B.E. DEGREE EXAMINATION, 2016

(CIVIL ENGINEERING)

(SIXTH SEMESTER)

CLEC - 601 / PCLEC - 304. HYDROLOGY

(Common with Part - Time)

November]   [Time : 3 Hours

Maximum : 75 Marks.

Answer any ONE FULL question from each unit.

UNIT - I

1. (a) Discuss the practical applications of hydrology.   (8)

   (b) List the vertical structure of the atmosphere.   (7)

(OR)

2. (a) Write the hydrological cycle balance equation and explain the components.   (8)

   (b) Write a note on the scope of hydrology.   (7)

UNIT - II

3. (a) Explain the various types of precipitaion.   (8)

   (b) Describe the method for estimating missing rainfall data at a station.   (7)

(OR)

4. (a) Calculate the optimum number of rain gauges for a drainage basin so as to limit the percentage error within 10 percent. At present, the drainage basin is provided with 5 raingauges. The average rainfall at these stations is : 95 cm, 85 cm, 72 cm, 55 cm, and 45 cm.   (8)

   (b) Explain the step by step procedure of preparation of intensity - duration - frequency analysis.   (7)

UNIT - III

5. (a) Discuss briefly the factors affecting infiltration.   (8)

   (b) Explain how transpiration is measured in laboratory.   (7)

(OR)

6. (a) What is the evaporation, if 4.75 litres of water is removed from an evaporation pan of diameter 1.3 m and the simultaneous rainfall measurement is 9.5 mm? (8)

(b) List the methods of reducing evaporation from water surfaces. (7)

UNIT - IV

7. (a) List out the various climatic factors affecting run-off. (8)

(b) Explain the working principle of automatic stage recorder. (7)

(OR)

8. Describe the step by step procedure of the derivation of a unit hydrograph from an isolated storm. (15)

UNIT - V

9. Discuss the Muskingam method of channel routing. (15)

(OR)

10. Explain the methods of estimating design flood. (15)

B.E. DEGREE EXAMINATION, 2016

(CIVIL ENGINEERING)

(SIXTH SEMESTER)

CLEC - 602 / PCLEC - 202. HYDRAULICS AND HYDRAULIC MACHINERY

(Common with Part - Time)

November]   [Time : 3 Hours

Maximum : 75 Marks.

Answer any ONE FULL question from each unit.

ALL questions carry EQUAL marks.

UNIT - I

1. Derive the expression for discharge through a channel by chezy's formula.

(OR)

2. A rectangular channel carries water at a rate of 500 litres/sec when bed slope is 1 in 3000. Find the most economical dimensions of the channel if C=60.

UNIT - II

3. Obtain an expression for the force exerted by a jet of water on a fixed vertical plate in the direction of the jet.

(OR)

4. A jet of water of 30 mm diameter moving with a velocity of 15 m/s, strikes a hinged square plate of weight 245·25 N at the centre of plate. The plate is of uniform thickness. Find the angle through which the plate will swing.

UNIT - III

5. Obtain an expression for the work done per second by water on the runner of a Pelton wheel. Hence, derive an expression for maximum efficiency of the Pelton wheel giving the relationship between the jet speed and bucket speed.

(OR)

6. A Pelton wheel has a mean bucket speed of 35 m/s with a jet of water flowing at a rate of 1 m^3/s under a head of 270 m. The buckets deflect the jet through an angle of 170°. Calculate the power delivered to the runner and the hydraulic efficiency of the turbine. Assume co-efficient of velocity as 0.98.

UNIT - IV

7. Obtain an expression for the work done by impeller of a centrifugal pump on water per second per unit weight of water.

(OR)

8. The internal and external diameters of the impeller of a centrifugal pump are 300 mm and 600 mm respectively. The pump is running at 1000 *rpm*. The vane angles at inlet and outlet are 20° and 30° respectively. The water enters the impeller radially and velocity of flow is constant. Determine the work done by the impeller per unit weight of water.

UNIT - V

9. What is the effect of acceleration of the piston on the velocity and acceleration of the water in suction and delivery pipes? Obtain an expression for the pressure head due to acceleration in the suction and delivery pipes.

(OR)

10. A double - acting reciprocating pump, running at 50 *rpm* is discharging 900 litres of water per minute. The pump has stroke of 400 mm. The diameter of piston is 250 mm. The delivery and suction heads are 25 m and 4 m respectively. Find the slip of the pump and power required to drive the pump.

B.E. DEGREE EXAMINATION, 2016

(CIVIL, CIVIL AND STRUCTURAL ENGINEEERING)

(SIXTH SEMESTER)

CLEC-603 / CSEC-602 / PCLEC-303 / PCSEC-504.

STRUCTURAL MECHANICS - II

November]   [Time : 3 Hours

Maximum : 60 Marks

(*For the candidates of 2007-08 batch and later*)

Answer ONE FULL question from each unit.

Assume any reasonable missing data.

ALL questions carry EQUAL marks.

UNIT - I

1. Analyse the continuous beam shown in figure-1 by slope deflection method.
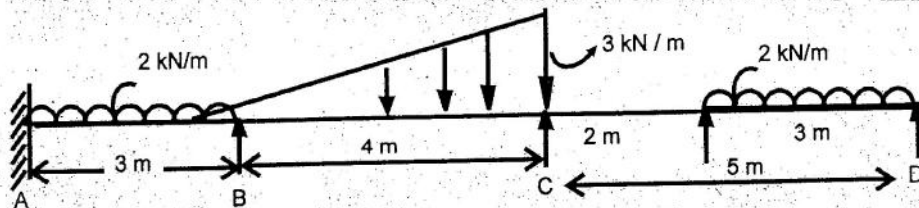
Figure - 1

(OR)

2. Analyse the frame shown in figure - 2 by slope deflection method.
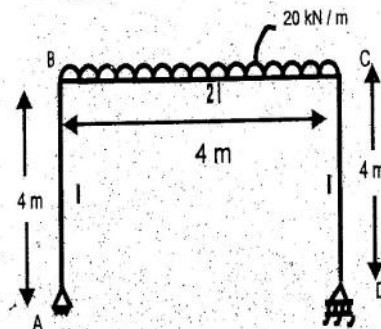

Figure - 2

UNIT - II

3. Analyse the continuous beam shown in figure-3 by strain energy method. Take EI is constant throughout the beam.
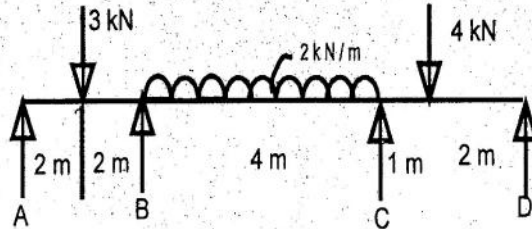

Figure - 3.

(OR)

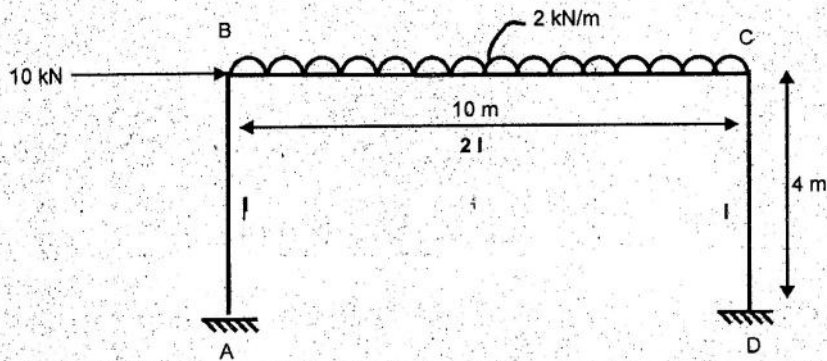4. Analyse the portal frame shown in figure - 4 by strain energy method.

Figure-4.

UNIT - III

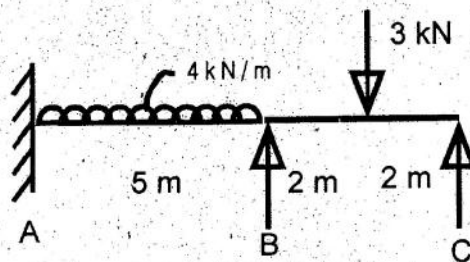5. Analyse the continuous beam shown in figure - 5 by flexibility method. EI constant.

Figure - 5.

(OR)

6. Analyse the frame shown in figure - 4 by force method. EI is constant.

UNIT - IV

7. Analyse the continuous beam shown in figure - 6 by displacement method. EI is constant throughout the beam.
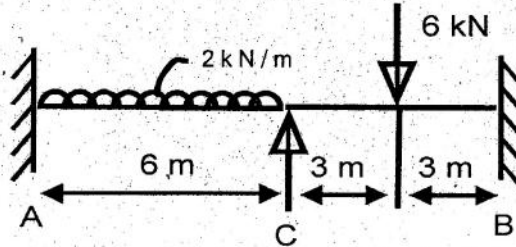

Figure - 6.

(OR)

8, Analyse the frame shown in figure - 7 by stiffness matrix method.

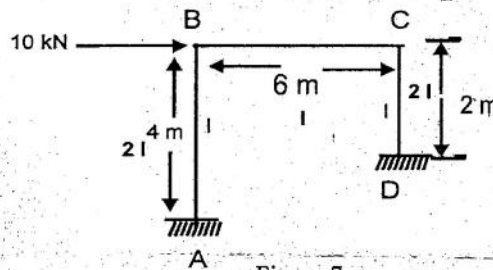

Figure-7.

UNIT - V

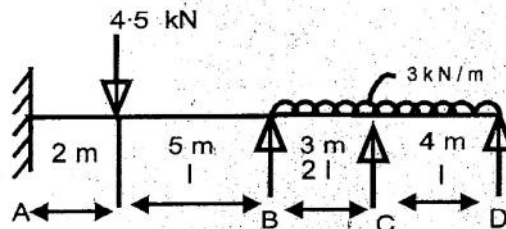9. Analyse the continuous beam shown in figure - 8 by stiffness matrix method.

Figure - 8.

(OR)

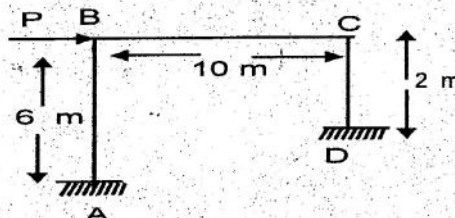10. Analyse the portal fram shown in figure - 9 by stiffness matrix method.

Figure - 9.

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B.E. DEGREE EXAMINATION, 2016

(CIVIL ENGINEERING)

(SIXTH SEMESTER)

CLEC-604/PCLEC-503. SUB-STRUCTURE DESIGN

(Old Regulation)

November]

[Time : 3 Hours

Maximum : 60 Marks

Answer any ONE FULL question from each UNIT (5 × 12= 60)

UNIT-I

1. Explain the different types of foundations with sketches. (12)

2. a) Explain the various factors to be considered while selecting a type of foundation. (8)

   b) Explain the various factors which affect the bearing capacity of the soil. (4)

UNIT-II

3. Explain in detail seismic refraction method of soil investigation with neat sketch. (12)

4. Explain any one field test for determination of bearing capacity of a soil. (12)

UNIT-III

5. The backfill behind a retaining wall above the water table consists of a sand of unit weight 17KN/m^3 and an angle of internal friction=38°. The height of the wall is 5m and the surface of the back fill is horizontal. Determine the total active earth pressure thrust on the wall according to the Rankies theory. (12)

6. Explain the Rankines theory of earth pressure with neat sketch. (12)

UNIT-IV

7. A group of 9 piles of diameter 350mm and 10m long is used as a foundation for a column. The c/c distance of the pile is 1m. The subsoil consists of clay with an unconfined compressive strength of 22KN/m^2. Estimate the safe load on the pile. (12)

8. Explain the components of pile driving system with a neat sketch. (12)

UNIT-V

9. Discuss briefly the sinking of a well foundation and mention the situations where such types of foundations are used. (12)

10. Explain the Barkans method of machine foundation design. (12)

B.E. DEGREE EXAMINATION, 2016

(CIVIL ENGINEERING)

(SIXTH SEMESTER)

CSEC - 604 / PCLEC - 503. FOUNDATION ENGINEERING

(Common with Part - Time)

November]   [Time : 3 Hours

Maximum : 75 Marks.

Answer any ONE FULL question from each unit.

UNIT - I

1. Explain the different types of shallow foundation with neat sketches.   (15)

(OR)

2. A circular footing is resting on a stiff saturated clay with an unconfined compression strength of 250 kN/m^2. The depth of foundation is 2 m. Determine the diameter of the footing if the column load is 700 kN. Assume a factor of safety as 2.5. The bulk unit weight of soil is 20 kN/m^3.   (15)

UNIT - II

3. Briefly explain the standard penetration test and static cone penetration test with a neat sketches.   (15)

(OR)

4. Explain the plate load test for determining the ultimate bearing capacity of the soil.   (15)

UNIT - III

5. Explain the coulomb's wedge theory of earth pressure with a neat sketches.   (15)

(OR)

6. A retaining wall is 4 m high. Its back is vertical and it has get sandy backfill upto its top. The top of the fill is horizontal and carries uniform surcharge of 85 kN/m^2. Determine the active pressure on the wall per *m* length of the wall. Water table is 1 m below the top of the fill. Dry unit weight = 18.5 kN/m^3, Moisture content above the water table = 12%, Angle of internal friction = 30°, Specific gravity = 2.65, Porosity = 30%. The wall friction may be neglected.   (15)

UNIT - IV

7. (a) Describe precast concrete piles with their merits and demerits. (8)

(b) What do you understand by pile load test? Explain in detail with neat sketches. (7)

(OR)

8. A group of 9 piles was driven into soft clay extending from ground level to a great depth. The diameter and length of piles were 30 cm and 10 m respectively. The unconfined compressive strength of clay is 70 kN/m^2. If the piles were spaced at 90 cm C/C, compute the allowable load on the pile group on the basis of shear failure criteria for a FOS 2.5, neglect bearing at the tip of piles, take m=0.6 for shear mobilization round each pile. (15)

UNIT - V

9. What are the difficulties in sinking of Caissons and how to overcome the above difficulties?(15)

(OR)

10. Determine the outside diameter of an open Caissons to be sunk through 40 m of sand and water to bed rock, if the allowable bearing capacity is 1500 kN/m^2. The Caissons receives a load of 60 MN from the super structure. The Mantle friction is 30 kN/m^2. Test the feasibility of sinking. Also, calculate the thickness of the seal. (15)

B.E. DEGREE EXAMINATION, 2016

(CIVIL ENGINEERING)

(SIXTH SEMESTER)

CLEC-605 / PCLEC-502. ENVIRONMENTAL ENGINEERING - I

(*Common with Part-Time*)

November]

[Time : 3 Hours

Maximum : 75 Marks

Answer any ONE FULL question from each unit.
Nomograph for Hasen William's formula permitted.

UNIT – I

1. (a) Write the importance and necessity of public wate supply schemes. (8)

   (b) Write the various water demands and give a short note about them. (7)

2. Name the various fluctuation in water demand and state the factors connected with the fluctations of demand of water. (15)

UNIT - II

3. Write short notes on the following with neat sketches :

   (a) Intake structures. (b) Infiltration galleries. (15)

4. (a) Describe well development and sanitary protection of wells. (7)

   (b) How the yield of an open well is determined? Write a short note. (8)

UNIT - III

5. List out the various types of joints in the conveyance of water through pipes and explain them with neat sketches. (15)

6. (a) What are the important considerations in the selection of a site for an intake? (7)

   (b) State the factors which govern the selection of pumps and explain them. (8)

UNIT - IV

7. With a neat sketch, explain the working principle of a slow sand filter. (15)

8. Define the term "disinfection". Explain the various methods of disinfection of drinking water.(15)

UNIT - V

9. Describe the various layouts of distribution networks in water supply system and state their advantages and disadvantages. (15)

10. Name the pipe appurtenances and describe them with neat sketches. (15)

B.E. DEGREE EXAMINATION, 2016

[CIVIL ENGINEERING]

(SIXTH SEMESTER)

CLEC - 606 / PCLEC - 601. CONSTRUCTION TECHNIQUES AND MANAGEMENT

November] .

[Time : 3 Hours

Maximum : 75 Marks.

Answer any ONE FULL question from each unit.

ALL questions carry EQUAL marks.   (5 × 15 = 75)

UNIT - I

1. Enumerate the differences between on-site and off-site construction with suitable examples.

(OR)

2. Explain the techniques involved in transportation and erection of precast units.

UNIT - II

3. Discuss briefly the modern construction techniques adopted for industrial buildings.

(OR)

4. Explain the classification of construction equipment in detail.

UNIT - III

5. Define "Scheduling". Discuss its uses and classifications.

(OR)

6. Discuss the importance and types of specifications in construction contracts.

UNIT - IV

7. Write short notes on Barchart and Milestone chart.

(OR)

8. Draw the PERT network for the following project and number the events according to the Fulkerson's rule.

Event no.	Preceeded by
A	Initial event
B	A
C	B
D	B
E	D
F	B
G	E
H	G,E
J	D,F & H
K	C,J
L	K

UNIT - V

9. Write short notes on :   (3 ×5 =15)

    (a) Cost slope.   (b) Activity times and float. (c) Project breakdown.

(OR)

10. From the following data, prepare the network diagram, decide the completion period and complete the critical path method schedule.

Activity Item	Duration in days	Activities immediately Preceeding	Following
A	3	None	B,C
B	2	A	D,E
C	3	A	E
D	5	B	F
E	6	B,C	F,G
F	5	D,E	None
G	4	E	None