	ARKAJAIN University Jharkhand		END TERM EXAMINATION
Branch	Civil Engineering	Program	B.TECH
Course Name	Engineering Geology	Semester	IV
Course Code	BTE24055	Year	2022/Even
Time: 3 Hour Maximum Marks : 70	• Start writing from 2nd page onwards; **don't Write On The 1st Page Backside** • **Answer all Questions of Section A (Compulsory)** • **Answer Any Four out of Six of Section B** • **Answer Any Three out of Five of Section C** • **Possession of Mobile Phones** or any kind of **Written Material, Arguments with the Invigilator or Discussing with Co-Student** will comes under **Unfair Means** and will **Result** in the **Cancellation of the Papers**.		
Knowledge Level (KL)	**K1 :** Remembering	**K3 :** Applying	**K5 :** Evaluating
	K2 : Understanding	**K4 :** Analysing	**K6 :** Creating

Section A (Each question Carry 02 Marks from Q1a to Q1j) – 20 Marks

Q. No.1	Questions	Marks	COs	KL	PO
1a.	Define Rock and Mineral. What is Mohs' scale of Hardness?	2	CO1	K1	PO1, PO12
1b.	Name the important physical properties of minerals that are commonly studied for identification.	2	CO1	K1	PO1, PO12
1c.	Define Hypabyssal Rocks.	2	CO2	K1	PO1, PO12
1d.	Recall how metamorphic rocks are formed.	2	CO2	K1	PO1, PO12
1e.	Tell what you understand by Dip and Strike.	2	CO3	K1	PO1, PO12
1f.	What is an Outcrop?	2	CO3	K1	PO1, PO12
1g.	Spell the number of Seismic Zones are there in India?	2	CO4	K1	PO1, PO12

1h.	What is an Earthquake?	2	CO4	K1	PO1, PO12
1i.	Define Dams.	2	CO5	K1	PO1, PO12
1j.	With what purposes is a Dam constructed.	2	CO5	K1	PO1, PO12

Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 5 Marks)

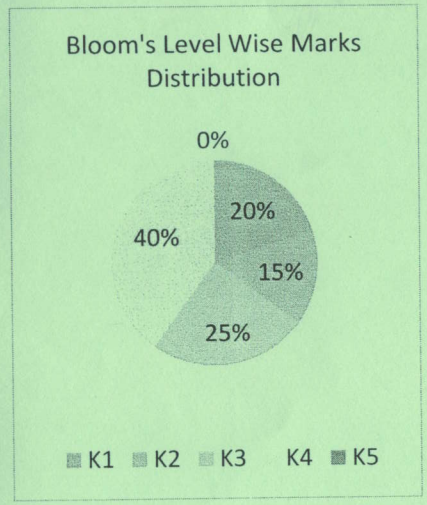
Q NO	Questions	Marks	COs	KL	PO
2.	Demonstrate Cleavage and Fracture of a mineral with example.	5	CO1	K2	PO1, PO12
3.	Summarize Sedimentary Rocks. Classify them.	5	CO2	K2	PO1, PO12
4.	Compare how a recumbent fold differs from a monoclinic fold.	5	CO3	K2	PO1, PO12
5.	Examine the following terms: i. P-Waves and S-Waves, ii. Focus and Epicentre.	5	CO4	K4	PO1, PO12
6.	Select a site to construct a Dam.	5	CO5	K3	PO1, PO12
7.	What are Dams and Reservoirs? Discuss the different types of Dams giving geological reasons.	5	CO5	K4	PO1, PO12

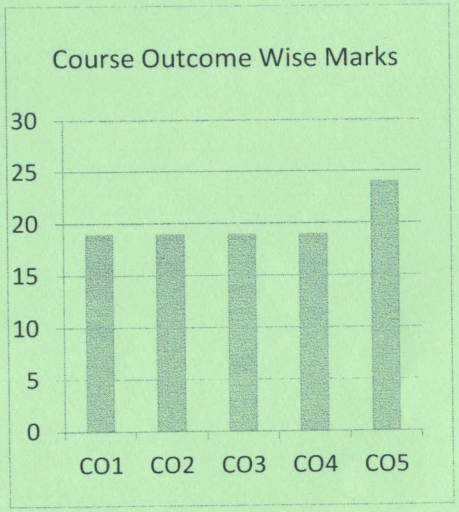
Section C (Answer any THREE out of FIVE) – 30 Marks-(Each question Carry 10 Marks)

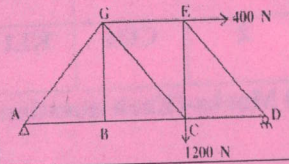
Q NO	Questions	Marks	COs	KL	PO
8.	Identify the internal structure and composition of the Earth.	10	CO1	K3	PO1, PO12
9.	Classify Igneous Rocks.	10	CO2	K4	PO1, PO12
10.	Describe the type of faults based on their modes of occurrence with neat diagram.	10	CO3	K4	PO1, PO12
11.	Inspect the various techniques of Slope reinforcement.	10	CO4	K4	PO1, PO12
12.	Identify how faults and folds affect choice of locations for Dams.	10	CO5	K3	PO1, PO12

CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

Course Outcomes	CO1	Site characterization and how to collect, analyse, and report geologic data using standards in engineering practice
	CO2	The fundamentals of the engineering properties of Earth materials and fluids.
	CO3	Rock mass characterization and the mechanics of planar rock slides and topples
	CO4	Use suitable software to examine geology, soil, geologic hazard, and NEHRP data to characterize a geologic site
	CO5	The mechanics of soils and fluids and their influence on settlement, liquefaction, and soil slope stability.

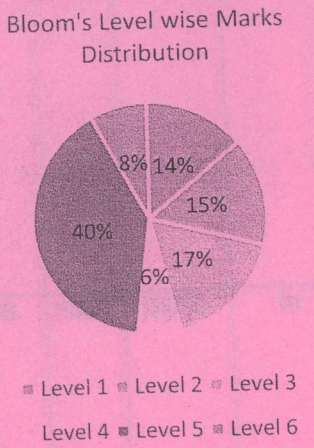


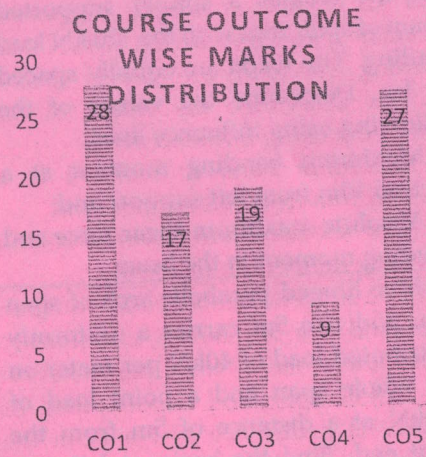


12.	Determine the forces in members GE GC and BC of the truss shown in fig 3. Using method of section 	10	CO1	KL5	PO5

O- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

Course Outcomes	CO1	Ability to analyze statically determinate trusses, beams, and frames and obtain internal loading
	CO2	Ability to analyze cable and arch structures
	CO3	Ability to determine deflections of beams and frames using classical methods.
	CO4	Ability to solve statically indeterminate structures using classical method
	CO5	Ability to obtain the influence lines for statically determinate and indeterminate structures





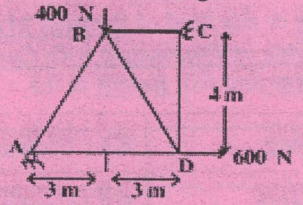
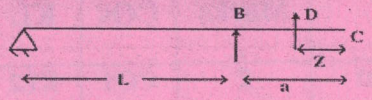
	JGI ARKAJAIN University Jharkhand		END TERM EXAMINATION
Branch	Civil Engineering	Program	B.TECH
Course Name	Structural Analysis-I	Semester	IV
Course Code	BTE24057	Year	2022/Even
Time: 3 Hour Maximum Marks : 70	• Start writing from 2nd page onwards; **don't Write On The 1st Page Backside** • **Answer all Questions of Section A (Compulsory)** • **Answer Any Four out of Six of Section B** • **Answer Any Three out of Five of Section C** • **Possession of Mobile Phones** or any kind of **Written Material, Arguments with the Invigilator or Discussing with Co-Student** will comes under **Unfair Means** and will **Result** in the **Cancellation of the Papers**.		
Knowledge Level (KL)	**K1 :** Remembering	**K3 :** Applying	**K5 :** Evaluating
	K2 : Understanding	**K4 :** Analysing	**K6 :** Creating

Section A (Each question Carry 02 Marks from Q1a to Q1j) – 20 Marks

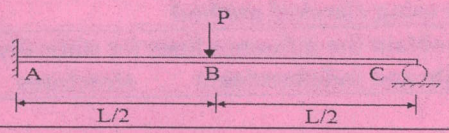
Q. No.1	Questions	Marks	COs	KL	PO
1a.	Describe the procedure for finding out the prop reaction of a cantilever.	2	CO1	KL2	PO1
1b.	What do you understand by the term Redundant Frame?	2	CO4	KL2	PO1
1c.	What do you understand temperature stresses in three Hinged Arch.	2	CO2	KL2	PO2
1d.	What do you understand by kinematic indeterminacy of a structure?	2	CO1	KL2	PO1
1e.	Analyse the perfect frame? Enumerate the assumption made while finding out the forces in truss.	2	CO1	KL4	PO4
1f.	What do you understand by static indeterminacy of structure? Determine the same for structure shown in fig-	2	CO4	KL2	PO5

1g.	Brief the method of consistent deformation for the analysis of a propped cantilever	2	CO3	KL3	PO1
1h.	Draw influence line for shearing force at any point in a simply supported beam using Muller Breslau's principle	2	CO5	KL6	PO3
1i.	What do you understand by the term distribution factor?	2	CO1	KL2	PO1
1j.	State Maxwell's reciprocal theorem.	2	CO3	KL1	PO1

Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 5 Marks)

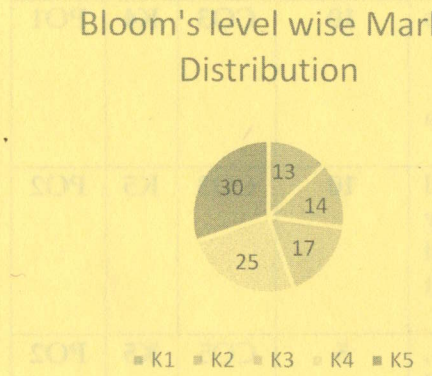
Q NO.	Questions	Marks	COs	KL	PO
2.	Determine the force in each number of turns shown in Fig. 2. 	5	CO1	KL5	PO3
3.	Draw influence line diagram for the shear force and bending moment of section D of the beam shown in fig 4 	5	CO5	KL6	PO3
4.	Define Muller Breslau's principles? Explain with a suitable example how it is used to obtain influence line diagram in a beam.	5	CO5	KL1	PO1
5.	A cable of span 100m and a dip 5m is subjected to a rise of temperature of 15°C. Find the increase in dip due to rise of temperature. Take α= 12×10^-6 per °C	5	CO5	KL5	PO3
6.	A three hinged Parabolic Arch of span 30m has its support at depth of 4m and 16m below crown C. The arch carries a load of 80KN at a distance of 5m to the left of C and second load of 100Kn at 10m to the right of C. Determine the reaction at supports and bending moment under the loads.	5	CO2	KL5	PO4
7a.	Explain carry over factor and distribution factor?	3	CO1	KL2	PO1
7b.	Define carry over moment with example?	2	CO1	KL1	PO1

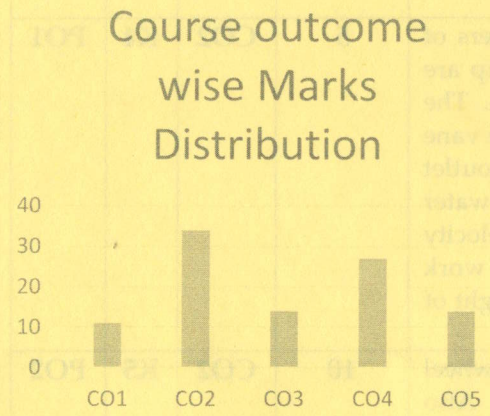
Section C (Answer any THREE out of FIVE) – 30 Marks-(Each question Carry 10 Marks)

Q NO.	Questions	Marks	COs	KL	PO
8a.	State Castigliano's second theorem.	05	CO3	KL1	PO1
8b.	Differentiate the method of joints & method of sections	05	CO1	KL3	PO2
9.	Analyse the beam by the method of consistent deformation method- 	10	CO3	KL3	PO2
10.	A system of four loads 80, 160, 160 and 120 kN crosses a simply supported beam of span 25m with the 120 kN load leading. The loads are equally spaced at 1m. Determine the values of the following using influence lines. i. Maximum bending moment at a section 10m from left support and ii. Absolute maximum shear force and bending moment in the beam	10	CO5	KL5	PO4
11.	A three hinged parabolic arch of span 30m and rise 5m carries a uniformly distributed load of 40kN per meter on the whole span and a point load of 200kN at a distance of 5m from the right end. Find the horizontal thrust, resultant reaction, bending moment and normal thrust at a section 5m from the left end	10	CO2	KL5	PO4

CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

Course Outcomes	CO1	Remember various properties of fluids in solving the problems
	CO2	Understand working of pumps and turbines.
	CO3	Apply Bernoulli's equation for solutions in fluids
	CO4	Analyse fluid forces - drags and lift on immersed bodies
	CO5	Evaluate the dimensionless parameters.





	JGI ARKAJAIN University Jharkhand		END TERM EXAMINATION
Branch	**Civil Engineering**	Program	**B.Tech**
Course Name	**Fluid Mechanics**	Semester	**IV**
Course Code	**BTE24080**	Year	**2022/Even**
Time: 3 Hour Maximum Marks : 70	• Start writing from 2nd page onwards; **don't Write On The 1st Page Backside** • **Answer all Questions of Section A (Compulsory)** • **Answer Any Four out of Six of Section B** • **Answer Any Three out of Five of Section C** • **Possession of Mobile Phones** or any kind of **Written Material, Arguments with the Invigilator or Discussing with Co-Student** will comes under **Unfair Means** and will **Result** in the **Cancellation of the Papers**.		
Knowledge Level (KL)	**K1 :** Remembering	**K3 :** Applying	**K5 :** Evaluating
	K2 : Understanding	**K4 :** Analysing	**K6 :** Creating

Section A (Each question Carry 02 Marks from Q1a to Q1j) – 20 Marks

Q. No.1	QUESTION	Marks	COs	KL	PO
1a.	Define Specific gravity of any fluid. Also give value of specific gravity for two general fluids.	**2**	**CO1**	**K2**	**PO2**
1b.	Define Newton's law of viscosity.	**2**	**CO1**	**K1**	**PO3**
1c.	What are the difference between compressible and uncompressible flow?	**2**	**CO1**	**K1**	**PO3**
1d.	Define boundary layer thickness.	**2**	CO5	**K4**	**PO3**
1e.	Write dimensional formula for Power and Specific weight.	**2**	CO4	**K1**	**PO1**
1f.	Define Mach's number also explain its importance.	**2**	CO5	**K1**	**PO1**
1g.	What is turbine? How it is different from pump?	**2**	**CO2**	**K3**	**PO1**

Q. No.	QUESTION	Marks	COs	KL	PO
1h.	Classify different types of pumps.	2	CO2	K4	PO1
1i.	What do you understand by impact of jet?	2	CO3	K2	PO2
1j.	What is the formula for flow rate through nozzle?	2	CO3	K4	PO2

Section B (Answer any FOUR out of SIX) – 20 Marks (Each question 5 Marks)

Q. No.	QUESTION	Marks	COs	KL	PO
2.	A plate 0.030 mm distance from a fixed plate, moves at 50 cm/s and requires a force of 2.2 N per unit area i. e. 2 N/m^2 to maintain this speed. Determine the fluid viscosity between the plates.	5	CO1	K1	PO2
3.	Define surface tension. Also write expression for pressure inside a soap bubble.	5	CO4	K2	PO2
4.	Distinguish between rotational and irrational flow with suitable examples.	5	CO4	K5	PO2
5.	The diameter of a pipe at the section 1 and 2 are 15 cm and 20 cm respectively. Find the discharge through the pipe if velocity of water at section 1 is 4 m/s. Also determine the velocity at section 2.	5	CO4	K4	PO2
6.	Draw a schematic diagram of centrifugal pump and explain its working principle.	5	CO2	K3	PO2
7.	Write difference between impulse and reaction turbine.	5	CO2	K2	PO1

Section C (Answer any THREE out of FIVE) – 30 Marks-(Each question Carry 10 Marks)

Q. No.	QUESTION	Marks	COs	KL	PO
8a.	Explain the phenomenon of variation of viscosity with temperature for fluids.	5	CO4	K4	PO2
8b.	Determine the intensity of shear of an oil having viscosity = 1 poise. The oil is used for lubricating the clearance between a shaft of diameter 10 cm and its journal bearing. The Clearance is 1.5 mm and the shaft rotates at 150 rpm.	5	CO4	K5	PO1
9.	The velocity vector in a fluid flow is given by $V= 4x^3i-10x^2yj+3tk$ Find the velocity and acceleration of a fluid particle at (2, 1, 3) at t=1.	10	CO3	K4	PO1
10.	Find the expression using dimensional analysis for the power P, developed by a pump when P depends upon the head H, the discharge Q and Specific weight w of the fluid.	10	CO3	K5	PO2
11a.	Define the term manometer efficiency, mechanical efficiency and overall efficiency in context of centrifugal pump.	5	CO5	K5	PO2
11b.	The internal and external diameters of the impeller of a centrifugal pump are 150mm and 300mm respectively. The pump is running at 1200 rpm. The vane angle of the impeller 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.	5	CO2	K4	PO1
12.	Explain working of Pelton wheel turbine with schematic diagram. Also write formula for different efficiencies involved in calculation of performance of a turbine.	10	CO2	K5	PO2

	ARKAJAIN University Jharkhand		END TERM EXAMINATION
Branch	Civil Engineering	Program	B.TECH
Course Name	Material Testing & Evaluation	Semester	IV
Course Code	BTE24280	Year	2022/Even
Time: 3 Hour Maximum Marks : 70	• Start writing from 2nd page onwards; **don't Write On The 1st Page Backside** • **Answer all Questions of Section A (Compulsory)** • **Answer Any Four out of Six of Section B** • **Answer Any Three out of Five of Section C** • **Possession of Mobile Phones** or any kind of **Written Material, Arguments with the Invigilator or Discussing with Co-Student** will comes under **Unfair Means** and will **Result** in the **Cancellation of the Papers**.		
Knowledge Level (KL)	**K1 :** Remembering	**K3 :** Applying	**K5 :** Evaluating
	K2 : Understanding	**K4 :** Analysing	**K6 :** Creating

Section A (Each question Carry 02 Marks from Q1a to Q1j) – 20 Marks

Q. No.1	Questions	Marks	COs	KL	PO
1a.	Write the constituents of cement.	2	CO1	K1	PO1, PO12
1b.	Define high performance concrete polymer.	2	CO1	K1	PO1, PO12
1c.	What is hardness? Name some hardness tests.	2	CO2	K1	PO1, PO5, PO12
1d.	What is Material Engineering?	2	CO2	K1	PO1, PO12
1e.	Define internal friction.	2	CO3	K1	PO1, PO12
1f.	What is fracture toughness?	2	CO3	K1	PO1, PO2 PO12
1g.	Define Impact Load.	2	CO4	K1	PO1, PO12

1h.	Name some Impact Tests carried out on materials.	2	CO4	K1	PO1, PO5, PO12
1i.	List the tests carried out on concrete.	2	CO5	K1	PO1, PO5, PO12
1j.	List the tests carried out on polymers and polymer based materials.	2	CO5	K1	PO1, PO5, PO12

Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 5 Marks)

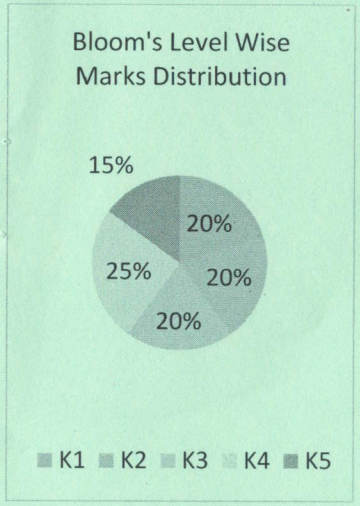
Q NO	Questions	Marks	COs	KL	PO
2.	Illustrate some general proper properties of Glass.	5	CO1	K2	PO1, PO12
3.	Demonstrate the principle and characteristics of Elasticity.	5	CO2	K2	PO1, PO12
4.	Discuss about the strength of ceramic.	5	CO3	K4	PO1, PO12
5.	Examine Brittle fracture of Steel.	5	CO3	K4	PO1, PO12
6.	Differentiate between elastic and plastic deformation.	5	CO4	K4	PO1, PO12
7.	Assess Composite material with proper examples.	5	CO5	K5	PO1, PO12

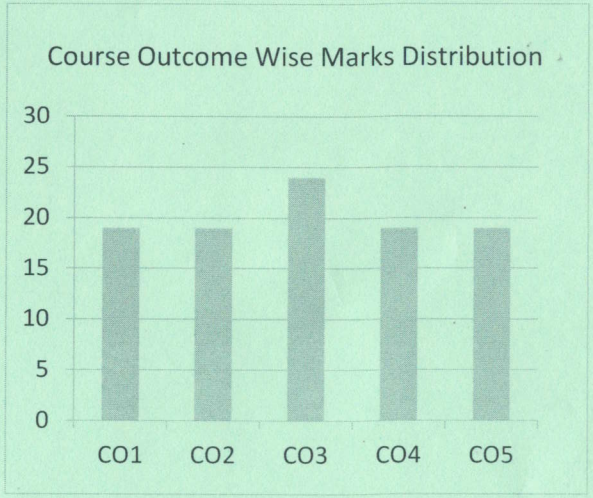
Section C (Answer any THREE out of FIVE) – 30 Marks-(Each question Carry 10 Marks)

Q NO	Questions	Marks	COs	KL	PO
8.	Identify the importance of steel in Structure? Write its characteristics and mechanical behaviour.	10	CO1	K3	PO1, PO2, PO12
9.	Interpret Plastic deformation of metals.	10	CO2	K2	PO1, PO2, PO12
10.	Categorize the different types of steel available and their properties in brief.	10	CO3	K4	PO1, PO12
11.	Explain Creep. How do you measure the creep in cement concrete?	10	CO4	K5	PO1, PO5, PO12
12.	Identify the tests carried out on bricks and discuss briefly about it.	10	CO5	K3	PO1, PO5, PO12

CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

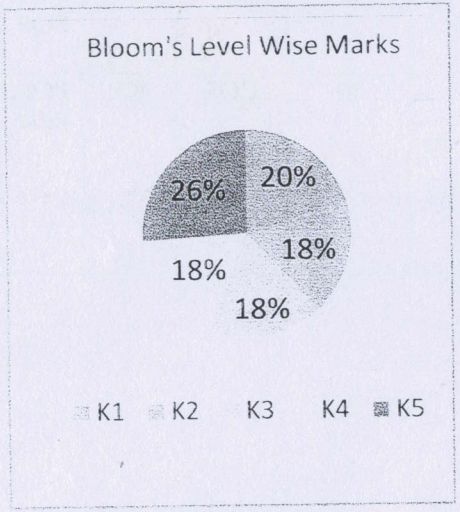
Course Outcomes	CO1	Different materials used in civil engineering applications
	CO2	Planning an experimental program, selecting the test configuration, selecting the test specimens and collecting raw data
	CO3	Documenting the experimental program including the test procedures, collected data, method of interpretation and final results
	CO4	Observing various modes of failure in compression, tension, and shear
	CO5	Observing various types of material behaviour under similar loading conditions

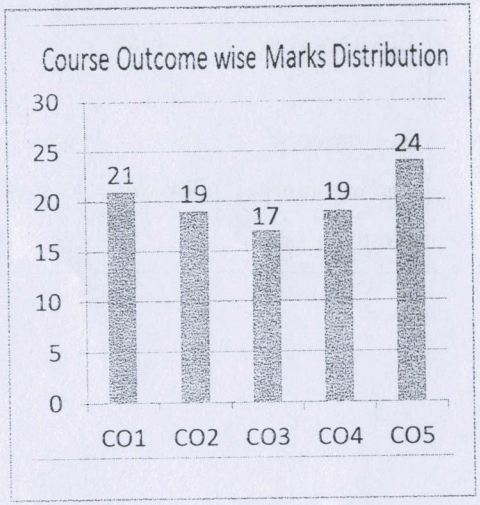




CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

Course Outcomes	CO1	Awareness of the importance of Civil Engineering and the impact it has on the Society and at global levels
	CO2	Awareness of the impact of Civil Engineering for the various specific fields of human endeavour
	CO3	Need to think innovatively to ensure Sustainability
	CO4	Understand the new civil engineering projects & its impact on society
	CO5	Importance of Civil Engineering in shaping & affecting the world





	ARKAJAIN University Jharkhand		END TERM EXAMINATION
Branch	Civil Engineering	Program	B.Tech
Course Name	Civil Engineering- Societal & Global Impact	Semester	IV
Course Code	BTE24281	Year	2022/Even
Time: 3 Hour Maximum Marks : 70	• Start writing from 2nd page onwards; don't Write On The 1st Page Backside • Answer all Questions of Section A (Compulsory) • Answer Any Four out of Six of Section B • Answer Any Three out of Five of Section C • Possession of Mobile Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will comes under Unfair Means and will Result in the Cancellation of the Papers.		
Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating
	K2 : Understanding	K4 : Analysing	K6 : Creating

Section A (Each question Carry 02 Marks from Q1a to Q1j) – 20 Marks

Q. No.	QUESTION	Marks	COs	KL	PO
1a.	Spell the full form of LEED.	2	CO4	K1	PO6, PO7
1b.	Memorize the unit of Ecological Footprint.	2	CO1	K1	PO6, PO7
1c.	Remember the pH below which the precipitation is regarded as acid rain.	2	CO3	K1	PO6, PO7
1d.	What is a Megacity?	2	CO2	K1	PO6, PO7
1e.	Recall when and where was the practice of preparing EIA for a project first initiated	2	CO5	K1	PO6, PO7
Q. No.	QUESTION	Marks	COs	KL	PO

1f.	Recall the name of the Organization which publishes the HDI report.	2	CO1	K1	PO6, PO7
1g.	Tell the total number of projects included under India's Environmental Impact Assessment Notification, 1994.	2	CO5	K1	PO6, PO7
1h.	Mention the number of megacities in the world as per UN in 2018.	2	CO2	K1	PO6, PO7
1i.	Quote the criteria on the basis of which LEED 2009 allocate points.	2	CO4	K1	PO6, PO7
1j.	As per HDI 2021, out of 189 countries, tell the name the country which occupied the 1st position.	2	CO1	K1	PO6, PO7

Section B (Answer any FOUR out of SIX) – 20 Marks (Each question 5 Marks)

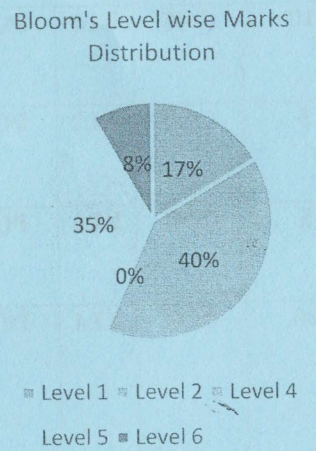
Q. No.	QUESTION	Marks	COs	KL	PO
2.	Illustrate some of the recent major Civil Engineering Innovations.	5	CO1	K2	PO1, PO6, PO7
3a.	Explain 'Infrastructure'	2	CO2	K3	PO6, PO7
3b.	Compare the different types of Infrastructure.	3	CO2	K3	PO6, PO7
4a.	Identify the different zones in which Atmosphere is sub-divided into.	2	CO3	K3	PO6, PO7
4b.	Demonstrate how Acid Rain occurs.	3	CO3	K2	PO6, PO7
5.	Compare a Zero Energy Building with Green Building.	5	CO4	K2	PO1, PO6, PO7
6.	Explain India's Environmental Impact Assessment Notification, 2006.	5	CO5	K2	PO1, PO6, PO7
7.	Summarize the Validity of Environmental Clearance (EC)	5	CO5	K3	PO6, PO7

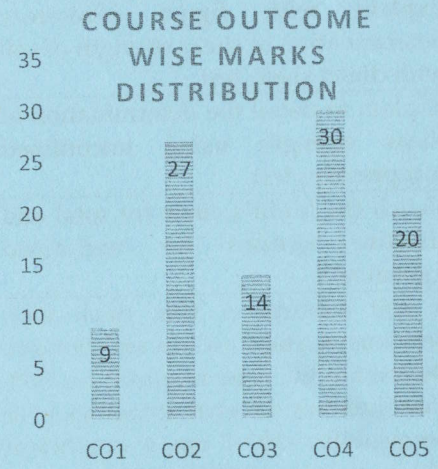
Section C (Answer any THREE out of FIVE) – 30 Marks-(Each question Carry 10 Marks)

Q. No.	QUESTION	Marks	COs	KL	PO
7a.	Identify some of the common attributes of Pre-Industrial Society.	6	CO1	K3	PO6, PO7
7b.	List the key indicators of Human Development Index.	4	CO1	K4	PO6, PO7
8a.	Explain 'National Smart Cities Mission'.	6	CO2	K5	PO6, PO7
8b.	List some of the key features of Smart City.	4	CO2	K4	PO1, PO6, PO7
9.	Assess the most dreaded adverse impacts of UV radiations.	10	CO3	K5	PO6, PO7
10.	Discover the features that make a Green Building 'green'?	10	CO4	K4	PO1, PO6, PO7
11a.	Conclude the general details that an EIA report should contain.	10	CO5	K5	PO6, PO7
11b.	OR Recommend the stages in Environmental Clearance Process for New Projects.	10	CO5	K5	PO6, PO7

CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

Course Outcomes	CO1	Understand the various phase diagrams and derive various phase relationships of the soil
	CO2	Classify any soils based on their particle size distribution and index properties
	CO3	Analytically calculate the effective permeability of anisotropic soil mass
	CO4	Evaluate ground settlements against time.
	CO5	Understand the significance of shear strength parameters in various geotechnical analyses





P	ARKAJAIN University Jharkhand		END TERM EXAMINATION
Branch	**Civil Engineering**	Program	**B.TECH**
Course Name	**Geotechnical Engineering**	Semester	**IV**
Course Code	**BTE24056**	Year	**2022/Even**
Time: 3 Hour Maximum Marks : **70**	• Start writing from 2nd page onwards; **don't Write On The 1st Page Backside** • **Answer all Questions of Section A (Compulsory)** • **Answer Any Four out of Six of Section B** • **Answer Any Three out of Five of Section C** • **Possession of Mobile Phones** or any kind of **Written Material, Arguments with the Invigilator or Discussing with Co-Student** will comes under **Unfair Means** and will **Result** in the **Cancellation of the Papers**.		
Knowledge Level (KL)	**K1 :** Remembering	**K3 :** Applying	**K5 :** Evaluating
	K2 : Understanding	**K4 :** Analysing	**K6 :** Creating

Section A (Each question Carry 02 Marks from Q1a to Q1j) – 20 Marks

Q. No.1	Questions	Marks	COs	KL	PO
1a.	Draw phase diagram of soil when soil is : (i) Moist, (ii) Fully saturate	2	CO1	KL6	PO1
1b.	State formation and classification of soil.	2	CO2	KL1	PO1
1c.	Define void ratio and bulk density.	2	CO2	KL1	PO1
1d.	Define Cohesion and internal friction.	2	CO2	KL1	PO1
1e.	State any four factors affecting permeability	2	CO3	KL1	PO2
1f.	Explain soil as three phase system with labelled sketch	2	CO1	KL2	PO2
1g.	State relation between e, S and W, G.	2	CO2	KL2	PO1
1h.	Define toughness index.	2	CO2	KL1	PO1
1i.	Define plasticity index and liquidity index	2	CO2	KL1	PO1

1j.	Define quick sand condition.	2	CO3	KL1	PO1

Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 5 Marks)

Q NO.	Questions	Marks	COs	KL	PO
2.	Calculate coefficient of uniformity and coefficient of curvature for a soil sample for which D10 = 0.430 mm, D30 = 0.790 mm and D60 = 1.300 mm	5	CO2	KL5	PO3
3.	Give step-by-step procedure to determine specific gravity of soil by pycnometer in laboratory	5	CO1	KL5	PO4
4.	A soil sample is tested in constant head permeability, diameter of sample is 4 cm and length is 10 cm under constant head of 15 cm discharge was found to be 70 cc in 10 mins. Find coefficient of permeability	5	CO3	KL5	PO3
5.	Differentiate between compaction and consolidation with four points.	5	CO4	KL4	PO2
6.	Explain standard proctor test to determine MDD and OMC of soil.	5	CO4	KL2	PO4
7.	A sample of soil 10 cm height and 50 cm2 in c/s area water flows through the soil under a constant head of 80 cm. Water collected in 9 minutes is 450 C.C. find the coefficient of permeability	5	CO3	KL5	PO3

Section C (Answer any THREE out of FIVE) – 30 Marks-(Each question Carry 10 Marks)

Q NO.	Questions	Marks	COs	KL	PO
8.	A soil sample of volume 160 CC, weights 304 gms, when partially saturated. It weights 269.28 gms, when fully dry specific gravity of soil is 2.64. Determine porosity, void ratio, water content and degree of saturation.	10	CO2	KL5	PO3
9.	State field methods of compactions. Explain suitability of various compaction equipments.	10	CO4	KL2	PO2
10.	Explain with figure laboratory determination of shear strength of soil with direct shear test.	10	CO5	KL2	PO2
11a.	Explain in detail the determination of shear strength using unconfined compression test.	5	CO5	KL2	PO4
11b.	Sketch the Mohr's circle for total and effective stresses for undrained triaxial test.	5	CO5	KL6	PO4
12.	A soil stratum is 10m thick with pervious stratum on top and bottom. Determine the time required for 50% consolidation. Given that coefficient of permeability=10^-7 cm/s. coefficient of compression=0.0003cm^2/gm Void ratio=2 Time factor=0.197	10	CO4	KL4	PO3