

Register Number :

Name of the Candidate :

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**B.E. DEGREE EXAMINATION, 2018**

( CIVIL ENGINEERING )

( SEVENTH SEMESTER )

**CLEC-701 / PCLEC-401. GROUND WATER ENGINEERING**

( 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. What is hydrological cycle ? Briefly discuss the various components of hydrological cycle with the help of suitable sketch. (15)
2. What is meant by aquifer ? Explain the different types of aquifers with neat sketch. (15)

**UNIT - II**

3. (a) Highlight the validity of Darcy's law. (8)
- (b) Explain the laboratory measurement of hydraulic conductivity. (7)
4. Describe the general flow equation and assumption made for steady radial flow to a well penetrating a confined aquifer. (15)

**UNIT - III**

5. Elaborate the methods of constructing shallow wells with neat sketches. (15)
6. With neat sketch, discuss a various components for well completion after drilled. (15)

**UNIT - IV**

7. Give detail account on methods of surface investigation of ground water (15)
8. (a) Write a detailed note on test drilling method of subsurface investigation. (8)
- (b) With the help of sketch, explain resistivity logging to ascertain well characteristics. (7)

**UNIT - V**

9. (a) Explain the concept of artificial recharge of groundwater basin. (8)
- (b) Describe the stream channel method of recharging of groundwater. (7)
10. Illustrate Ghyben-Harzburg relation between fresh and saline waters. (15)

**B.E. DEGREE EXAMINATION, 2018**

(CIVIL ENGINEERING)

(SEVENTH SEMESTER)

**CLEE-701 / CSEE-702 / PCSEC-702. EARTH QUAKE ENGINEERING***( Common with Civil and Structural Engineering and Part-Time )*

November ]

[ Time : 3 Hours

Maximum : 75 Marks

*Answer any ONE FULL question from each unit.**IS: 1983-2002 ; IS: 4236-1976 ; IS 3920-1993; SP-22; IS - 456: 2000 are permitted.**ALL questions carry EQUAL marks.***UNIT - I**

- 1 (a) Explain the types of liquefaction and its effects. (7)
- (b) Explain plate tectonics with neat sketch. (8)
2. (a) Explain the seismic waves with neat sketch. (8)
- (b) List out some past disastrous earth-quakes. (7)

**UNIT - II**

3. Write in detail about seismograph with neat schematic diagram and their classification. (15)
4. Explain the characteristics of strong ground motion with neat graph. (15)

**UNIT - III**

5. (a) The peak amplitude of the roof of a one storey building under free vibration reduces from 0.6 mm to 0.2 mm in five cycles. The time elapsed for five cycles is 12 sec. Estimate the natural period, natural frequency and damping ratio. (7)
- (b) The roof of a one storey building has a mass 2000 kg. All the columns supporting the roof together have a lateral stiffness of 50000 N/m. The viscous damping co-efficient is 500 Nm/s. Estimate the natural period and natural frequency for both damped and undamped systems. (8)
6. Derive the equation of motion of a single degree of freedom system for free vibration and find the solution for :
  - (a) Under damped system. and (b) Over damped system. (7 + 8)

**UNIT - IV**

7. Write brief note on the design philosophy and methodology of earth-quake resistant design. (15)
8. Discuss seismic active control methods and its concepts. (15)

**UNIT - V**

9. Describe any four recent Indian earth-quakes and explain how properties of soil destroyed. (15)
- (OR).
10. Discuss in detail the causes of damage of RC structure during earth-quake and suggest improvements that may help to overcome common failure RC structure during earth-quake. (15).

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**B.E. DEGREE EXAMINATION, 2018**

(CIVIL ENGINEERING)

(SEVENTH SEMESTER)

**CLEC-702. IRRIGATION AND WATER POWER ENGINEERING**

November ]

[ Time : 3 Hours

Maximum : 75 Marks

*Answer any ONE FULL question from each unit.*

*ALL questions carry EQUAL marks.*

**UNIT - I**

1. List out the factors affecting duty. Explain in detail.
2. Name the different types of canal falls and state the suitability of their applications.

**UNIT - II**

3. Explain the criteria adopted designing various components of weir in permeable foundation.
4. Explain the layout of diversion head works and its components.

**UNIT - III**

5. List out the various forces acting on gravity dam. Discuss in brief, any four with neat sketches.
6. Discuss in brief, the causes of failure of earth dams.

**UNIT - IV**

7. List out the different types of canal lining. Explain any four.
8. Describe in detail method of controlling the water logging.

**UNIT - V**

9. Explain in brief, the design of canal regulator.
10. What are the components of hydro-electric installations ? Discuss the utility of each component.

**B.E. DEGREE EXAMINATION, 2018**

(CIVIL ENGINEERING)

(SEVENTH SEMESTER)

**CLEC-703 / PCLEC-603. ENVIRONMENTAL ENGINEERING - II**

November ]

[ Time : 3 Hours

Maximum : 75 Marks

*Answer any ONE FULL question from each unit.**ALL questions carry EQUAL marks.***UNIT - I**

1. The main combined sewer is to be designed to serve an area of  $12 \text{ km}^2$  with a population density of 250 persons per hectare. The average rate of flow is 250 LPCD. The maximum flow is 100 % in excess of average together with the rain-fall equivalent of 15 min in 24 hrs, all of which are run-off. Determine the capacity of the sewer. Taking maximum velocity of flows as 3 m/s, also, determine the size of the sewer.
2. Explain about the hydraulic characteristics of circular sewer section running full and partially full.

**UNIT - II**

3. What do you understand by 'sewer appurtenances' ? Enumerate the various appurtenances commonly used.
4. Write a note on sanitary fittings.

**UNIT - III**

5. Explain the various physio-chemical characteristics of sewage and state their environmental significance.
6. Discuss the process of self purification of natural water.

**UNIT - IV**

7. Design a septic tank for on-site sanitation of a housing colony with 120 population. Assume suitable design criteria and draw a neat sketch of the designed tank.
8. Design a single stage trickling filter to yield an effluent BODs of 30 mg/l. The influent BOD following primary classification is 175 mg/l and the flow is  $15000 \text{ m}^3/\text{d}$ . Maintain a hydraulic loading rate of  $20 \text{ m}^3/\text{m}^2/\text{d}$  and a filter depth of 2 m. Assume a recirculation ratio of 1.5.

**UNIT - V**

9. Explain briefly the working principle of waste sterilization ponds. Mention their classification.
10. Explain in brief the various methods of final disposal of sludge.

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**B.E. DEGREE EXAMINATION, 2018**

(CIVIL ENGINEERING)

(SEVENTH SEMESTER)

**CLEC-704 / PCLEC-602. REMOTE SENSING AND GIS**

November]

[ Time : 3 Hours

Maximum : 75 Marks

*Answer any ONE FULL question from each unit.*

*ALL questions carry EQUAL marks.*

**UNIT - I**

1. Define remote sensing and explain their components with neat sketch. (15)  
(OR)
2. Write brief notes on :  
(a) Spectral signature concepts (b) Scattering and their types (8 + 7)

**UNIT - II**

3. Briefly discuss about the payload description of land sat series satellites. (15)  
(OR)
4. Write short notes on : (4 + 4 + 7)  
(a) Types of platforms (b) Types of orbits (c) Types of resolutions

**UNIT - III**

5. Discuss in detail about the digital image processing. (15)  
(OR)
6. What are the elements to be considered during visual interpretation ? (15)

**UNIT - IV**

7. Define GIS and explain their components in detail. (15)  
(OR)
8. Define map projections and briefly explain their types. (15)

**UNIT - V**

9. Briefly discuss about the GIS application in highway alignment studies. (15)  
(OR)
10. Discuss about the various methods of raster data compression. (15)

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**B.E. DEGREE EXAMINATION, 2018**

(CIVIL ENGINEERING)

(SEVENTH SEMESTER)

**CLEE-705/PCLEE-701. URBAN AND RURAL PLANNING**

(New Regulations)

( Elective - I )

( 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. Enumerate the objectives and aspects of zoning.
2. Explain briefly the guiding principles of urban planning.

**UNIT - II**

3. Discuss briefly the points to be considered while designing a new town.
4. Explain the physical characters to analyse while choosing a site for urban town.

**UNIT - III**

5. Enumerate the broad principles of the building by laws.
6. Discuss how the town and country planned.

**UNIT - IV**

7. Briefly discuss the causes and effects of urbanisation in India.
8. Explain in detail the principles of rural planning.

**UNIT - V**

9. Explain in brief the essential features of rural housing schemes in India.
10. Briefly describe the principle and design of environmental sanitation.

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**B.E. DEGREE EXAMINATION, 2018**

(CIVIL ENGINEERING)

(SEVENTH SEMESTER)

**CLEE-706 / PCLEE-702. WATERSHED CONSERVATION AND MANAGEMENT**

November ]

[ Time : 3 Hours

Maximum : 75 Marks

*Answer any ONE FULL question from each unit.*

*ALL questions carry EQUAL marks.*

**UNIT - I**

1. Explain the history of erosion and classification and characteristics history of erosion.
2. Discuss the approaches to soil and water conservation.

**UNIT - II**

3. Explain the methods of controlling the soil erosion.
4. Discuss the erosion control in torrents and gullies.

**UNIT - III**

5. Explain flood water harvesting and merits and demerits.
6. Explain the water harvesting principle and techniques.

**UNIT - IV**

7. Explain the various water-shed programmes.
8. Discuss the water-shed resources and water-shed management practices.

**UNIT - V**

9. Discuss briefly the importance of pasture and fodder cultivation in order to improve the method of the water-shed.
10. Explain the grass-land farming and management systems.