P P SAVANI UNIVERSITY

Forth Semester of B. Tech. Examination

November 2022

SECV2060 Geology & Geotechnical Engineering

28.11.2022, Monday **Time: 01:0 p.m. To 03:30 p.m.** **Maximum Marks: 60**

Instructions:

1. The question paper comprises of two sections.
2. Section I and II must be attempted in same answer sheet.
3. Make suitable assumptions and draw neat figures wherever required.
4. Use of scientific calculator is allowed.

SECTION – I

			CO	BTL
Q - 1	Answer the Following: (Any five)	**[05]**		
(i)	Define (Any One) : Erosion, Mineralogy, folds, faults		**1**	**1**
(ii)	What is geology?			**2**
(iii)	What is an earthquake?			**2**
(iv)	Explain Dip and strike.		**2**	**4**
(v)	Enlist various type of unconformity.		**2**	**2**
Q - 2 (a)	What is Rock weathering? Explain in detail different types of rock weathering	**[05]**	**2**	**3**
Q - 2 (b)	Explain Importance of Geology in civil engineering.	**[05]**		**4**
	OR			
Q - 2 (a)	Explain Physical properties of minerals.	**[05]**	**1**	**4**
Q - 2 (b)	What is Engineering Geology explain in detail.	**[05]**		**2**
Q - 3 (a)	Explain in detail Types of folds.	**[05]**	**2**	**4**
Q - 3 (b)	Explain in detail different forms of rocks.	**[05]**	**2**	**4**
	OR			
Q - 3 (a)	Explain in detail Types of faults.	**[05]**	**2**	**4**
Q - 3 (b)	What is the purpose of seismic refraction method?	**[05]**		**2**
Q - 4	Attempt any one.	**[05]**		
(i)	Explain geological considerations of Tunnel, Dam, Road, Highway sides.		**2**	**4**
(ii)	Explain soil structure in detail.		**3**	**4**

SECTION – II

Q - 1	Define following terms: (Any five.)	**[05]**		**2**
(i)	Unit weight of the soil		**3**	**2**
(ii)	Liquid limit		**3**	**2**
(iii)	Plasticity index		**3**	**2**
(iv)	Permeability		**4**	**2**
(v)	Specific gravity		**2**	**2**
(vi)	Pore water pressure		**4**	**2**
(vii)	Effective pressure		**4**	**2**
Q - 2 (a)	Explain three and two phases of soil diagram.	**[05]**	**3**	**2**
Q - 2 (b)	An undisturbed soil sample has total weight of 2060 gm, volume of 1200 cc, water content 11% and Sp. Gravity G = 2.68. Compute i. Void ratio ii. Porosity iii. Degree of saturation iv. Water content v. Effective unit weight	**[05]**	**3**	**5**

OR

Q - 2 (a)	How to find out Specific Gravity of soil using Pycnometer bottle? Explain in detail.	**[05]**	**3**	**4**
Q - 2 (b)	Derive $\gamma_b = \frac{(G+e.s_r)}{1+e}\gamma_w$	**[05]**	**3**	**5**
Q - 3 (a)	Explain Co-efficient of permeability in detail.	**[05]**	**4**	**1**
Q - 3 (b)	Explain particle size distribution curve with figure.	**[05]**	**3**	**1**
	OR			
Q - 3 (a)	State Darcy's law. What are the validities of Darcy's law?	**[05]**	**4**	**3**
Q - 3 (b)	Explain Soil Field test in detail.	**[05]**	**3**	**3**
Q - 4	Attempt any one.	**[05]**		
(i)	A void ratio of a clay sample is 0.5 and degree of saturation is 70%. Compute the water content, dry unit weight, wet unit weight of the soil, G=2.7.		**3**	**5**
(ii)	Explain in detail various factors affecting on permeability.		**4**	**2**

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CO : Course Outcome Number BTL : Blooms Taxonomy Level

Level of Bloom's Revised Taxonomy in Assessment

1: Remember	2: Understand	3: Apply
4: Analyze	5: Evaluate	6: Create