KDK COLLEGE OF ENGINEERING, NAGPUR

Department of Civil Engineering

Session 17 - 18

Semester VI

ASSIGNMENT NO. 1

Subject:- Environmental Engineering II

1. Find the diameter of a circular sanitary sewer for the following data :- i) Population- 12500 persons. ii) Rate of supply -135 lpcd. iii) Velocity of flow is server = 1m/sec.

2. A sewer, having diameter 1.20m, is laid at a gradient of 1 in 400. Calculate the velocity of flow & discharge through this sewer when running one-half full. Assume N = 0.012 in manning's formula

3. Define Inverted siphon. Describe it with the help of neat sketch.

4. What are 'traps' why is it necessary that all Sanitary fittings should be provided with individual traps? Star the different traps in use.

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ASSIGNMENT NO. 2
Subject:- Environmental Engineering II

1. Draw a layout of a conventional sewage treatment plant & state function of each unit.

2. Design a circular sewage sedimentation tank for a town having population of 40,000. The average water demand is 140 lpcd. Assume that 70% water reaches at the treatment unit and the maximum demand is 2.7 times the average demand.

3. With the help of neat sketch, explain the activated sludge process.

4. Explain the meteorological factors influencing the air pollution

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ASSIGNMENT NO. 1
Subject:- Surveying – II

1. Derive the equation D=KS+C as used in fixed hair method of tacheometry.

2. A tacheometer was set up at a station 'A' and the reading on the vertically held staff at 'B' were 2.255, 2.605 and 2.955 the line of staff being at an inclination of +8°24', another observation on the vertically held staff at C gave the reading 1.640, 1.920 and 2.200 the inclination of line of sight being +1°06'. Calculate horizontal distance between A and B and elevation of 'B' if the RL of 'C' is 418.685. The constant of instrument were 100 and 0.3.

3. Derive the distances and elevation formulae for line of sight inclined but staff normal to it, when the line of collimation is inclined upward.

4. Two straights AB and BC intersect at an inaccessible point. A straight line MN intersect them making angle AMN = 115° and an angle CNM = 128°. The lengths of MN is 135.50M. The radius of the curve between the straights is 387.60 m and chainage of M is 1596.90 m. Compute the necessary data to set out the curve with 30 m chord length, with the help of theodolite

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ASSIGNMENT NO. 2

Subject:- Surveying - II

1. A parabolic valley curve is to be set out connecting two uniform grade - 0.60% and +0.45% The chainage and reduced level of point of intersection are 10545.325 m and 192.235 m respectively. The rate of change of grade is 0.05% per chain of 20 m. Calculate the reduced levels of the various station pegs and tabulate in a table.

2. Two straights AB and CD intersect of V. BD is the common tangent of length 200 m. It is proposed to introduced a reverse curve between them the angles ABD and CDB are 150°30' and 43°12' respectively. Calculate : i) The common radius ii) The chainages of PC, PRC and PT if that of B is 9245.80 m

3. Two straights AB and BC intersect at chainage 1000 m, the deflection angle being 40°. It is proposed to insert a circular curve of radius 300 m with a transition curve of length 90m at each end. Calculate all the dates necessary for setting out the curve by the deflection angle method, taking peg interval of 20 m. Prepare the setting out table, taking the least count of theodolite 20".

4. The altitude of two proposed stations A and B 130 km apart are respectively 220 m and 1240 m. The altitude of the two points C and D on a profile between them are respectively 305 m and 630 m. The distance AC = 60 km and AD = 100 km. Determine A and B are intervisible and if necessary find the minimum height of scaffolding at B assuming A as the ground station such that the new line of sight clear the peak by 3 m.

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ASSIGNMENT NO. 1
Subject:- Fluid Mechanics II

Q.1) Oil of dynamic viscosity 0.2 Pa-Sec ,Sp gr = 0.8, flows through a 180mm dia pipe. If the head loss in 300m, length of pipe is 18m, estimate –

i) Shear stress at distance of 40mm from pipe boundary
ii) Shear stress along boundary
iii) Velocity at radial distance of 75 mm from axis of pipe
iv) Check whether flow is laminar.

Q.2) Write short notes with neat sketches on following :

1. Total energy line
2. Hydraulic grade line

Q.3) define the syphon and give its uses.

Q.4) Show that for a linear distribution of velocity in the boundary layer, $S/\theta = 6$.

Q.5) Explain streamline body

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ASSIGNMENT NO. 2
Subject:- Fluid Mechanics II

Q1. What do you understand by most economical section of channel. Derive the condition of most economical section for trepezoidal channel.

Q2. Find the normal depth corresponding to a discharge of 0.5m3/s flowing through a traingular channel with its vertex down. The sides slope of the channel are 1.5H:1V & the longitudinal slope is 1 in 4000 N=0.025.

Q3. Draw specific energy diagram for the rectangular channel. Also calculate the critical depth corresponding to a discharge of 10.5m3/s for a rectangular channel of base width 3.4m

Q4. A rectangular open channel of bed width 8m & depyh of flow 1.2m discharge water rate of 15m3/s. Find the specific energy, critical depth, critical velocity, specific energy required for the discharge.

Q5. A rectangular channel section having mannings n=0.013 is to be designed economically to carry discharge of 10m3/s with limiting velocity of 0.8m/s. Determine the dimension of the channel.

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ASSIGNMENT NO. 1
Subject:- Steel Structures

1. Design a single Angle Tie Member to Carry a safe load of 150kN. The length of member is 2.5m. Provide bolted connection.

2. A 2.5m Long discontinuous strut is subjected to a factored load of 300kN. Design the section using two angles provided on either sides of the gusset 15mm thick. Use Bolted connection.

3. A secondary Beam ISLB 350 @49.5 kg/m is to be connected to a main Beam. ISMB 600 @ 122.6 kg/m. The secondary beam transfers a safe reaction of 400 kN. Design the connection.

4. A beam, simply supported over an effective span of 8m, carries a U.d.L. of 80 kN/m, inclusive of self weight. The depth of the beam is restricted to 450 mm. Design the Beam assuming that the compression flange of the beam is laterally supported by floor construction. Assume width of support 230 mm.

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ASSIGNMENT NO. 2
Subject:- Steel Structures

1. A welded plate Girder of span 30m is Laterally restrained throughout its length. If has to carry a load of 110 kN/m over the whole span be sides its self weight. Design. i) C/s of Girder. ii) End Bearing stiffener and iii) Connection of flange to web.

2. Design a Built up column consisting of four rolled steel angles of Grade Fe410 steel for a 5m high Laced column to carry a factored Load of 2000 kN. The column is effectively held in position but not restrained against rotation at both ends.

3. A column is subjected to a factored load of 1000 kN and a factored moment of 80 kN-m @ one of its planer axes and 40 kN-m about the other axis respectively. Design the section using single rolled section if its effective length is 5m.