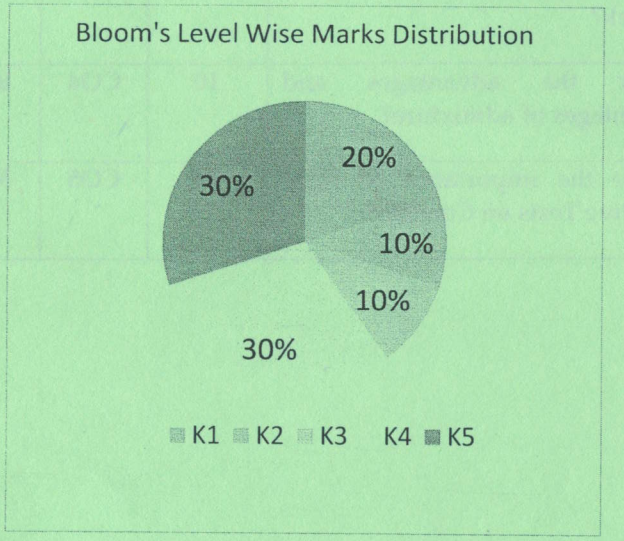
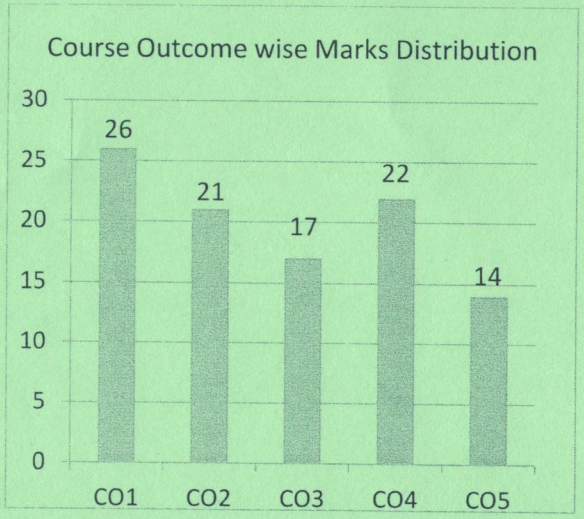
CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

Course Outcomes	CO1	Use different types of cement and aggregates in concrete
	CO2	Prepare concrete of desired compressive strength.
	CO3	Prepare concrete of required specification.
	CO4	Maintain quality of concrete under different conditions.
	CO5	Apply relevant admixtures for concreting.





	ARKAJAIN University Jharkhand		**END TERM EXAMINATION**
Branch	**Civil Engineering**	Program	**POLY**
Course Name	**Concrete Technology**	Semester	**IV**
Course Code	**DIP13015**	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.	Spell the functions of Cement?	**2**	**CO1**	**K1**	**PO1, PO6, PO12**
1b.	Recall Abrams' water-cement ratio law.	**2**	**CO2**	**K1**	**PO1, PO6, PO12**
1c.	Name the father of concrete technology?	**2**	**CO1**	**K1**	**PO1, PO6, PO12**
1d.	Show the Oxide composition of Portland Cement.	**2**	**CO1**	**K1**	**PO1, PO6, PO12**
1e.	Name the different tests for testing Workability.	**2**	**CO2**	**K1**	**PO1, PO6, PO12**

1f.	Define Segregation and Bleeding.	2	CO2	K1	PO1, PO6, PO12
1g.	What do you understand by Concrete Mix Design?	2	CO5	K1	PO1, PO6, PO12
1h.	Name the different Non-Destructive Tests on Concrete.	2	CO5	K1	PO1, PO6, PO12
1i.	Find the relation between compaction and strength of concrete.	2	CO3	K1	PO1, PO6, PO12
1j.	Recall the different types of admixtures.	2	CO4	K1	PO1, PO6, PO12

Section B (Answer any Four out of six) – 20 Marks (Each question Carry 5 Marks)

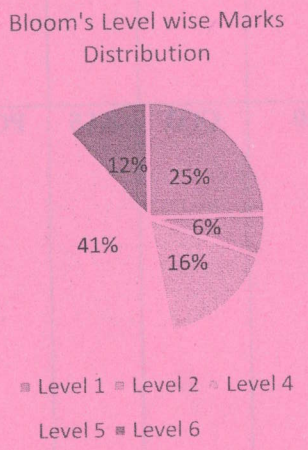
QNO.	Questions	Marks	COs	KL	PO
2.	Identify the compound composition of Cement.	5	CO1	K3	PO1, PO6, PO12
3.	Discuss deleterious substances in aggregates. Categorize the different deleterious materials.	5	CO1	K4	PO1, PO6, PO12
4.	Identify the factors on which strength, durability and other concrete characteristics depend.	5	CO2	K3	PO1, PO6, PO12
5.	Elaborate Batching, Compaction and Curing.	5	CO3	K2	PO1, PO6, PO12
6.	Illustrate:- (any 2) a. Accelerating Admixture b. Retarding Admixture c. Air-entraining Admixture	5	CO4	K2	PO1, PO6, PO12
7.	Distinguish between Chemical Admixtures and Supplementary Cementing materials.	5	CO4	K4	PO1, PO6, PO12

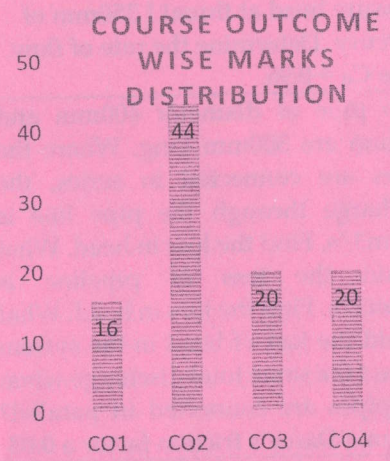
Section C (Answer any three out of Five) – 30 Marks-(Each question Carry 10 Marks)

QNO.	Questions	Marks	COs	KL	PO
8	Explain – a) Rapid Hardening Cement b) Low Heat Portland Cement	10	CO1	K5	PO1, PO6, PO12
9	Define 'Workability'. Assess the factors affecting workability of concrete?	10	CO2	K5	PO1, PO6, PO12
10	List the requirements of a good formwork?	10	CO3	K4	PO1, PO6, PO12
11	Discover the advantages and disadvantages of admixture?	10	CO4	K4	PO1, PO6, PO12
12	Appraise the importance of Non-Destructive Tests on Concrete.	10	CO5	K5	PO1, PO6, PO12

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

Course Outcomes	CO1	Measure pressure and determine total hydrostatic pressure for different conditions.
	CO2	Understand various parameters associated with fluid flow
	CO3	Determine head loss of fluid flow through pipes.
	CO4	Find the fluid flow parameters in open channels.
	CO5	Select relevant hydraulic pumps for different applications.





	ARKAJAIN University Jharkhand		**END TERM EXAMINATION**
Branch	**Civil Engineering**	Program	**POLY**
Course Name	**Hydraulics**	Semester	**IV**
Course Code	**DIP14192**	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.	Differentiate between cohesion and adhesion?	2	CO1	KL4	PO1
1b.	Define stagnation point.	2	CO1	KL1	PO1
1c.	Distinguish between solids and fluids.	2	CO2	KL4	PO2
1d.	Define pressure and what are the types?	2	CO1	KL1	PO2
1e.	Define capillarity and compressibility	2	CO2	KL1	PO1
1f.	Define specific gravity and mass density.	2	CO2	KL1	PO1
1g.	State the types of fluids?	2	CO2	KL1	PO1
1h.	State Newton's law of viscosity and give examples of its application	2	CO2	KL1	PO1

1i.	Define is surface tension and bulk modulus?	2	CO2	KL1	PO1
1j.	Differentiate between specific volume and specific weight	2	CO2	KL4	PO2

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

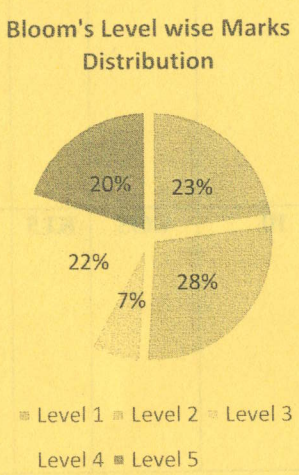
QNO.	Questions	Marks	COs	KL	PO
2.	State Bernoulli's theorem & mention the assumptions involved in it.	5	CO2	KL3	PO1
3.	Differentiate between stable, unstable and neutral equilibrium of the floating body with neat sketch.	5	CO2	KL4	PO2
4.	What do you understand by (a) pipes in series, (b) pipes in parallel?	5	CO2	KL2	PO2
5a.	Differentiate between laminar boundary layer and turbulent boundary layer?	3	CO2	KL4	PO2
5b.	Define Total energy line and Hydraulic gradient line	2	CO2	KL1	PO3
6.	Find the head lost due to friction in pipe of diameter 300 mm and length 75 mm through which water is flowing at a velocity of 4 m/s using (i) Darcy formula, (ii) Chezy's formula for which C = 55. Take kinematic viscosity for water 0.03 stokes	5	CO3	KL3	PO3
7.	A pipe has D = 40 cm, L = 100 m, f = 0.005. Compute the length of an equivalent pipe which has D = 20 cm and f = 0.008.	5	CO3	KL3	PO3

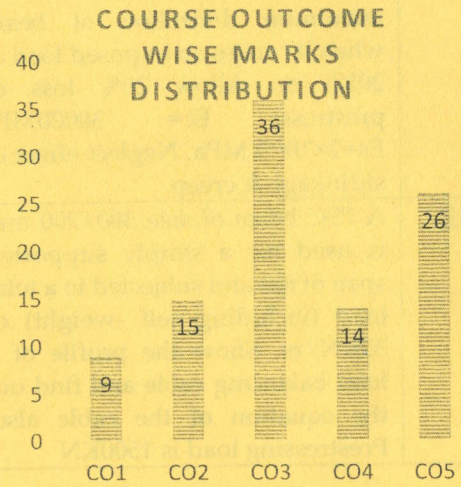
Section C (Answer any THREE out of FIVE) – 30 Marks-(Each question Carry 10 Marks)

QNO.	Questions	Marks	COs	KL	PO
8.	Derive the equation of continuity for three dimensional incompressible fluid flows and reduce it to one dimensional form.	10	CO2	KL6	PO5
9.	A horizontal Venturimeter with inlet and throat diameter 300mm and 100mm respectively is used o measure the flow of water. The pressure intensity at inlet is 130kN/m^2 while the vacuum pressure head at throat I 350mm of mercury. Determine the rate of flow. Take C_d = 0.96.	10	CO1	KL5	PO2
10.	Two pipe of diameter 400mm and 200mm are 300mm long. Where the pipes are connected in series, the discharge through the pipe line is 0.10m3/s. Find the loss in head. What would the loss of pipeline is 0.10m3/s. Find the loss in head. What would the loss of head in the system to pass the same total discharge when the pipes are connected in parallel? Assume Darcy's friction factor a 0.03	10	CO3	KL5	PO4
11.	Determine the dimensions of the most economical trapezoidal channel with manning's N = 0.02, to carry a discharge of 14m3/sec at a slope of 4 in 10,000	10	CO4	KL5	PO4
12a.	Evalaute the critical depth of a rectangular channel carrying a discharge of 2.4 m3/s/m.	5	CO4	KL5	PO4
12b.	Define specific energy. Draw the specific energy curve.	5	CO4	KL1	PO3

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

Course Outcomes	CO1	Select the relevant precast concrete element for a given type of construction.
	CO2	Use relevant components for prefabricated structures.
	CO3	Justify the relevance of prestressed element in a given situation.
	CO4	Select relevant methods / systems for given construction work.
	CO5	Propose suitable cable profile for the given prestressed concrete members.





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	ARKAJAIN University Jharkhand		**END TERM EXAMINATION**
Branch	**Civil Engineering**	Program	**POLY**
Course Name	**Precast And Prestressed Concrete**	Semester	**IV**
Course Code	**DIP14204**	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 prestressed concrete and state types of prestressing steel.	2	CO3	KL1	PO1
1b.	Recall the basic principle of prestressed concrete ?	2	CO3	KL1	PO1
1c.	List the various types of loss of prestress in pretensioned prestressed member.	2	CO3	KL4	PO5
1d.	State cable profile in simply supported rectangular beam section	2	CO5	KL2	PO3
1e.	State any two name of materials used in precast concrete	2	CO1	KL2	PO3
1f.	State any four precast non-structural components that can be used for speedy construction	2	CO1	KL2	PO5
1g.	Define Relaxation of steel.	2	CO2	KL1	PO1

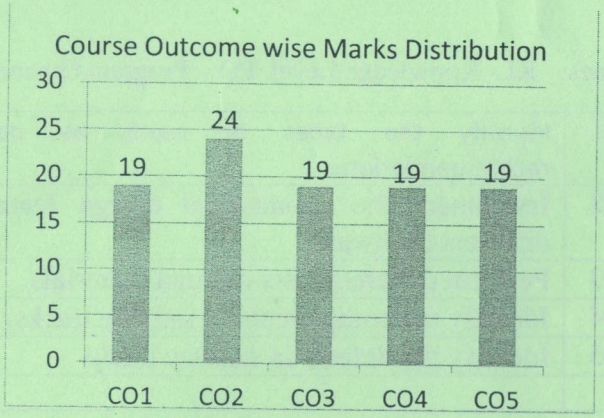
1h.	What do you understand by Cracking moment	2	CO4	KL2	PO1
1i.	What do you understand by Pressure line.	2	CO5	KL2	PO1
1j.	Define Cable line	2	CO5	KL1	PO1

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

QNO.	Questions	Marks	COs	KL	PO
2.	Explain determination of water absorption of paver block and state acceptable limit as per IS.	5	CO4	KL4	PO2
3.	State any four advantages and four disadvantages of precast concrete.	5	CO1	KL4	PO2
4.	Explain the procedure of the storage, transportation and errection of pre-fabricated building elements	5	CO4	KL4	PO3
5.	Justify the necessity of use of high-grade materials in prestressed concrete.	5	CO2	KL4	PO3
6.	Explain loss of prestress due to friction and slip of anchorage and state two remedial measures to avoid them	5	CO3	KL2	PO4
7.	Explain Load Balancing concept in prestressing concrete? Discuss with neat sketch.	5	CO3	KL2	PO4

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

QNO.	Questions	Marks	COs	KL	PO
8a.	State the advantages and disadvantages of prestressed concrete.	5	CO3	KL1	PO1
8b.	State any two advantages of prestressed concrete over reinforced concrete?	5	CO2	KL1	PO1
9a.	Define permissible limit for shrinkage of concrete in pretensioned and post tensioned members as per IS code?	5	CO2	KL1	PO1
9b.	Enumerate load balancing concept	5	CO3	KL3	PO1
10.	Described the loss of prestress in prestressed concrete structure.	10	CO3	KL2	PO2
11.	A concrete beam simply supported at both ends with a rectangular section 300×600mm is prestressed by post tension cable of 500mm2 each. The cables are located as constant eccentricity of 100mm span=8m. Cable are stressed to 1600MPa. Calculate maximum deflection of beam when it carries an imposed load of 20KN/m. Allow 20% loss of prestress. Ec= 30000MPa Es=2×10^5 MPa. Neglect effect of shrinkage & creep.	10	CO5	KL5	PO3
12.	A PSC beam of size 300×700 mm is used for a simply supported span of 8m and subjected to a total load (including self -weight) of 35KN/m. Show the profile of a load balancing cable and find out the equation of the cable also. Prestressing load is 1500KN	10	CO5	KL5	PO5



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	ARKA JAIN University Jharkhand		END TERM EXAMINATION
Branch	Civil Engineering	Program	POLY
Course Name	Transportation Engineering	Semester	IV
Course Code	DIP14210P	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

QNO .1	Questions	Marks	COs	KL	PO
1a.	List the importance of transportation in country.	2	CO1	K1	PO6
1b.	Recall the factors governing choice of mode of transportation.	2	CO1	K1	PO6, PO12
1c.	Tell the merits of camber.	2	CO2	K1	PO1, PO12
1d.	Define Sight Distance and its types.	2	CO2	K1	PO1, PO12
1e.	Name the different type of Gauges in Indian Railways.	2	CO3	K1	PO1, PO12
1f.	Define Flaky and Elongated aggregate.	2	CO3	K1	PO1, PO12
1g.	What do you mean by Creep of Rails?	2	CO4	K1	PO1,

1h.	What is a Sleeper?	2	CO4	K1	PO1, PO12
1i.	Define Track Alignment.	2	CO5	K1	PO1, PO12
1j.	Distinguish between terminal station and junction station	2	CO5	K4	PO1, PO12

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

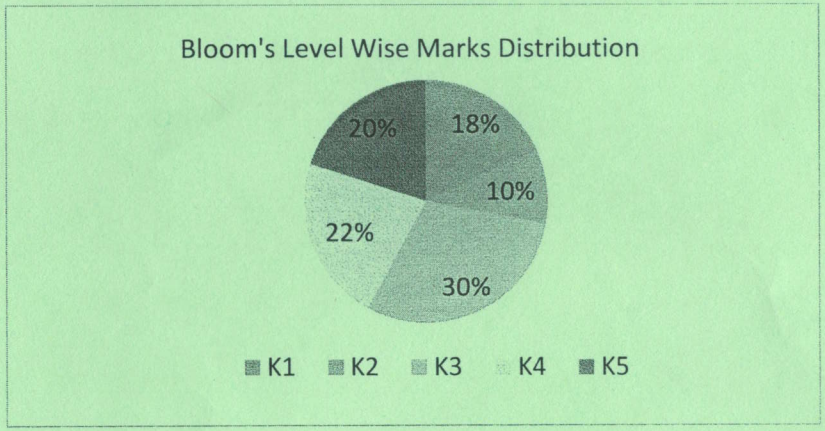
QNO.	Questions	Marks	COs	KL	PO
2.	Rephrase the recommendation of Jayakar Committee.	5	CO1	K2	PO12
3.	Enlist parameters affecting sight distance.	5	CO2	K4	PO1, PO12
4.	Identify the types of gradient and explain any one.	5	CO2	K3	PO1, PO12
5.	Compare Flexible and Rigid Pavement.	5	CO3	K4	PO1, PO12
6.	Identify the requirements of an Ideal Rail Joint.	5	CO4	K3	PO1, PO12
7.	Outline the purposes why Railway station is provided.	5	CO5	K2	PO12

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

QNO.	Questions	Marks	COs	KL	PO
8.	Deduct the classification of Indian Roads as per Nagpur Plan.	10	CO1	K5	PO1, PO6, PO12
9.	The overtaking and overtaken vehicles are 10kmph and 40kmph respectively on a two way traffic road. If the acceleration of overtaking vehicle is 0.99m/sec2. Evaluate safe overtaking sight distance.	10	CO2	K5	PO1, PO2, PO3, PO12
10.	Examine the different types of stresses that need to be considered in Rigid Pavements.	10	CO3	K4	PO1, PO2, PO12
11.	Identify the factors affecting choice of Gauges.	10	CO4	K3	PO1, PO12
12.	Select the factors controlling alignment of Railway Track.	10	CO5	K3	PO1, PO12

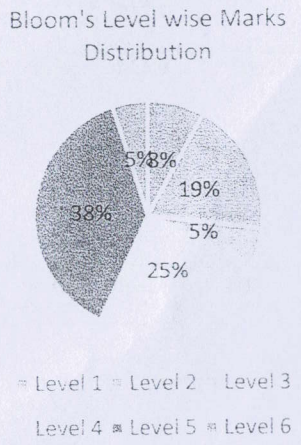
CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

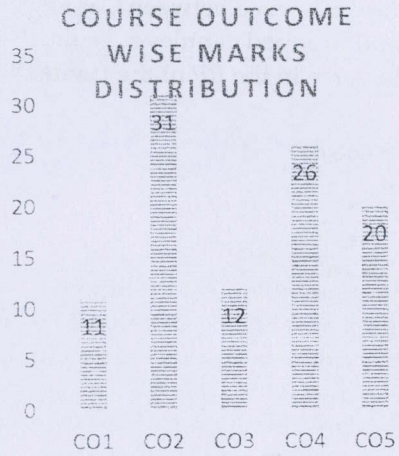
COURSE OUTCOMES	CO1	Identify the types of roads as per IRC recommendations
	CO2	Implement the geometrical design features of different highways.
	CO3	Perform different tests on road materials.
	CO4	Identify the components of railway tracks.
	CO5	Identify the defects in railway tracks



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

Course Outcomes	CO1	Analyse stresses induced in vertical member subjected to direct and bending loads.
	CO2	Analyse slope and Deflection in fixed and continuous beams.
	CO3	Analyse continuous beam under different loading conditions using the principles of Three Moments.
	CO4	Analyse continuous beam using Moment Distribution Method under different loading conditions.
	CO5	Evaluate axial forces in the members of simple truss.





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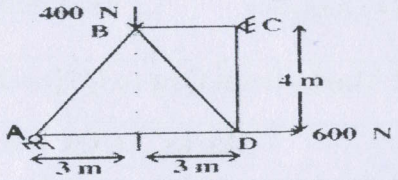
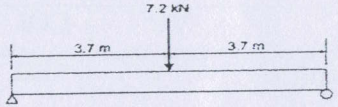
	ARKAJAIN University Jharkhand		END TERM EXAMINATION
Branch	Civil Engineering	Program	DIPLOMA
Course Name	Theory of Structure	Semester	IV
Course Code	DIP15032	Year	2022/Even
Time: 3 Hour Maximum Marks : 70	• Start writing from 2nd page onwards; **don't Write On The 1st Page Backside** • **Answer all Questions 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

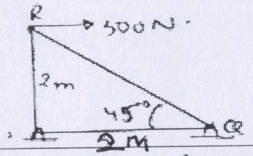
Q. No. 1	Questions	Marks	COs	KL	PO
1a.	Write the differential equation of flexure.	2	CO1	KL3	PO1
1b.	Draw the deflected shapes of any two beams.	2	CO1	KL6	PO3
1c.	Write the equation of area moment method theorem of deflection	2	CO3	KL3	PO1
1d.	Define elastic curve?	2	CO1	KL1	PO2
1e.	Draw the bending moment diagram for the fixed beam carrying UDL throughout.	2	CO2	KL6	PO3
1f.	What is the fixed beam and How is differ from Simply supported beam?	2	CO2	KL2	PO1
1g.	State any two advantages of a fixed beam.	2	CO2	KL2	PO2

1h.	Define stiffness factor.	2	CO4	KL1	PO1
1i.	Define distribution factor.	2	CO4	KL1	PO1
1j.	Define Carry over factor?	2	CO4	KL1	PO1

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

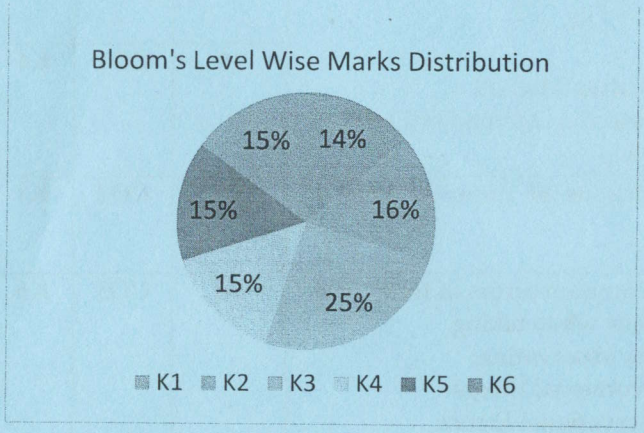
Q NO	Questions	Marks	COs	KL	PO
2.	State Mohr's area moment theorems for slope and deflection.	5	CO2	KL2	PO1
3.	A cantilever beam of 3 meter length is subjected to a point load of 30 kN at its free end. Find the deflection at the free end, using formula. if EI = 90 x 1012 N.mm2	5	CO2	KL5	PO5
4.	Explain slope and deflection	5	CO2	KL2	PO2
5.	Determine the force in each number of truss show in fig 2. 	5	CO5	KL5	PO4
6.	A 89 mm×300 mm Parallam beam has a length of 7.4 m and supports a concentrated load of 7.2 kN, as illustrated below. Draw shear force and bending moment diagrams for the beam. Find the maximum maximum shear stress and the maximum bending  stress.	5	CO1	KL5	PO4
7.	A fixed beam of 6m span subjected to a UDL of w/m over its full length. The net BM at the centre is 30kN/m. find the value of w	5	CO2	KL5	PO4

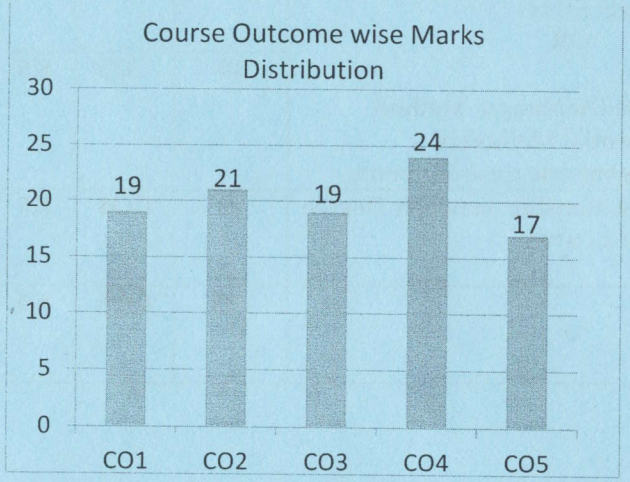
Section C (Answer any THREE out of FIVE) – 30 Marks-(Each question Carry 10 Marks)

Q NO	Questions	Marks	COs	KL	PO
8.	A cantilever beam 120 mm wide and 200 mm deep is 3 m long. What udl should the beam can carry to produce a deflection of 8 mm at the free end. Take E = 210 GN/mm2	10	CO2	KL5	PO5
9.	A continuous beam of ABC, simply supported at A and C, carries an UDL of 20kN/m on AB = 6m and carries a central point load of 120kN on BC = 6m. Take EI as constant. Draw SFD and BMD by moment distribution method.	10	CO4	KL5	PO4
10a.	Differentiate the method of joints & method of sections	5	CO5	KL4	PO3
10b.	Write the difference between Cantilever beam and propped cantilever beam.	5	CO2	KL2	PO1
11.	Find the force in the RP of the frame shown below 	10	CO4	KL4	PO4
12.	A Continuous beam ABC is Simply Supported at A and C such that AB = 6m and BC = 5m. The span AB carries an UDL of 20kN/m and the span BC carries a point load of 50kN at the centre. Find the support moments by using theorem of three moments draw SFD and BMD.	10	CO3	KL4	PO4

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

Course Outcomes	CO1	Prepare plans using Plane Table Surveys.
	CO2	Prepare plans using Theodolite surveys.
	CO3	Find distances and elevations using Tachometer.
	CO4	Prepare plans using Total Station instrument.
	CO5	Locate coordinates of stations using GPS.
	CO1	Prepare plans using Plane Table Surveys.





	ARKA JAIN University, Jharkhand		END TERM EXAMINATION
Branch	Civil Engineering	Program	POLY
Course Name	Advanced Surveying	Semester	IV
Course Code	DIP14021	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 Meansand 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

QNO .1	Questions	Marks	COs	KL	PO
1a.	Name the accessories/equipment used for Plane Table Surveying.	2	CO1	K1	PO1, PO5, PO12
1b.	Recall the principle of Plane Table Surveying.	2	CO1	K1	PO1, PO2, PO12
1c.	Compare Transiting & Swinging. How do you Change the face of Theodolite?	2	CO2	K2	PO1, PO5, PO12
1d.	List the different purposes for which Theodolite can be used?	2	CO2	K1	PO1, PO4, PO12
1e.	Define Temporary Adjustment and Permanent Adjustment.	2	CO2	K1	PO1, PO5,

1f.	Recall when is Tacheometric Surveying done? State its purpose.	2	CO3	K1	PO1, PO4, PO12
1g.	Outline the basic principle on which stadia method of Tacheometry is based.	2	CO3	K2	PO1, PO5, PO12
1h.	Tell the purpose of Providing a Curve.	2	CO4	K1	PO1, PO4, PO12
1i.	Classify Curves.	2	CO4	K2	PO1, PO6, PO12
1j.	Spell the full form of GPS.	2	CO5	K1	PO1, PO5, PO12

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

QNO.	Questions	Marks	COs	KL	PO
2.	Outline the precautions that should be taken while using Plane Table.	5	CO1	K2	PO1, PO5, PO12
3.	Explain the different Fundamental Lines of Theodolite.	5	CO2	K5	PO1, PO5, PO12
4.	Distinguish between Fixed Hair Method and Movable Hair Method of Tacheometric measurements.	5	CO3	K4	PO1, PO4, PO12
5.	Discuss Transition Curves.	5	CO4	K6	PO1, PO6, PO12
6.	Interpret the use of Data Recorder in Total Station?	5	CO4	K2	PO1, PO5
7.	Identify the different modes in GPS.	5	CO5	K3	PO1, PO5, PO12

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

QNO.	Questions	Marks	COs	KL	PO
8a.	Discover the common errors of the following type that occur during Plane Tabling:- a. Instrumental Errors b. Personal Errors c. Plotting Errors **OR**	10	CO1	K4	PO1, PO5, PO12
8b.	Examine:- a. Radiation Method b. Intersection Method of Plane Tabling	10	CO1	K4	PO1, PO5, PO12
9.	Identify functions of different parts of Theodolite	10	CO2	K3	PO1, PO5, PO12
10a.	Predict the common errors of following type that occur while taking Tacheometric observation: a. Instrumental Errors b. Observational Errors c. Natural Errors **OR**	10	CO3	K6	PO1, PO5, PO12
10b.	Discuss:- a. Stadia Diaphragm Method b. Tangential Method of Tacheometric measurements.	10	CO3	K6	PO1, PO5, PO12
11.	Derive the relationship between Degree and Radius of a curve.	10	CO4	K3	PO1, PO2, PO12
12.	Explain GPS	10	CO5	K5	PO1, PO5, PO12