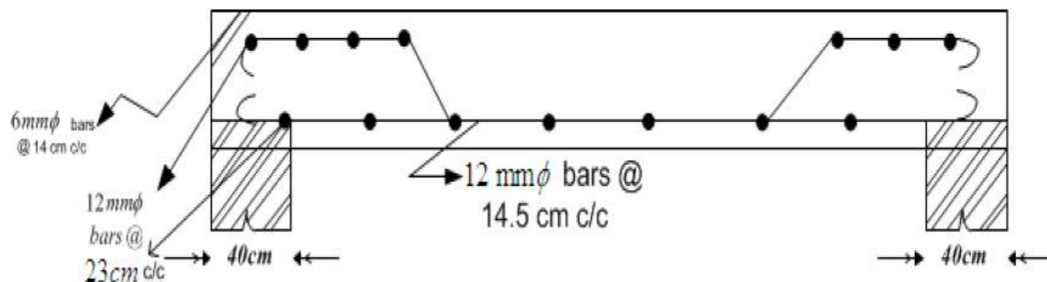
**Year & Sem:** IV-B.Tech & I-Sem

**Regulation:** R13

**UNIT -III**

**Earthwork Estimation & Reinforcement Estimation**

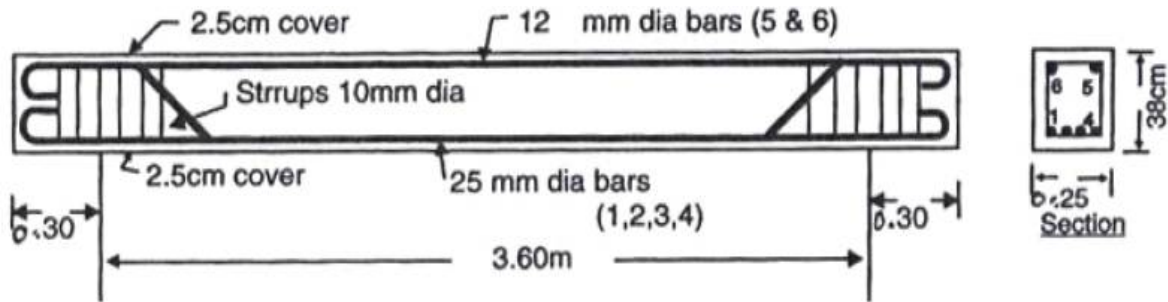
1. Following Fig. Shows the Section along the shorter span of a room of size 4X5.5m (Internal dimension). The thickness of the slab is 13 cm. The thickness of wall is 40 cm.



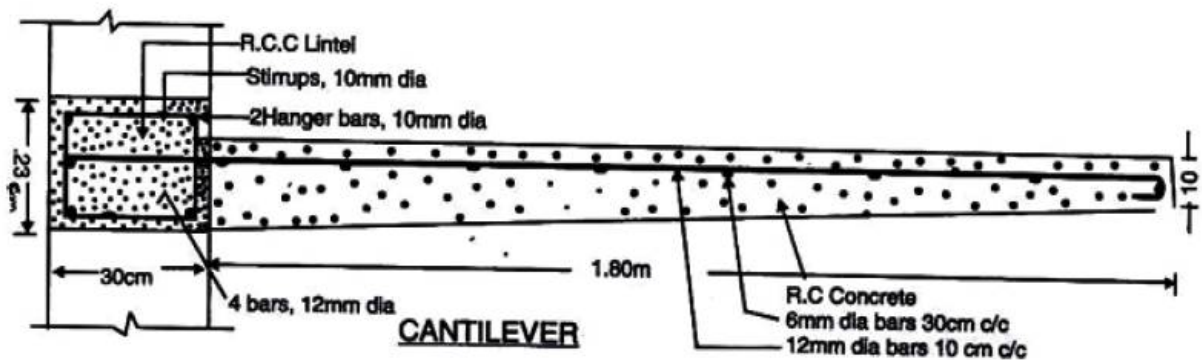
2. (A) What are the different methods for computation of earth work in road embankments?  
(B) Explain about Lead and lift.
3. Estimate the quantity and cost of earth work for a road between two stations A to B with the following data. Width of road is 10m at formation surface and side slope 2:1. Rate of earth work in banking and cutting may be taken as Rs. 10.00 per cubic meter including a lead up to 150m with a condition that portion of earth work available from cutting is to be utilized for banking with in the same lead of 150m. The data on field book for the portion of road are as follows;

Chainage	0	1	2	3	4	5	6
Reduced Level	123.90	125.00	124.6	122.90	121.60	121.00	120.40
Formation Level	123.20	123.60	124.00	123.60	123.2	122.80	122.40

4. Workout the quantity of reinforcement by preparing bar requirement schedule of a beam as per the drawing given below.



5. Prepare bar bending schedule and calculate the quantity of reinforcement in a R.C.C (1:2:4) lintel as per data given below:  
 Total Length of the lintel including bearing=1.50 m  
 Thickness of wall=400 mm;  
 Thickness of lintel=150 mm;  
 Main reinforcement 5 bars of 12 mm  $\phi$  (out of which 2 bars are bent up near support)  
 Top reinforcement 2 bars of 10 mm  $\phi$ ;  
 6 mm  $\phi$ , 2 legged stirrups are provided @175mm c/c uniformly.
6. Calculate the quantity of steel required by preparing bar bending schedule, for a R.C.C (1:11/2:3) lintel cum sunshade as per the drawing given below. Take clear span of Lintel as 1.2m and bearing over the support is 0.3 m on either side.



7. A room 600 cm long and 500 cm wide has a flat roof. There is one T-beam in the center (cross Section below the slab 30cm X 50cm) and the slab is 15 cm thick. Estimate the quantity of iron Bars required for reinforcement (For the T-beam only) from the data given below.  
 Main bars: 8 No.s - 25mm dia in 2 rows of 4 each (all 4 in the bottom being straight and others Bent) Stirrups: 10 mm dia and 15 cm C/C throughout.  
 Anchor bars: 2 No. s - 16 mm dia
8. Prepare a detailed estimate for earthwork for a portion of road from the following data.  
 Formation width of road is 10 meter, side slope 2:1 in banking and 1/2: 1 in cutting.

Chainage in (m)	R.L of ground	R.L of formation
0	115.50	116
150	115.75	↑
300	116.25	upward gradient 1 in 300 up 900 m
450	116.20	↓
600	117.10	↑
750	117.85	down ward gradient of 1 in 450. up to 1500m
900	119.00	↓
1050	119.25	
1200	119.10	
1350	118.80	
1500	118.75	

9. Estimate the quantity of earthwork for an embankment, 120cm long, 8m wide @ crest and whose side slopes are 2 to 1. The central height from 0 to at every 30m intervals are 0.60m, 1.2m, 1.6m, 2.0m and 1.3m.
10. Write briefly about the following:
- Development length of Reinforcement.
  - Lap length of Reinforcement.
  - Bent up bars.
  - Cover to the Reinforcement.
  - Density of steel

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**SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR**  
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**QUESTION BANK (OBJECTIVE)**

**Subject with Code :** OR(13A03701)

**Course & Branch:** B.Tech - ME

**Year & Sem:** IV-B.Tech & I-Sem

**Regulation:** R13

**III. Earthwork Estimation & Reinforcement Estimation**

**IV. Contracts and Tenders**

**V. Rate Analysis & Valuation**

1. The expected out turn of 2.5 cm cement concrete floor per Manson per day [      ]  
A) 2.5 sqm      B) 5.0 sqm      C) 7.5 sqm      D) 10 sqm
2. The correct prismoidal formula for volume is [      ]  
A)  $D$  [first area + last area +  $\sum$  Even area + 2  $\sum$  odd areas]  
B)  $D/3$  [first area + last area + 4  $\sum$  Even area + 2  $\sum$  odd areas]  
C)  $D/3$  [first area + last area + 2  $\sum$  Even area + 4  $\sum$  odd areas]  
D)  $D/6$  [first area + last area + 2  $\sum$  Even area + 4  $\sum$  odd areas]
3. Pick up the correct statement from the following: [      ]  
A) The bent up bars at a support resist the negative bending moment  
B) The bent up bars at a support resist the sharing force  
C) The bending of bars near supports is generally at  $45^\circ$   
D) All the above.
4. For 12 mm thick cement plastering 1 : 6 on 100 sq. new brick work, the quantity of cement required, is [      ]  
A) 0.200 m<sup>3</sup>      B) 0.247 m<sup>3</sup>      C) 0.274 m<sup>3</sup>      D) 0.295 m<sup>3</sup>
5. In the mid-section formula [      ]  
A) The mean depth is the average of depths of two consecutive sections  
B) The area of mid-sections is calculated by using mean depth  
C) The volume of the earth work is calculated by multiplying the mid-section area by the distance between the two sections  
D) All the above.
6. The area of a sloping surface of a protective embankment of mean height  $d$ , side slopes  $S$ : 1 and length  $L$  is [      ]  
A)  $d \times d \times s$       B)  $d^2 \times (ds)^2$       C)  $L \cdot D$  sq. Root  $(1 + s^2)$       D) All the above.

7. If the formation level of a highway has a uniform gradient for a particular length, and the ground is also having a longitudinal slope, the earthwork may be calculated by [      ]  
A) Mid-section formula      B) Trapezoidal formula  
C) Prismoidal formula      D) All the above.
8. The expected out turn of 12 mm plastering with cement mortar is [      ]  
A) 2.5 sq m      B) 4.0 sq m  
C) 6.0 sq m      D) 8.0 sq m
9. The total length of a cranked bar through a distance (D) at  $45^\circ$  in case of a beam of effective length L, is [      ]  
A)  $L + 0.42 d$       B)  $L + 2 \times 0.42 d$   
C)  $L - 0.42 d$       D)  $L - 2 \times 0.4 d$
10. While estimating a rcc structure, the omitted cover of concrete is assumed [      ]  
A) At the end of reinforcing bar, not less than 25 mm or twice the diameter of the bar  
B) In thin slabs, 12 mm minimum or diameter of the bar whichever is more  
C) for reinforcing longitudinal bar in a beam 25 mm minimum or diameter of the largest bar which is more  
D) All the above
11. The cross-sections for a highway is taken at [      ]  
A) right angle to the center line      B) 30 meters apart  
C) Intermediate points having abrupt change in gradient      D) All the above.
12. For 100 sq. m CC (1: 2: 4) 4 cm thick floor, the quantity of cement required, is [      ]  
A) 0.90 m<sup>3</sup>      B) 0.94 m<sup>3</sup>      C) 0.98 m<sup>3</sup>      D) All the above.
13. A cement concrete road is 1000 m long, 8 m wide and 15 cm thick over the sub-base of 10 cm thick gravel. The box cutting in road crust is [      ]  
A) 500 m<sup>3</sup>      B) 1000 m<sup>3</sup>      C) 1500 m<sup>3</sup>      D) All the above.
14. The expected out turn for EW in excavation in ordinary soil per mazdoor per day is [      ]  
A) 1m<sup>3</sup>      B) 2 m<sup>3</sup>      C) 3 m<sup>3</sup>      D) All the above.
15. Pick up the incorrect statement from the following: [      ]  
A) Lead is the average horizontal straight distance between the borrow pit and the place of spreading soil  
B) The lead is calculated for each block of the excavated area  
C) The unit of lead is 50 m for a distance up to 500 m  
D) The unit of lead is 1 km where the lead exceeds 2 km.

16. The expected out turn of half brick partition wall per mason per day is [      ]  
 A) 1m<sup>3</sup>      B) 2 m<sup>3</sup>      C) 3 m<sup>3</sup>      D) All the above.
17. If B is the width of formation, d is the height of the embankment, side slope S: 1, for a highway with no transverse slope, the area of cross-section is [      ]  
 A)  $B + d + Sd$       B)  $Bd + Sd^2$       C)  $B \times d - Sd^{1/2}$       D) All the above.
18. The slope of the outlet of 'P trap' below the horizontal is kept [      ]  
 A)  $8^0$       B)  $10^0$       C)  $12^0$       D)  $14^0$
19. The unit of measurement is per quintal for the following: [      ]  
 A) Collapsible gates with rails      B) Rolling shutters  
 C) Expanded metal wire netting      D) M.S. reinforcement of R.C.C. works
20. The expected out turn of brick work in cement mortar in foundation and plinth per mason per day, is [      ]  
 A) 1.00 m<sup>3</sup>      B) 1.25 m<sup>3</sup>  
 C) 1.50 m<sup>3</sup>      D) 1.75 m<sup>3</sup>
21. Pick up the correct statement from the following: [      ]  
 A) If the bed level is above N.S.L. the canal is called fully in banking and the berms are designed as 3 d where d is full supply depth of water (F.S.D.)  
 B) Area of canal in cutting =  $BD + Sd^2$  where B = bed width, d = depth of cutting and S is the side slope  
 C) Area of the bank of canal =  $B_1d_1 + Sd^2$  where B<sub>1</sub>, d<sub>1</sub> and S are the width of bank, height of the bank above N.S.L. and side slope respectively  
 D) All the above
22. The rate of an item of work depends on [      ]  
 A) Specifications of works      B) Specifications of materials  
 C) Proportion of mortar      D) All the above
23. The rate of payment is made for 100 cu m (per % cu m) in case of [      ]  
 A) Earth work in excavation      B) Rock cutting  
 C) Excavation in trenches for foundation      D) All the above
24. Berms are provided in canals if these are [      ]  
 A) Fully in excavation      B) partly in excavation and partly in embankment  
 C) Fully in embankment      D) All the above
25. The ground surface slopes 1 in 50 along a proposed railway embankment 150 m in length. The height of the embankment at zero chainage is 0.5 m, the width is 11 m and side slopes 2:1. If the falling gradient of the embankment is 1 in 150, the quantity of the earthwork calculated by prismoidal formula, is [      ]  
 A) 3250 m<sup>3</sup>      B) 3225 m<sup>3</sup>  
 C) 3275 m<sup>3</sup>      D) 3300 m<sup>3</sup>

26. The diameter of a domestic sewer pipe laid at gradient 1 in 100 is recommended [     ]  
A) 100mm                      B) 150mm  
C) 200mm                      D) 300mm
27. Pick up the correct statement from the following: [     ]  
A) Bricks are paid per thousand                      B) Cement is paid per 50 kg bag  
C) Lime is paid per quintal                      D) All the above
28. The weight of an item is measured correct to nearest [     ]  
A) 0.25 kg                      B) 0.50 kg                      C) 1.00 kg                      D) 5 kg
29. Due to change in price level, a revised estimate is prepared if the sanctioned estimate exceeds [     ]  
A) 2.0%                      B) 2.5%                      C) 4.0%                      D) 5.0%
30. Formula for U-hook [     ]  
(A)  $9\phi$                       (B)  $6\phi$                       (C)  $12\phi$                       (D)  $24\phi$
31. Formula for L-hook [     ]  
(A)  $9\phi$                       (B)  $6\phi$                       (C)  $12\phi$                       (D)  $24\phi$
32. Formula for Stirrup-hook [     ]  
(A)  $9\phi$                       (B)  $6\phi$                       (C)  $12\phi$                       (D)  $24\phi$
33. Length of bent up bar ( $45^\circ$ ) [     ]  
(A)  $0.3d$                       (B)  $0.4d$                       (C)  $0.45d$                       (D)  $0.6d$
34. Length of bent up bar ( $30^\circ$ ) [     ]  
(A)  $0.3d$                       (B)  $0.4d$                       (C)  $0.45d$                       (D)  $0.6d$
35. In RCC works the end and side covers should be \_\_\_\_\_ [     ]  
(A) 2.5 to 5 cm                      (B) 3 to 4 cm                      (C) 4 to 5 cm                      (D) 1.2 to 2 cm
36. In slabs bottom and top cover should be \_\_\_\_\_ [     ]  
(A) 2.5 to 5 cm                      (B) 3 to 4 cm                      (C) 4 to 5 cm                      (D) 1.2 to 2 cm
37. In beams bottom and top cover should be \_\_\_\_\_ [     ]  
(A) 2.5 to 5 cm                      (B) 3 to 4 cm                      (C) 4 to 5 cm                      (D) 1.2 to 2 cm
38. Unit weight of 20 mm  $\phi$  bar is [     ]  
(A) 2.46 Kg/m (B) 3.85 Kg/m (C) 1.58 Kg/m (D) 0.62 Kg/m
39. Unit weight of 25 mm  $\phi$  bar is [     ]  
(A) 2.46 Kg/m (B) 3.85 Kg/m (C) 1.58 Kg/m (D) 0.62 Kg/m
40. Unit weight of 16 mm  $\phi$  bar is [     ]  
(A) 2.46 Kg/m (B) 3.85 Kg/m (C) 1.58 Kg/m (D) 0.62 Kg/m
41. Unit weight of 16 mm  $\phi$  bar is [     ]  
(A) 2.46 Kg/m (B) 3.85 Kg/m (C) 1.58 Kg/m (D) 0.62 Kg/m
42. Gross income = \_\_\_\_\_ [     ]  
(A) Net income + out goings                      (C) Net income -out goings  
(B) Gross income + out goings                      (D) none
43. Yearly purchase = \_\_\_\_\_ [     ]  
(A)  $50/\text{rate of interest}$                       (C)  $75/\text{rate of interest}$   
(B)  $100/\text{rate of interest}$                       (D) none

44. Annual installment (sinking fund) [     ]  
(A)  $I=(s \times i)/(1+i)^n-1$      (C)  $I=(s \times i)/(1+i)^n+1$   
(B)  $I=(s \times i)/(1+i)^n \times 1$      (D) none
45. Who is the administrative head of the department [     ]  
(A) Assistant engineer     (C) chief engineer  
(B) Superintendent engineer     (D) none
46. Who is the circle head [     ]  
(A) Assistant engineer     (C) chief engineer  
(B) Superintendent engineer     (D) none
47. Dry volume of 12mm plastering (for 100 mm<sup>2</sup>) [     ]  
(A) 1 m<sup>3</sup>   (B) 2 m<sup>3</sup>     (C) 3 m<sup>3</sup>     (D) none
48. Dry volume of 20mm plastering (for 100 mm<sup>2</sup>) [     ]  
(A) 1 m<sup>3</sup>   (B) 2 m<sup>3</sup>     (C) 3 m<sup>3</sup>     (D) none
49. Number of bricks for 10 m<sup>3</sup> [     ]  
(A) 5000   (B) 500     (C) 50     (D) 5
50. The brick work is not measured in cu m in case of [     ]  
A) One or more than one brick wall  
B) Brick work in arches  
C) Reinforced brick work  
D) Half brick wall

Prepared by: **R RAJESH KUMAR**