

CODE - CE201

SUBJECT - SOM

TIME - 1hr

N.M - 15

DEPT. OF CIVIL ENGRG.

GOVT. POLYTECHNIC COLLEGE

Q.2 एक 3m लंबाई का एक आयताकार खंड पर 8 kN का भार प्रयुक्त है। इस खंड को स्थिर रखने के लिए एक आयताकार खंड का आयतन निर्धारित करें।

Q.3 एक 3m लंबाई का एक आयताकार खंड पर 8 kN का भार प्रयुक्त है। इस खंड को स्थिर रखने के लिए एक आयताकार खंड का आयतन निर्धारित करें।

Q.1 4000 ग्राम का एक आयताकार खंड पर 25000 cm<sup>3</sup> आयतन आयोजित किया जाता है। इस खंड को स्थिर रखने के लिए एक आयताकार खंड का आयतन निर्धारित करें।

5

5

5

Q.4 एक आयताकार खंड पर 8 kN का भार प्रयुक्त है। इस खंड को स्थिर रखने के लिए एक आयताकार खंड का आयतन निर्धारित करें।

Solution

CE 201

Ans. 1. Given  
 $d = 40 \text{ cm}$   
 $I = 25000 \text{ cm}^4$   
 $f_{max} = 1.2 \text{ T/cm}^2$   
 $w = 1 \text{ T/m}$

(for U.D.L)  
 $M = wL^2/8$   
 $M = 1000 \times d^2 \times 100/8$   
 kg/cm

$\frac{M}{I} = \frac{f_{max}}{y_{max}}$   
 $\frac{1000 \times d^2 \times 100}{8} = \frac{1200 \times 25000}{20}$   
 $d = \sqrt{120} = 10.97 \text{ m}$  Ans

Ans. 2. Given  
 $L = 3 \text{ m} = 3000 \text{ mm}$   
 $w = 8 \text{ kN}$   
 $EI = 2.4 \times 10^{12} \text{ N/m}^2$

i)  $\theta = \frac{wL^2}{16EI} = \frac{16 \times 2.4 \times 10^{12}}{16 \times 8000 (3000)^2}$   
 $\theta = 0.00187 \text{ Radian}$   
 ii)  $y = \frac{wL^3}{48EI} = \frac{48 \times 2.4 \times 10^{12}}{48 \times 8000 (3000)^3}$   
 $y = 1.875 \text{ mm}$

- Ans 3
- i) Both hinged =  $\frac{17^2 EI}{L^2}$
  - ii) one fixed other hinged =  $\frac{27^2 EI}{L^2}$
  - iii) Both fixed =  $\frac{47^2 EI}{L^2}$
  - iv) one fixed other free =  $\frac{17^2 EI}{4L^2}$

III TEST

Building Technology (CE 203)

Page 15

1. The load on the roof of a building is

2. The load on the wall of a building is

3. The load on the floor of a building is

4. The load on the column of a building is

5. The load on the foundation of a building is

6. The load on the roof of a building is

7. The load on the wall of a building is

8. The load on the floor of a building is

1. Preparation of stock - The stock is prepared by budding the selected plants.

The stock is prepared by budding the selected plants. The stock is prepared by budding the selected plants.

of the stock

(ii) Preparation of stock - The stock is prepared by budding the selected plants. The stock is prepared by budding the selected plants.

2. Preparation of stock

(vii) Preparation

(viii) Preparation

(ix) Preparation

(x) Preparation

(xi) Preparation

(xii) Preparation

Preparation of stock

3. Preparation of stock - The stock is prepared by budding the selected plants.

Preparation of stock

Preparation of stock

Preparation of stock

Preparation of stock

Preparation of stock

307. 2019-2020

2019-2020

2019

2019

2019

2019-2020

2019-2020

2019-2020

Subject - Surveying - I

Q.1. Plane table surveying is called collage (6 points) (3 marks)

Q.2. Plane table surveying is quicker than other (3 marks)

Q.3. Orientation of table (2 marks)

Q.4. Horizontal table (4 marks)

- (a) level line (1 mark)
- (b) Height of instrument (1 mark)
- (c) Reduced level (1 mark)
- (d) levelling staff (1 mark)

Q.5. Plane table surveying is error free (3 marks)

steps level table (3 marks)

Plane table surveying of area is done by

- (i) by using the area formula
- (ii) by using the area of similar figures

- (iii) by using the area of similar figures
- (iv) by using the area of similar figures

- (v) by using the area of similar figures
- (vi) by using the area of similar figures

- (vii) by using the area of similar figures
- (viii) by using the area of similar figures

- (ix) by using the area of similar figures
- (x) by using the area of similar figures

No. 2 Plane table surveying of area

- (i) Taped
- (ii) Wooden board
- (iii) Alidade
- (iv) Magnetic compass
- (v) U frame
- (vi) Pencil

No. 3.

Orientation:- The process of adjusting the plane table surveying by the plane table is done by the following methods:-  
 (i) by compass  
 (ii) by back sight

(a) Level line :- The line is at level surface of the levelling instrument.

(b) Height of instrument :- Surface of the instrument of height, height of instrument.

(c) Reduced level :- The height of datum of level surface of the reduced level height.

(d) levelling staff :- Levelling staff and its reduced level.

Reduced level of the staff  
The staff is on scale  
levelling staff feature

Q.5) Plane table surveying errors:-  
(i) plotting of errors  
(ii) sighting of errors  
(iii) instrument of errors

OR

Dumpy level :- dumpy level is a simple level.

Staff of the dumpy level



Q.1

एक वक्र की आकृति निम्नलिखित है।

Q.2 एक वक्र की आकृति निम्नलिखित है।

Q.3

एक वक्र की आकृति निम्नलिखित है।

Ans 1) The shear stress is zero at the top and bottom surfaces and maximum at the neutral axis.

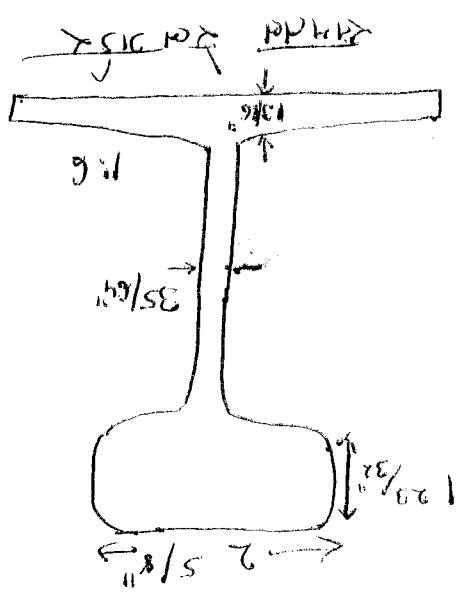
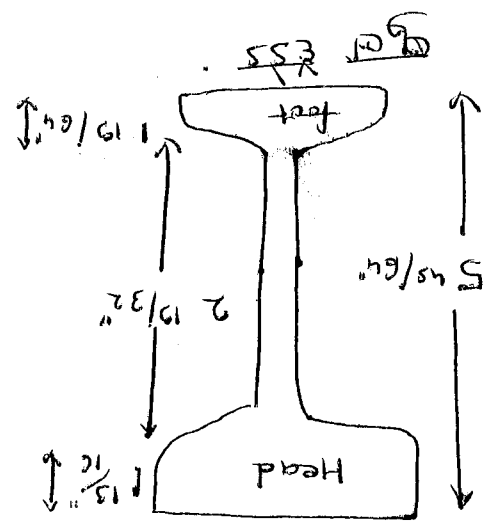
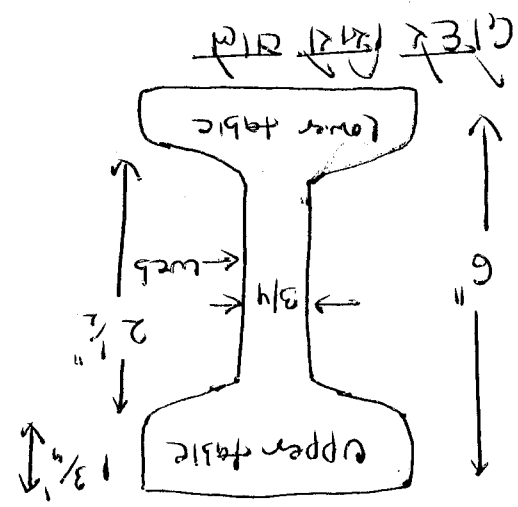
iii) The shear stress is zero at the top and bottom surfaces.

iii) The shear stress is zero at the top and bottom surfaces.

ii) The shear stress is zero at the top and bottom surfaces.

i) The shear stress is zero at the top and bottom surfaces.

Ans 2) The shear stress is zero at the top and bottom surfaces.



Ans 3) i) The shear stress is zero at the top and bottom surfaces.  
 ii) The shear stress is zero at the top and bottom surfaces.  
 iii) The shear stress is zero at the top and bottom surfaces.  
 iv) The shear stress is zero at the top and bottom surfaces.  
 v) The shear stress is zero at the top and bottom surfaces.

TIME - 1hr  
M.M. - 15

SUBJECT - SOIL  
CODE - CE206

Q.1. एक भू-भरण के प्रकार लिखिए। (5)

Q.2. भू-भरण के आकार के प्रकारों को परिभाषित करें। (5)

Q.3. भू-भरण एवं भू-भरण के भेद लिखिए। (5)

Ans 1

1) The soil is saturated and the water table is at the ground level.

2) The soil is saturated and the water table is at the ground level. The soil is saturated and the water table is at the ground level.

3) The soil is saturated and the water table is at the ground level. The soil is saturated and the water table is at the ground level.

4) The soil is saturated and the water table is at the ground level. The soil is saturated and the water table is at the ground level.

5) The soil is saturated and the water table is at the ground level. The soil is saturated and the water table is at the ground level.

6) The soil is saturated and the water table is at the ground level. The soil is saturated and the water table is at the ground level.

Ans 2

1)

2)

3)

4)

5)

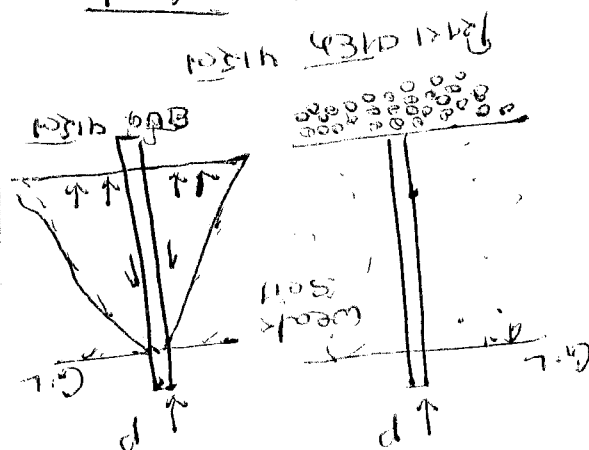
6)

7)

8)

9)

10)



1) The soil is saturated and the water table is at the ground level.

2) The soil is saturated and the water table is at the ground level.

3) The soil is saturated and the water table is at the ground level.

4) The soil is saturated and the water table is at the ground level.

5) The soil is saturated and the water table is at the ground level.

6) The soil is saturated and the water table is at the ground level.

7) The soil is saturated and the water table is at the ground level.

8) The soil is saturated and the water table is at the ground level.

9) The soil is saturated and the water table is at the ground level.

1) The soil is saturated and the water table is at the ground level.

2) The soil is saturated and the water table is at the ground level.

3) The soil is saturated and the water table is at the ground level.

4) The soil is saturated and the water table is at the ground level.

5) The soil is saturated and the water table is at the ground level.

6) The soil is saturated and the water table is at the ground level.

7) The soil is saturated and the water table is at the ground level.

Ans 3

III TEST

Dr. L. K. CONCRETE TECHNOLOGY (CE 207) P.P. 15

or - Part A or Part B or Part C

1. Part A or Part B or Part C

(i) Part A or Part B or Part C

(ii) Part A or Part B or Part C

2. Part A or Part B or Part C

3. Part A or Part B or Part C

Part A

4. Part A or Part B or Part C

1. 2012 10/31/12

2. 2012 10/31/12

3. 2012 10/31/12

4. 2012 10/31/12

5. 2012 10/31/12

6. 2012 10/31/12

7. 2012 10/31/12

8. 2012 10/31/12

9. 2012 10/31/12

10. 2012 10/31/12

11. 2012 10/31/12

12. 2012 10/31/12

13. 2012 10/31/12

14. 2012 10/31/12

15. 2012 10/31/12

16. 2012 10/31/12

17. 2012 10/31/12

18. 2012 10/31/12

19. 2012 10/31/12

20. 2012 10/31/12

21. 2012 10/31/12

22. 2012 10/31/12

23. 2012 10/31/12

24. 2012 10/31/12

25. 2012 10/31/12

26. 2012 10/31/12

- (i)  $\frac{1}{x^2} = x^{-2}$   $\Rightarrow \frac{d}{dx} x^{-2} = -2x^{-3} = -\frac{2}{x^3}$
- (ii)  $\frac{1}{x^3} = x^{-3}$   $\Rightarrow \frac{d}{dx} x^{-3} = -3x^{-4} = -\frac{3}{x^4}$
- (iii)  $\frac{1}{x^4} = x^{-4}$   $\Rightarrow \frac{d}{dx} x^{-4} = -4x^{-5} = -\frac{4}{x^5}$
- (iv)  $\frac{1}{x^5} = x^{-5}$   $\Rightarrow \frac{d}{dx} x^{-5} = -5x^{-6} = -\frac{5}{x^6}$
- (v)  $\frac{1}{x^6} = x^{-6}$   $\Rightarrow \frac{d}{dx} x^{-6} = -6x^{-7} = -\frac{6}{x^7}$
- (vi)  $\frac{1}{x^7} = x^{-7}$   $\Rightarrow \frac{d}{dx} x^{-7} = -7x^{-8} = -\frac{7}{x^8}$
- (vii)  $\frac{1}{x^8} = x^{-8}$   $\Rightarrow \frac{d}{dx} x^{-8} = -8x^{-9} = -\frac{8}{x^9}$
- (viii)  $\frac{1}{x^9} = x^{-9}$   $\Rightarrow \frac{d}{dx} x^{-9} = -9x^{-10} = -\frac{9}{x^{10}}$
- (ix)  $\frac{1}{x^{10}} = x^{-10}$   $\Rightarrow \frac{d}{dx} x^{-10} = -10x^{-11} = -\frac{10}{x^{11}}$
- (x)  $\frac{1}{x^{11}} = x^{-11}$   $\Rightarrow \frac{d}{dx} x^{-11} = -11x^{-12} = -\frac{11}{x^{12}}$

7.  $\frac{d}{dx} x^{-n} = -n x^{-n-1} = -\frac{n}{x^{n+1}}$

8.  $\frac{d}{dx} x^{-n} = -n x^{-n-1} = -\frac{n}{x^{n+1}}$

- (i)  $\frac{d}{dx} x^{-1} = -1 x^{-2} = -\frac{1}{x^2}$
- (ii)  $\frac{d}{dx} x^{-2} = -2 x^{-3} = -\frac{2}{x^3}$
- (iii)  $\frac{d}{dx} x^{-3} = -3 x^{-4} = -\frac{3}{x^4}$
- (iv)  $\frac{d}{dx} x^{-4} = -4 x^{-5} = -\frac{4}{x^5}$
- (v)  $\frac{d}{dx} x^{-5} = -5 x^{-6} = -\frac{5}{x^6}$
- (vi)  $\frac{d}{dx} x^{-6} = -6 x^{-7} = -\frac{6}{x^7}$
- (vii)  $\frac{d}{dx} x^{-7} = -7 x^{-8} = -\frac{7}{x^8}$
- (viii)  $\frac{d}{dx} x^{-8} = -8 x^{-9} = -\frac{8}{x^9}$
- (ix)  $\frac{d}{dx} x^{-9} = -9 x^{-10} = -\frac{9}{x^{10}}$
- (x)  $\frac{d}{dx} x^{-10} = -10 x^{-11} = -\frac{10}{x^{11}}$
- (xi)  $\frac{d}{dx} x^{-11} = -11 x^{-12} = -\frac{11}{x^{12}}$
- (xii)  $\frac{d}{dx} x^{-12} = -12 x^{-13} = -\frac{12}{x^{13}}$
- (xiii)  $\frac{d}{dx} x^{-13} = -13 x^{-14} = -\frac{13}{x^{14}}$
- (xiv)  $\frac{d}{dx} x^{-14} = -14 x^{-15} = -\frac{14}{x^{15}}$
- (xv)  $\frac{d}{dx} x^{-15} = -15 x^{-16} = -\frac{15}{x^{16}}$
- (xvi)  $\frac{d}{dx} x^{-16} = -16 x^{-17} = -\frac{16}{x^{17}}$
- (xvii)  $\frac{d}{dx} x^{-17} = -17 x^{-18} = -\frac{17}{x^{18}}$
- (xviii)  $\frac{d}{dx} x^{-18} = -18 x^{-19} = -\frac{18}{x^{19}}$
- (xix)  $\frac{d}{dx} x^{-19} = -19 x^{-20} = -\frac{19}{x^{20}}$
- (xx)  $\frac{d}{dx} x^{-20} = -20 x^{-21} = -\frac{20}{x^{21}}$

NOTE: ONE YEAR FOR EACH PART.

1. ONE POINT FOR EACH PART OF THE QUESTION.

2. PART A AND PART B ARE SEPARATE.

(i) ONE MARK  
(ii) FIVE MARKS

3. ANSWER EACH PART OF THE QUESTION IN 90 TO 120 WORDS.  
ONE MARK EACH PART.

4. THREE MARKS FOR EACH PART OF THE QUESTION.  
ONE MARK EACH PART.



- (X) 80-110 kJ/mol  $\frac{1}{2}$  mark
- (IX) 140-200 kJ/mol  $\frac{1}{2}$  mark
- (VIII) 7-10 eV  $\frac{1}{2}$  mark
- (VII) 1300°C  $\frac{1}{2}$  mark
- (VI) 150°C  $\frac{1}{2}$  mark
- (V) 100°C  $\frac{1}{2}$  mark
- (IV) 100°C  $\frac{1}{2}$  mark
- (III) 100°C  $\frac{1}{2}$  mark
- (II) 100°C  $\frac{1}{2}$  mark
- (I) 100°C  $\frac{1}{2}$  mark

सही उत्तरों को चिह्नित करें :

- (XI) 60-80 kJ/mol  $\frac{1}{2}$  mark
- (X) 80-100 kJ/mol  $\frac{1}{2}$  mark
- (IX) 7-8 eV  $\frac{1}{2}$  mark
- (VIII) 1200°C  $\frac{1}{2}$  mark
- (VII) 100°C  $\frac{1}{2}$  mark
- (VI) 100°C  $\frac{1}{2}$  mark
- (V) 100°C  $\frac{1}{2}$  mark
- (IV) 100°C  $\frac{1}{2}$  mark
- (III) 100°C  $\frac{1}{2}$  mark
- (II) 100°C  $\frac{1}{2}$  mark
- (I) 100°C  $\frac{1}{2}$  mark

सही उत्तरों को चिह्नित करें :

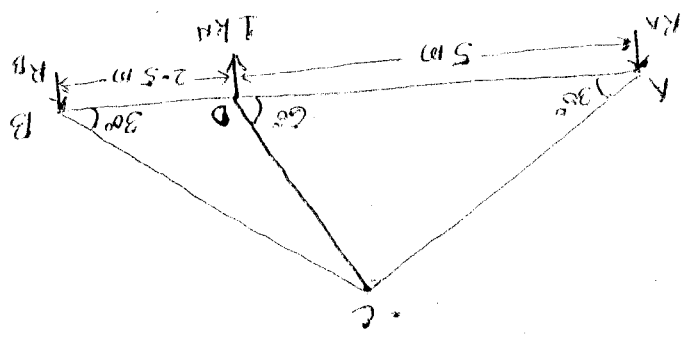


Q. 1. A beam of length 10 m is supported at its ends. A load of 20 kN is applied at a distance of 4 m from the left end. Find the reaction at the supports.

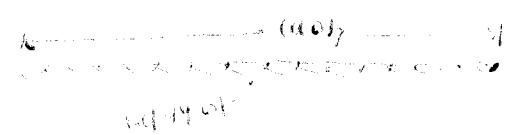
1. एक 10 मीटर की लंबाई का बीम अपने दोनों सिरों पर समर्थित है। 20 kN का भार 4 मीटर की दूरी पर बाएँ सिरों पर लगाया गया है। सिरों पर प्रतिक्रियाएँ ज्ञात करें।

2. A beam of length 30 m is supported at its ends. A load of 4 m is applied at a distance of 10 m from the left end. Find the reaction at the supports.

2. एक 30 मीटर की लंबाई का बीम अपने दोनों सिरों पर समर्थित है। 4 मीटर का भार 10 मीटर की दूरी पर बाएँ सिरों पर लगाया गया है। सिरों पर प्रतिक्रियाएँ ज्ञात करें।



Theory of structures (1st sem) solution



Support reaction forces are as follows

$$R_{B20} = 10 \times 4 \times 4$$

$$R_B = 16 \text{ kN}$$

$$+ \text{Free} = 16 \text{ kN}$$

$$R_A \times 4 = 10 \times 4 \times 2 \times 6$$

$$R_A = 32 \text{ kN}$$

$$- \text{Free} = 32 \text{ kN}$$



$$R_A = R_A \times 2 = 10 \times 4 \times 4$$

$$R_A = 100 \times 8 = 800$$

$$M_A = 480 \text{ kNm}$$

$$M_{B10} = 480 \text{ kNm}$$

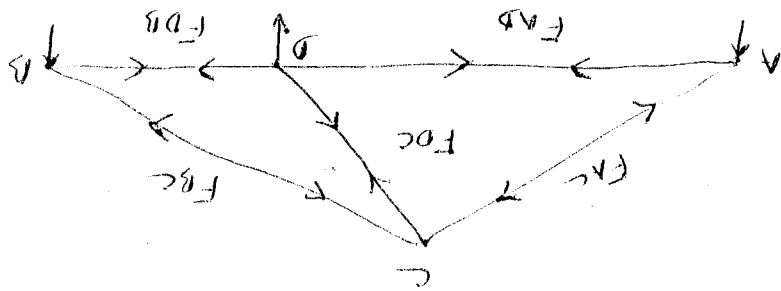
Support reaction forces are as follows

$$R_B = 6 \text{ kN}$$

$$R_B \times 10 = 20 \times 4$$

$$R_B = 6 \text{ kN}$$

$$+ \text{Free} = 6 \text{ kN}$$



Member	Force	Length
$F_{BC}$	1.425	1.73 m
$F_{DB}$	1.15	1.15 m
$F_{DC}$	1.15	1.15 m
$F_{AD}$	0.58	0.58 m
$F_{AC}$	0.67	0.67 m

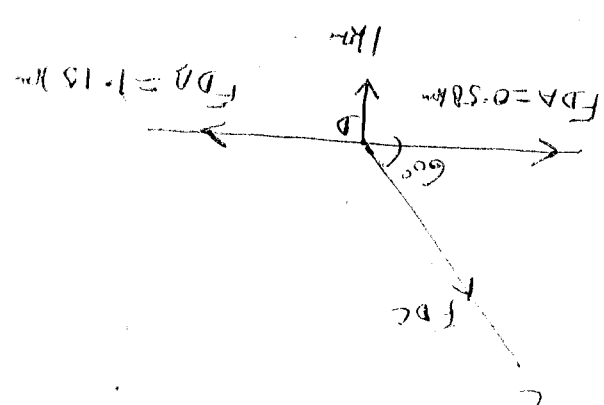
$$\sum F_V = 0$$

$$F_{DC} \sin 60 - 1 = 0$$

$$F_{DC} \times 0.866 = 1$$

$$F_{DC} = \frac{1}{0.866}$$

$$F_{DC} = 1.15 \text{ m}$$



1/2-3 D

$$F_{BD} - 1.22 \times 0.86 = 0$$

$$F_{BD} + F_{BC} \cos 30^\circ = 0$$

$$\sum F_H = 0$$

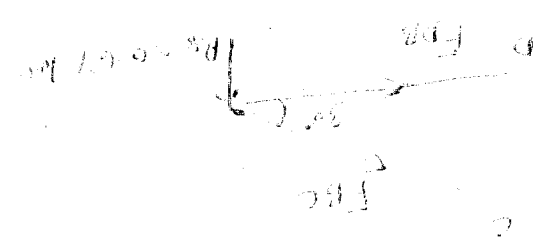
$$F_{BC} - 1.22 = 0$$

$$F_{BC} = 1.22 \text{ kN}$$

$$F_{BC} = \frac{1.22}{\cos 30^\circ} = \frac{1.22}{0.86} = 1.41 \text{ kN}$$

$$\sum F_V = 0$$

$$R_B + F_{BC} \sin 30^\circ = 0$$



$$F_{BD} = 0.67 \times 0.86 = 0.58$$

$$F_{BD} = 0.67 \cos 30^\circ = 0.58$$

$$F_{BD} + F_{AC} \cos 30^\circ = 0$$

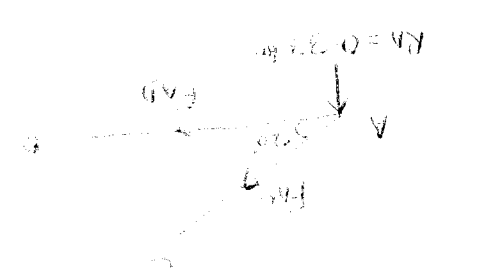
$$\sum F_H = 0$$

$$F_{AC} = \frac{0.58}{\cos 30^\circ} = \frac{0.58}{0.86} = 0.67$$

$$F_{AC} \sin 30^\circ = 0.67 \times 0.5 = 0.33$$

$$K_A + F_{AC} \sin 30^\circ = 0$$

Reaction at joint  $\sum F_V = 0$



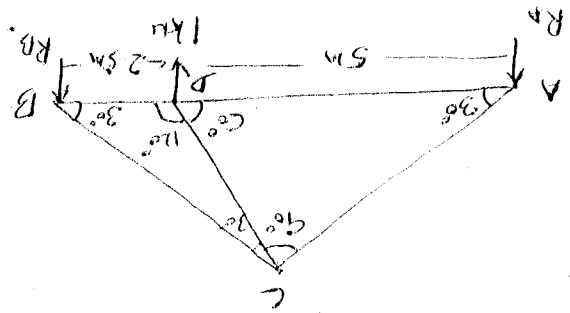
$$\therefore R_A = 1 - 0.667 = 0.333 \text{ km}$$

$$R_B = \frac{7.5}{5} = 0.667 \text{ km}$$

$$1 \times 5 - R_A \times 7.5 = 0$$

A वरवीं घड्याळाच्या दिशेने

$$R_A + R_B = 1 \text{ km}$$



3.

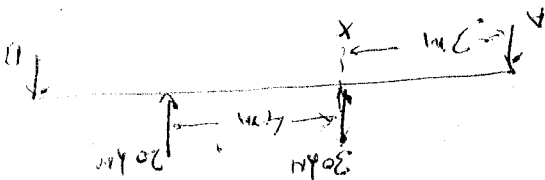
$$R_{\text{max}} = 81 \text{ km-m}$$

$$R_A = R_A \times 3 = 27 \times 3$$

$$R_A = 27 \text{ km}$$

B वर घड्याळाच्या दिशेने

$$R_A \times 10 = 30 \times 7 + 20 \times 3$$



घड्याळाच्या दिशेने घड्याळाच्या दिशेने

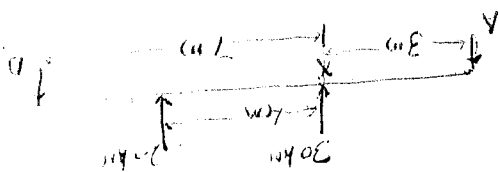
$$- F_{\text{max}} = 27 \text{ km}$$

$$R_A = \frac{210 + 60}{10}$$

$$\therefore R_A = 27 \text{ km}$$

$$R_A \times 10 = 30 \times 7 + 20 \times 3$$

B वर घड्याळाच्या दिशेने



घड्याळाच्या दिशेने घड्याळाच्या दिशेने

1. For the column size of 4 m x 4 m x 4 m  
 2. For the column size of 4 m x 4 m x 4 m  
 3. For the column size of 4 m x 4 m x 4 m

4. For the column size of 4 m x 4 m x 4 m  
 5. For the column size of 4 m x 4 m x 4 m

6. For the column size of 4 m x 4 m x 4 m  
 7. For the column size of 4 m x 4 m x 4 m



Design of steel structures

$l^2 = 12 \text{ km}^2$   
 $l = 3.46 \text{ km}$   
 $l = 3460 \text{ m}$   
 $l = 1.5 \times 12 = 18 \text{ km}^2$

$11 = \frac{10.8}{18 \times 4.2} = \frac{8}{36 \text{ km}^2}$

$18 \times 4.2 = \frac{2}{2} = 36 \text{ km}^2$

$Z_p = \frac{36 \times 10^6 \times 1.1}{250} = 158400 \text{ mm}^3$   
 $Z_p = \frac{I_y}{m} \times \gamma_{mo} = \frac{I_y}{m} \times \gamma_{mo}$

$d = 5.7 \text{ mm}$   
 $d = h - 2(t_f + r_a)$   
 $d = 200 - 2(10.8 + 11)$   
 $d = 156.4 \text{ mm}$

$I_{p2} = 2235.4 \times 10^4 \text{ mm}^4$   
 $Z_e = 223.5 \times 10^3 \text{ mm}^3$   
 $b = \frac{I}{100} = 50 \text{ mm}$

- $h = 200 \text{ mm}$   
 $b = 100 \text{ mm}$   
 $A = 3233 \text{ mm}^2$   
 $r_g = 10.8 \text{ mm}$

$\beta = \left( \frac{250}{250} \right)^2 = 1$

$\frac{I}{b} = \frac{50}{10.8} = 4.63 < 8.4E$

$\frac{I}{b} = \frac{1564}{5.7} = 27.44 < 8.4E$

$V_d = \frac{f_y}{1} \times \frac{1}{1.1} \times \frac{1}{\sqrt{3}} \times \frac{1}{1.1} \times 200 \times 5.7$   
 $V_d = 149.59 \text{ km} > 36 \text{ km}$

Solution

अनुपात का मान

$$P/d = P_b Z_p \frac{f_y}{f_{mc}} = 1 \times 1584 \times \frac{253}{11} = 36.46 \text{ mm}$$

$$P/d = 57.69 \text{ mm} > 36.46 \text{ mm}$$

सूत्र तालिका  $Z_p = 253860 \text{ mm}^3$

अनुपात का मान

$$s = \frac{5 \times 10^4}{5 \times 12 \times 4000} = \frac{784}{384} = \frac{EF}{2 \times 10^5 \times 22354 \times 10^3}$$

$$I_{zz} = 22354 \times 10^4 \text{ mm}^4$$

$$s = \frac{60 \times 16 \times 16 \times 10^3}{12} = \frac{384 \times 22354 \times 10^3}{12} = 8.9 \text{ mm}$$

$$\text{अनुपात का मान} = \frac{4000}{300} = \frac{Y}{300} = 13.51 \text{ mm}$$

2. ISHB 350 @ 710.2 mm.  $L = 3.5 \text{ m}$

$$A = 9221 \text{ mm}^2 \quad (I = 2.275 \text{ m}^4)$$

$$A = \frac{f}{f_{min}} \quad \text{अनुपात का मान}$$

$$A = \frac{2275}{52.2} = 43.58$$

$$A_{reqd} = \frac{f_y X_{max}}{f_{min}} = \frac{253 \times 171}{139} = 313.4 \text{ mm}^2$$

$$A_{reqd} = 0.21 \times [1 + 0.21(43.58 - 0.2) + 43.58] = 954.52$$

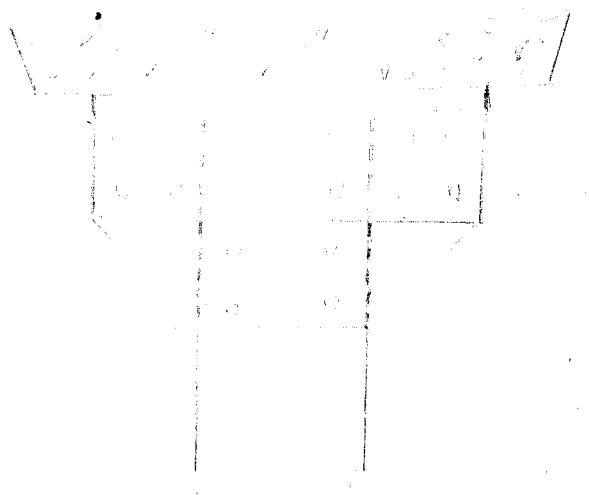
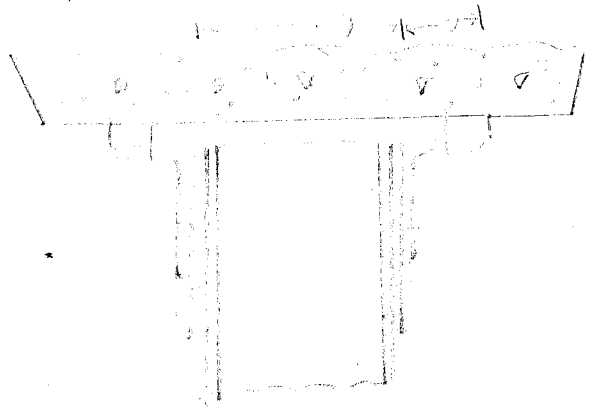
$$X_{max} = 0.5 [1 + 0.21(43.58 - 0.2) + 43.58] = 954.52$$

$$X_{reqd} = \frac{250/11.1}{0.21} = 109.5$$

$$f_{min} = 139 \quad f_y = 253$$

$$X_{sp} = 131$$

$$P = \frac{130.49 \times 9221}{1000} = 1258.6 \text{ mm}$$



(i) घन के आयतन का सूत्र

(ii) आयतन का सूत्र

$$V = \frac{P}{A} \times \text{ऊँचाई}$$

(iii) आयतन का सूत्र

(iv) आयतन का सूत्र

(v) आयतन का सूत्र

(vi) आयतन का सूत्र

(vii) आयतन का सूत्र

(viii) आयतन का सूत्र

$$P = 1.2 \times \frac{f_y}{\gamma_{ms}} - z_e$$

Q.1. Footing of types (a) and (b) are shallow foundation

(a) and (b) are

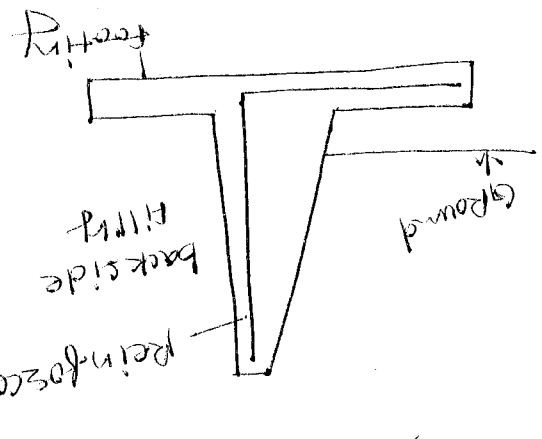
shown

Q.2. Retaining walls of types (a) and (b) are cantilever walls and are shown in figure (a) and (b).

Q.3. Draw two types of retaining walls.

Q.4. Draw any two types of design steps.

Q.5. A short R.C.C. column of size  $400 \times 400$  mm is reinforced with 8 reinforcement bars of diameter  $\phi$  and Reinforced concrete strength  $f_c = 20 \text{ N/mm}^2$ ,  $f_y = 415 \text{ N/mm}^2$ . The column is subjected to ultimate load of 1000 kN.



- (iii) force bearing capacity  
 (ii) weight of structure  
 (i) weight of soil

→ Counter Retaining wall - (2)

- (i) gravity retaining wall  
 (ii) semi gravity retaining wall  
 (iii) counter retaining wall  
 (iv) counter fort retaining wall

18. (2)

TYPES of retaining walls :-

Isolated, combined, mats or rafts, strip footing and gravity wall

- Shallow foundation :- (1)  
 (a) shallow foundation  
 (b) deep foundation  
 (c) pier foundation  
 (d) pile foundation

[3+1=4]

- (1) Types of footing :- (3)  
 (A) shallow foundation  
 → isolated footing  
 → strip footing  
 → combined footing  
 → mats or rafts  
 → strap footing

$$E_{min} = 20 \text{ mm}$$

Assume 20 mm

or

$$E_{min} = \frac{d_{eff}}{P} + \frac{30}{P}$$

S.2 Calculate minimum eccentricity

$$f_{ck} = 20 \text{ N/mm}^2 \quad f_y = 415 \text{ N/mm}^2$$

$$d_{eff} = 2.225 \text{ m}$$

$$A_{sc} = 8 \times \frac{\pi}{4} \times (16)^2 = 1608 \text{ mm}^2$$

$$A_g = 400 \times 400 = 160000 \text{ mm}^2$$

Calculate  $e$  & check deflection

(vi) Calculate actual depth comparison

(v) Calculate bending moment

(iv) Calculate total load, ultimate load

(iii) Calculate depth of slab (vertical deflection)

(ii) Calculate  $f_{ax}$ ,  $f_{ay}$

(i) Given data

Q. (4) design steps of one way slab

$$\frac{f_y}{f_{ck}} > 2$$

Case 1:  $\frac{f_y}{f_{ck}} > 2$

Case 2:  $\frac{f_y}{f_{ck}} \leq 2$

two way slab:  $\frac{f_y}{f_{ck}} > 2$  &  $\frac{f_y}{f_{ck}} > 2$

$$\frac{f_y}{f_{ck}} > 2$$

Case 1

AT slab  $\frac{f_y}{f_{ck}} > 2$  &  $\frac{f_y}{f_{ck}} > 2$

Q. (3) one way slab =  $\frac{f_y}{f_{ck}} > 2$  &  $\frac{f_y}{f_{ck}} > 2$

2. Selection of ultimate load.

(Pg. 71)

$$E_{min} = 0.005 \times D$$

$$= 0.005 \times 400$$

$$= 20 \text{ mm}$$

$$E_{min} \leq 0.05D$$

$$\therefore P_u = 0.4 f_{ck} A_c + 0.67 f_y A_{sc}$$

$$\text{where } A_c = A_g - A_{sc}$$

$$= 16 \times 16^4 - 1608$$

$$= 158392 \text{ mm}^2$$

$$P_u = 0.4 \times 26 \times 158392 + 0.67 \times 415 \times 1608$$

$$= 171424.04$$

Final design

Q.1. सर्वेक्षण क्षेत्र के लिए सर्वेक्षण की शुरुआत करने का सर्वेक्षण क्षेत्र समाप्त करिये। (5)

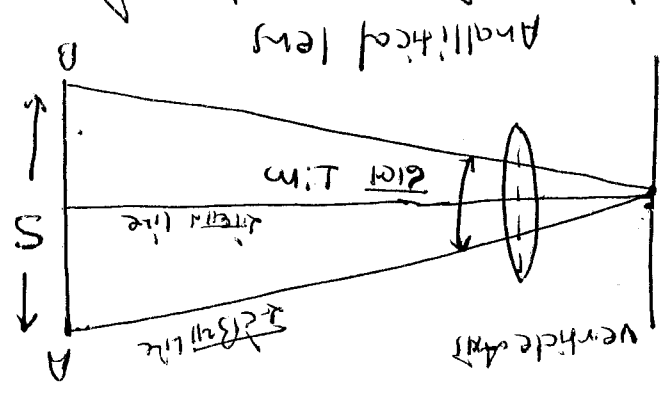
Q.2. सर्वेक्षण क्षेत्र में सर्वेक्षण शुरू करने पर सर्वेक्षण समाप्त करिये। (5)

Q.3. सर्वेक्षण क्षेत्र में सर्वेक्षण शुरू करने से पूर्व सर्वेक्षण क्षेत्र समाप्त करिये। (5)

- i) सर्वेक्षण क्षेत्र में सर्वेक्षण
- ii) सर्वेक्षण क्षेत्र में सर्वेक्षण
- iii) सर्वेक्षण क्षेत्र में सर्वेक्षण
- iv) सर्वेक्षण क्षेत्र में सर्वेक्षण



Ans 2



$$\boxed{1 = M_S + C} \quad \boxed{1 = K_S + C}$$

$$1 = \left[ \frac{f}{f} \right] S + (f + d)$$

$$1 = f + \frac{f}{S} + f + d$$

$$1 = u + d$$

$$u = f + \frac{f}{S}$$

$$u = f + \frac{u}{f}$$

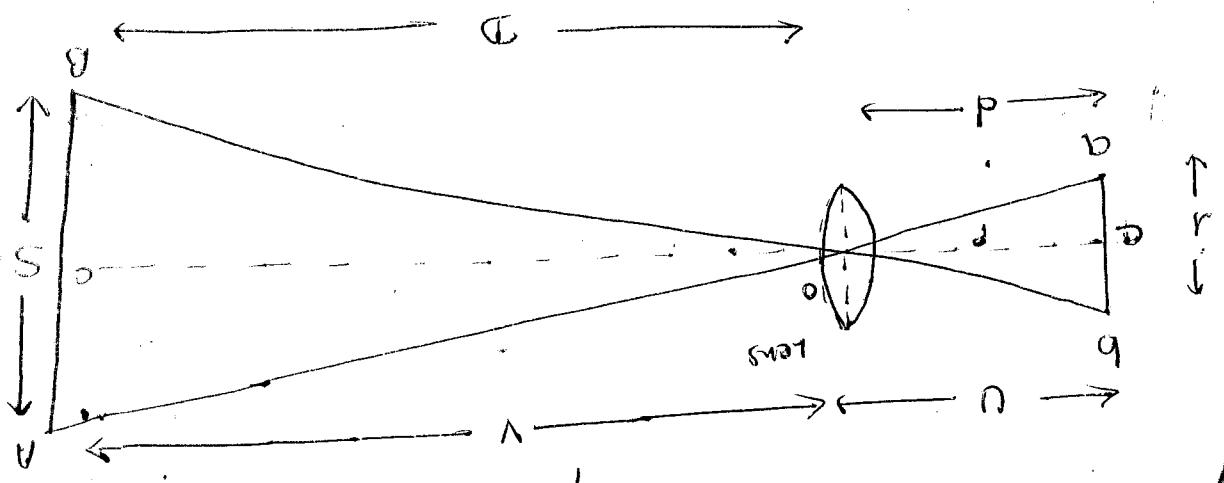
$$\frac{f}{u} = \frac{u}{f} + \frac{u}{u} + \frac{1}{f}$$

$$\frac{f}{u} = \frac{u}{f} + \frac{1}{f}$$

$$\frac{1}{u} = \frac{1}{f} + \frac{1}{S}$$

Conjugate points are those points on the optical axis such that an object placed at one point forms a real inverted image at the other point. The distance between these two points is called the conjugate distance. The points are called conjugate points.

When an object AB is placed at a distance S from the optical center O of a lens, a real inverted image A'B' is formed at a distance u from the optical center. The distance between the object and the image is called the conjugate distance. The points A and A' are called conjugate points.



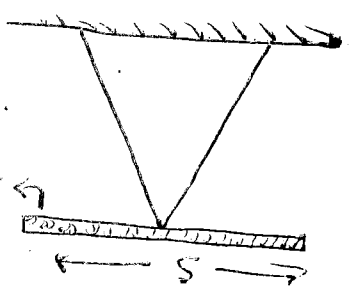
CE 306

$C = \frac{1}{u} - \frac{1}{S}$  (Conjugate distance)  
 $M = \frac{v}{u} = \frac{S}{f}$  (Magnification)  
 $C = 0$

Answers

- i) Reaction force of cable (T) =  $R \tan \frac{\Delta}{2}$
- ii) Cable force of cable (L) =  $2R \sin \frac{\Delta}{2}$
- iii) Cable force of cable (W) =  $R (\sec \frac{\Delta}{2} - 1)$
- iv) Cable force of cable (M) =  $R (1 - \cos \frac{\Delta}{2})$

Substance beam is supported by cable at two points. The cable is attached to the ceiling and the floor. The distance between the two points is 'S'. The angle between the cable and the horizontal is  $\frac{\Delta}{2}$ . The reaction force of the cable is 'T'. The cable force of the cable is 'L'. The cable force of the cable is 'W'. The cable force of the cable is 'M'.



- Q.1. Explain the term 'hardness' of water. (5 marks)
- Q.2. Explain the term 'softening' of water. (5 marks)
- Q.3. Explain the term 'chlorination' of water. (5 marks)
- Q.4. Explain the term 'disinfection' of water. (5 marks)

- 154.
- (1) अणुसंश्लेषण प्रक्रिया (संश्लेषण)
  - (2) अणुखंडन प्रक्रिया (खंडन)
  - (3) अणुसंश्लेषण प्रक्रिया (संश्लेषण)
  - (4) अणुखंडन प्रक्रिया (खंडन)

- (i) अणुसंश्लेषण प्रक्रिया (संश्लेषण)
- (ii) अणुखंडन प्रक्रिया (खंडन)
- (iii) अणुसंश्लेषण प्रक्रिया (संश्लेषण)
- (iv) अणुखंडन प्रक्रिया (खंडन)

- (i) अणुसंश्लेषण प्रक्रिया (संश्लेषण)
- (ii) अणुखंडन प्रक्रिया (खंडन)
- (iii) अणुसंश्लेषण प्रक्रिया (संश्लेषण)
- (iv) अणुखंडन प्रक्रिया (खंडन)

अणुसंश्लेषण प्रक्रिया (संश्लेषण) - अणुसंश्लेषण प्रक्रिया

अणुखंडन प्रक्रिया (खंडन) - अणुखंडन प्रक्रिया

Q.1. सिंचना-संबंधी की शीर्ष 2 प्रश्न पूछिए। (5) [सिंचना (5)]

Q.2. फ्लो व रेखा की प्रजा लिखिए। (5)

Q.3. सिंचना की व्यवस्था / शक्ति। (5)

Ans. 1. i) लिपि के भाग के प्रकार

- ii) लिपि के भाग के प्रकार
- iii) लिपि के भाग के प्रकार
- iv) लिपि के भाग के प्रकार
- v) लिपि के भाग के प्रकार
- vi) लिपि के भाग के प्रकार

Ans 2

प्रकार

प्रकार के भाग के प्रकार

प्रकार के भाग के प्रकार

प्रकार के भाग के प्रकार

प्रकार के भाग के प्रकार

प्रकार के भाग के प्रकार

Ans 3

प्रकार के भाग के प्रकार

प्रकार के भाग के प्रकार

प्रकार के भाग के प्रकार

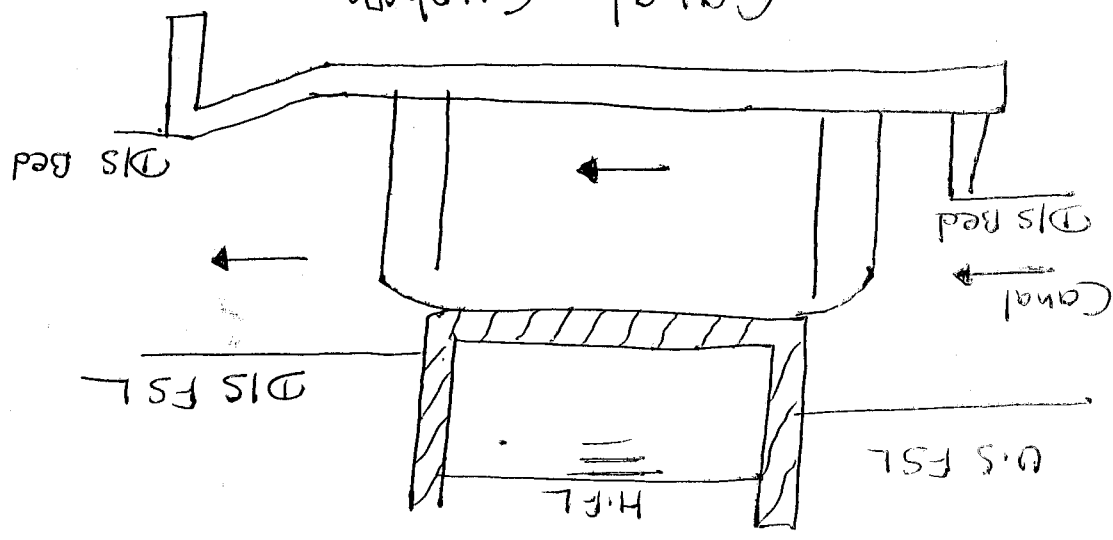
प्रकार के भाग के प्रकार

प्रकार के भाग के प्रकार

प्रकार के भाग के प्रकार

प्रकार के भाग के प्रकार

# Canal Syphon



III TEST

ESTIMATING & COSTING (CE 307)

PL# 15

1. How is the cost of work done?

2. How is the cost of work done calculated?

3. How is the cost of work done calculated?

4. How is the cost of work done calculated?

5. How is the cost of work done calculated?

6. How is the cost of work done calculated?

7. How is the cost of work done calculated?

8. How is the cost of work done calculated?

9. How is the cost of work done calculated?

10. How is the cost of work done calculated?

5



1.  $\frac{\text{Year 1 cost} - \text{Year 2 cost}}{\text{Year 1 cost}} = \frac{\text{Year 1 cost} - \text{Year 2 cost}}{\text{Year 1 cost}}$

Year 1 cost = 1000000, Year 2 cost = 900000  
 Difference = 1000000 - 900000 = 100000

∴ 10% reduction

$$\frac{\text{Year 1 cost} - \text{Year 2 cost}}{\text{Year 1 cost}} = \frac{1000000 - 900000}{1000000} = 0.1$$

(ii)  $\frac{\text{Year 1 cost} - \text{Year 2 cost}}{\text{Year 1 cost}} = \frac{1000000 - 900000}{1000000} = 0.1$

$$1 - \left(\frac{c}{s}\right)^n = D = 1 - \left(\frac{2}{3}\right)^5$$

c - Year 1 cost  
 s - Year 2 cost  
 n - number of years

(iii)  $\frac{\text{Year 1 cost} - \text{Year 2 cost}}{\text{Year 1 cost}} = \frac{1000000 - 900000}{1000000} = 0.1$

$$I = \frac{S \cdot r}{(1+r)^n - 1}$$

I - 3192000 (Year 1 cost)  
 n - 5 years  
 r - 10%  
 S - 2000000 (Year 2 cost)

∴ 10% reduction

(iv)  $\frac{\text{Year 1 cost} - \text{Year 2 cost}}{\text{Year 1 cost}} = \frac{1000000 - 900000}{1000000} = 0.1$

2. (i)  $\frac{\text{Year 1 cost} - \text{Year 2 cost}}{\text{Year 1 cost}} = \frac{1000000 - 900000}{1000000} = 0.1$

∴ 10% reduction

(ii)  $\frac{\text{Year 1 cost} - \text{Year 2 cost}}{\text{Year 1 cost}} = \frac{1000000 - 900000}{1000000} = 0.1$

∴ 10% reduction

∴ 10% reduction

3.  $\frac{\text{Year 1 cost} - \text{Year 2 cost}}{\text{Year 1 cost}} = \frac{1000000 - 900000}{1000000} = 0.1$

(i)  $\frac{\text{Year 1 cost} - \text{Year 2 cost}}{\text{Year 1 cost}} = \frac{1000000 - 900000}{1000000} = 0.1$

(ii)  $\frac{\text{Year 1 cost} - \text{Year 2 cost}}{\text{Year 1 cost}} = \frac{1000000 - 900000}{1000000} = 0.1$

∴ 10% reduction

∴ 10% reduction

(iii)  $\frac{\text{Year 1 cost} - \text{Year 2 cost}}{\text{Year 1 cost}} = \frac{1000000 - 900000}{1000000} = 0.1$

1.  $\frac{1}{x^2} = x^{-2}$  का अवकलन करने पर  
 $\frac{d}{dx} x^{-2} = -2x^{-3} = -\frac{2}{x^3}$   
 अतः  $\frac{d}{dx} \frac{1}{x^2} = -\frac{2}{x^3}$

2.  $\frac{1}{x^3} = x^{-3}$  का अवकलन करने पर

$\frac{d}{dx} x^{-3} = -3x^{-4} = -\frac{3}{x^4}$   
 अतः  $\frac{d}{dx} \frac{1}{x^3} = -\frac{3}{x^4}$

3.  $\frac{1}{x^4} = x^{-4}$  का अवकलन करने पर

$\frac{d}{dx} x^{-4} = -4x^{-5} = -\frac{4}{x^5}$   
 अतः  $\frac{d}{dx} \frac{1}{x^4} = -\frac{4}{x^5}$

- Q.1. बिना प्रयोग के कौन से दो गुणों का निर्धारण किया जा सकता है (5 marks)
- Q.2. कौन से दो गुणों का निर्धारण बिना प्रयोग के नहीं किया जा सकता है (4 marks)
- Q.3. कौन से दो गुणों का निर्धारण बिना प्रयोग के नहीं किया जा सकता है (5 marks)
- Q.4. कौन से दो गुणों का निर्धारण बिना प्रयोग के नहीं किया जा सकता है (10 marks)

1. 3/11/2018, 1.2.18

1) 10.10.2018, 1.2.18 (3) 11/10/2018

2) 10.10.2018, 10.10.2018, 1.2.18, 1.2.18

3) 10.10.2018, 1.2.18, 1.2.18

4) 10.10.2018, 1.2.18, 1.2.18 - 10.10.2018 (10) 10.10.2018

20.10.2018, 10.10.2018, 1.2.18, 1.2.18

20.10.2018, 1.2.18, 1.2.18 (10)

20.10.2018, 1.2.18 (10)

1.2.18  
10.10.2018, 1.2.18

20.10.2018, 1.2.18, 1.2.18 (10)

20.10.2018, 1.2.18, 1.2.18 (10)

20.10.2018, 1.2.18, 1.2.18 (10)

1.2.18, 1.2.18, 1.2.18 (10) 10.10.2018

1.2.18, 10.10.2018, 1.2.18 (10)

10.10.2018, 1.2.18, 1.2.18 (10)

3.11.2018, 10.10.2018, 1.2.18, 1.2.18 (3.11)

10.10.2018, 1.2.18, 1.2.18 (10) 10.10.2018

10.10.2018, 1.2.18, 1.2.18 (10)

10.10.2018, 1.2.18, 1.2.18 (10)

10.10.2018, 1.2.18, 1.2.18 (10)

10.10.2018, 1.2.18, 1.2.18 (10)

10.10.2018, 1.2.18, 1.2.18 (10)

10.10.2018, 1.2.18, 1.2.18 (10) 10.10.2018

III TEST

Account & Accounts (CE 309) P#1-15

1. The following are the accounts of a firm for the year ending 31st Dec 2019:

1. Balance Brought Forward (1/1/19) ₹ 1,00,000

2. Sales ₹ 5,00,000

3. Purchases ₹ 3,00,000

4. Opening Stock ₹ 50,000

5. Closing Stock ₹ 20,000



1

3000 and 10000 of 100000

(iii) 10000

(ii) 10000

(i) 10000

5000

10000 and 10000 of 100000

(iii) 10000

(ii) 10000

(i) 10000

4. 10000 of 10000 and 5000

10000 and 10000 of 100000

(iii) 10000

(ii) 10000

(i) 10000

(iii) 10000 and 10000 of 100000

(ii) 10000

(i) 10000 and 10000 of 100000

3. 10000 of 10000

III Test

Earthquake Resistant Structure (CE 310)

Q.1. Explain the importance of seismic design in the design of structures.

Q.2. Discuss the different types of seismic waves.

Q.3. Explain the concept of seismic hazard.

Q.4. Discuss the different types of seismic instruments.

Q.5. Explain the concept of seismic risk.

Q.6. Discuss the different types of seismic zones.

Q.7. Explain the concept of seismicity.

Q.8. Explain the concept of seismic hazard.



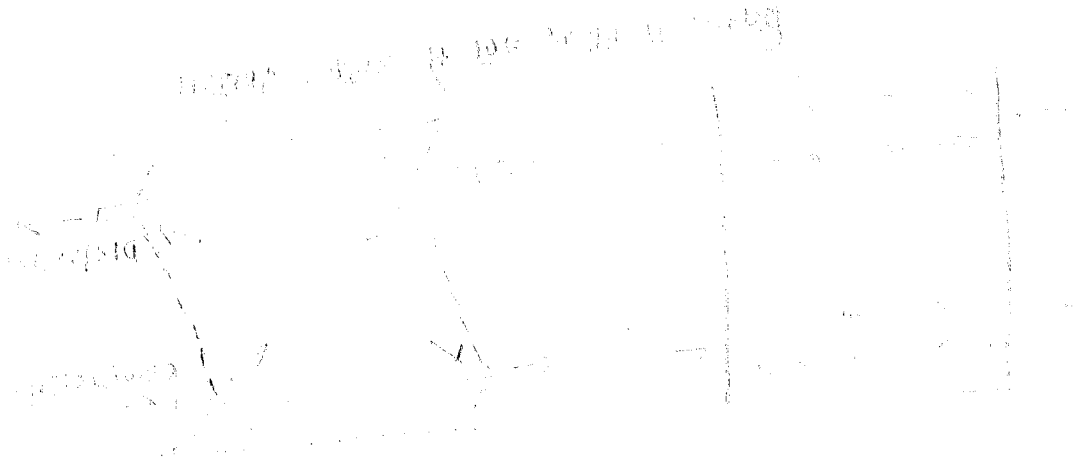
1. Shear Wall - Open Side Open Frame Structure can be used for residential buildings and small commercial buildings

2. Shear Wall can be used for residential buildings and small commercial buildings

3. Shear Wall can be used for residential buildings and small commercial buildings

4. Shear Wall can be used for residential buildings and small commercial buildings

5. Shear Wall can be used for residential buildings and small commercial buildings



- 1. Shear Wall can be used for residential buildings and small commercial buildings
- 2. Shear Wall can be used for residential buildings and small commercial buildings
- 3. Shear Wall can be used for residential buildings and small commercial buildings
- 4. Shear Wall can be used for residential buildings and small commercial buildings
- 5. Shear Wall can be used for residential buildings and small commercial buildings
- 6. Shear Wall can be used for residential buildings and small commercial buildings
- 7. Shear Wall can be used for residential buildings and small commercial buildings
- 8. Shear Wall can be used for residential buildings and small commercial buildings
- 9. Shear Wall can be used for residential buildings and small commercial buildings
- 10. Shear Wall can be used for residential buildings and small commercial buildings

