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ARKA JAIN University
Jharkhand

NAAC GRADE A
ACCREDITED UNIVERSITY

END SEM EXAMINATION
School of Engineering & IT

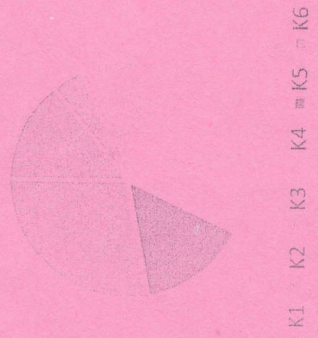
Branch	Civil Engineering	Program	B. Tech
Subject Name	Railway Engineering	Semester	VIII
		Year	April 2024
Time: 3 Hour Max. Marks : 70	<ul style="list-style-type: none"> Start writing from 2nd page onwards; don't Write on the 1st Page Backside Answer all Questions of Section A (Compulsory) Answer Any 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 <u>Unfair Means</u> and will Result in the <u>Cancellation of the Papers.</u> 		
Knowledge Level (KL)	K1 : Remembering K2 : Understanding	K3 : Applying K4 : Analysing	K5 : Evaluating K6 : Creating

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

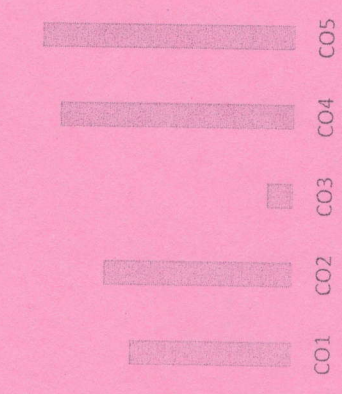
CO1	Understand the basic concepts of Track components, geometric design, track and railway Maintenance.
CO2	Demonstrate different Interlocking and modern Signal Systems in Railways
CO3	Analyze various facets of geometric design of tracks
CO4	Select the most suitable method of track maintenance, rehabilitation and renewal of track
CO5	Develop simple track layout.

GRAFICAL REPRESENTATION

Bloom's Level wise Marks Distribution



Course Outcome Wise Marks Distribution



Section A (Each question Carry 02 Marks from Q1-i to x) - 20 Marks		Q.N1	QUESTIONS	Marks	COs	KL
i	Define Gauge distance and Temporary and Permanent Railway Track.			2	CO1	K1
ii	Explain Buckling of Rails.			2	CO2	K1
iii	What do You understand by sleepers also Explain its Function.			2	CO5	K1
iv	Define Rulings and Momentum gradient.			2	CO2	K1
v	Define Ballast and explain its function.			2	CO1	K1
vi	Define Switch and Stock rail.			2	CO1	K1
vii	Define Closure Rail and Heel divergence.			2	CO4	K1
viii	Define Heel divergence Flangeway Clearance.			2	CO3	K1
ix	Define Point, crossing, Crossover.			2	CO3	K1
x	Define Grade compensation.			2	CO3	K1

Section B (Answer any FOUR out of SIX) - 20 Marks

(Each question 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	On a Broad gauge 3 degree curve the equilibrium cant is provided for 70kmph calculated value of equilibrium cant deficiency what would be the maximum permissible speed on the track. Using martin formula.	5	CO2	K5
3	Define Grade Compensation. Calculate compensation gradient if rulings gradient is 1 in 200 and 4 degree curve is provided.	5	CO1	K4
4	Define and explain correction for elevation and correction for gradient in Airport.	5	CO1	K1
5	Find the Cant (in cm) provided for a meter gauge 3 degree curve for a speed of 90kmph.	5	CO4	K4
6	A cant of 7.6 cm is provided on BG 2 degree curve Find the Cant deficiency (in cm) for a train Passing the curve. At 80km/hr.	5	CO3	K4
7	Define Railway Track, Dynamic gauge Negative Cant, Cant deficiency.	5	CO3	K3

Section C (Answer any THREE out of FIVE) - 30 Marks-

(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8	For a 2 degree on a high-Speed Broad gauge (BG) rail section, the maximum sanctioned speed is 100 km/h and the Equilibrium speed is 80 km/h. Consider dynamic gauge of BG rail as 1750 mm. The degree of curve is defined as the angle subtended at its centre by a 30.5 m arc Calculate The cant deficiency for the curve (in mm.).	10	CO4	K1
9	Define and explain Grade compensation. A BG railway track having ruling gradient 1 in 200 encounters a 4 degree curve Calculate The compensated gradient Provided at curve location.	10	CO3	K4
10	A train is pulled by a locomotive with four pairs of driving wheels with an axle load of 26.42 each on a straight level BG track at speed of 80kmph $\mu=0.17$ if the speed is reduced by 18.5 kmph as train approaches a gradient, Find the gradient(in %).	10	CO3	K5
11	Explain Docks and Harbours and its Types briefly.	10	CO4	K3
12	On a Broad gauge 3 degree curve the equilibrium cant is provided for 70kmph calculated value of	10	CO3	K4

equilibrium cant deficiency what would be the maximum permissible speed on the track. Using martin formula.

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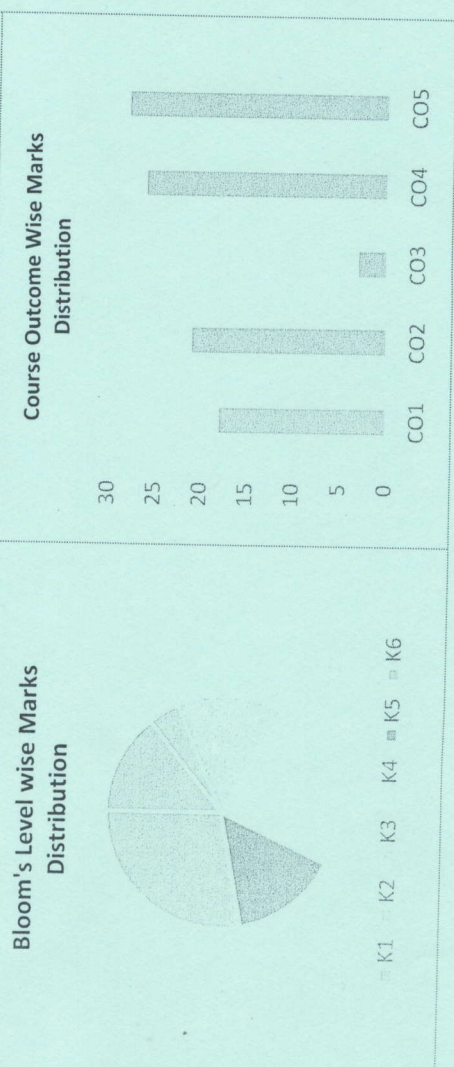
Branch	Civil Engineering	Program	B. Tech
Subject Name	Civil Engineering Design-I	Semester	VIII
		Year	April 2024
Time: 3 Hour Max. Marks : 70	<ul style="list-style-type: none"> Start writing from 2nd page onwards; don't write on the 1st Page Backside Answer all Questions of Section A (Compulsory) Answer 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 come under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation of the Papers</u>. 		
Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating
	K2 : Understanding	K4 : Analysing	K6 : Creating

Section A (Each question Carry 02 Marks from Q1-i to x) – 20 Marks			
Q. N1	QUESTIONS	Marks	COs
i	How does the design of civil engineering projects contribute to the quality of life in urban and rural areas?	2	CO1
ii	How do sustainability principles influence the design process in civil engineering?	2	CO2
iii	Can you give examples of how thoughtful design in infrastructure projects positively impacts communities?	2	CO1
iv	What is the role of geomatics (surveying and mapping) in the initial stages of civil engineering design?	2	CO3
v	How do environmental considerations influence the design of buildings and infrastructure projects?	2	CO1
vi	What are the advantages of using CAD software in civil engineering drawing compared to traditional drafting methods?	2	CO4
vii	What are the Functions of GIS.	2	CO1
viii	What are the Technologies used in GIS.	2	CO5
ix	Explain Spatial Analysis with GIS.	2	CO1
x	What are the Issues involving in EIA process.	2	CO4

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

CO1	Define the concept of Design and EIA.
CO2	Demonstrate the role of Geomatics in Civil Engineering Design
CO3	Examine the importance of modern tools and software in design
CO4	Judge the relevance of Site Appraisal and Safety in Design
CO5	Develop the Plan of a Building using modern tools.

GRAFICAL REPRESENTATION



Section B (Answer any FOUR out of SIX) - 20 Marks

(Each question Carry 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	Define and Explain Geographical Information Systems (GIS).	5	CO1	K2
3	Write and explain Components of GIS.	5	CO2	K2
4	Define the Environmental Impact Assessment (EIA) is the formal process.	5	CO1	K1
5	Explain the Type of Phases involve in the EIA Process.	5	CO3	K2
6	Write the application of GIS in civil engineering.	5	CO1	K3
7	Write the application of CAD. Name five commands and their functions.	5	CO4	K1

Section C (Answer any THREE out of FIVE) - 30 Marks-

(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8	How does CAD facilitate collaboration among different stakeholders involved in the design process?	10	CO4	K3
9	How does the process of site appraisal contribute to the overall success of a civil engineering	10	CO2	K1
10	What factors are typically considered during the site appraisal phase of a project?	10	CO5	K1
11	What are some essential skills required for proficiency in CAD software for civil engineering design?	10	CO3	K2
12	How do health and safety considerations influence the design decisions in civil engineering projects?	10	CO1	K3

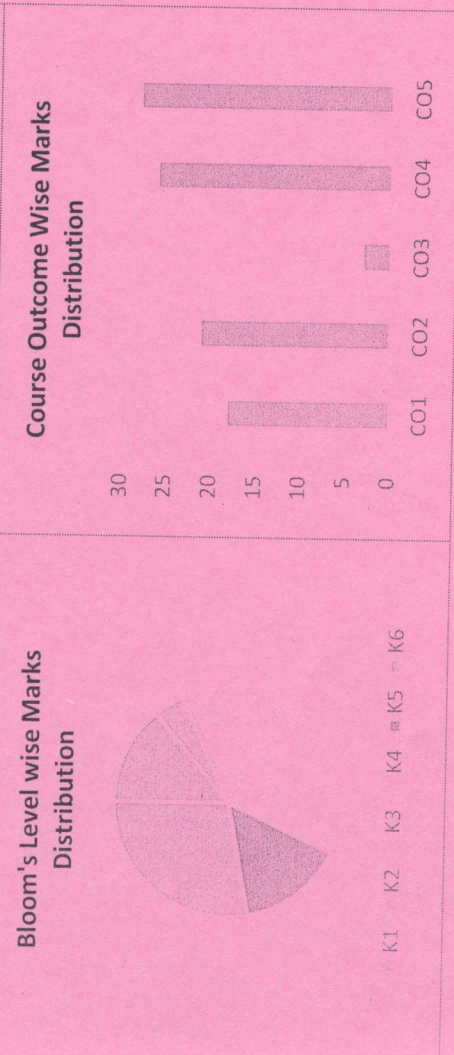
Branch	Civil Engineering	Program	B. Tech
Subject Name	Human Resource Development and Organizational Behaviour	Semester	VIII
		Year	April 2024
Time: 3 Hour Max. Marks : 70	<ul style="list-style-type: none"> Start writing from 2nd page onwards; don't Write on the 1st Page Backside Answer all Questions 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 come under <u>Unfair Means</u> and will result in the <u>Cancellation of the Papers.</u> 		
Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating
	K2 : Understanding	K4 : Analysing	K6 : Creating

Section A (Each question Carry 02 Marks from Q1-i to x) – 20 Marks			
Q. N 1	QUESTIONS	Marks	COs
i	What is the function of human resource Management.	2	CO1 K1
ii	What is the scope of Human Resource Policies.	2	CO2 K1
iii	Define the scope of organizational behaviour?	2	CO1 K1
iv	What do you understand of job analysis?	2	CO2 K1
v	Explain Significance of Job Analysis.	2	CO1 K1
vi	Define Human Resource Management.	2	CO1 K1
vii	Write the objective of Human resource management.	2	CO1 K1
viii	Write the social and professional significance of HRA.	2	CO5 K1
ix	Write the Qualities of Human Resource Manager.	2	CO3 K1
x	What do You understand by the Human Resource polices	2	CO4 K1

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

CO1	Define the key ideas and issues in OB.
CO2	Interpret the dynamics of human behavior in work context.
CO3	Examine the determinants of work behavior from different levels.
CO4	Judge the issues in OB that influence the way people behave in an organizational setting.
CO5	Develop competencies of analyzing behavioral issues in the work environment

GRAFICAL REPRESENTATION



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

Q. No.	QUESTIONS	Marks	COs	KL
2	Write the Types of Human resources polices.	5	CO4	K1
3	What is the Scope of Human Resource Polices Explain Briefly.	5	CO3	K2
4	Write the Objectives of Human Resource Planning.	5	CO5	K4
5	Explain the Process of Human Resource planning.	5	CO2	K3
6	What is the process of Job analysis? Explain in brief.	5	CO5	K1
7	What do you understand by Human Resource planning.	5	CO1	K2

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

Q. No.	QUESTIONS	Marks	COs	KL
8	Explain technique of Job analysis. Explain in Brief also explain the content of job description.	10	CO3	K4
9	Explain Job Design. Methods of job Design.	10	CO4	K4
10	Explain Recruitment in brief and also explain process of Recruitment.	10	CO2	K3
11	What are the Sources of Recruitment also Explain Techniques of Recruitment.	10	CO3	K3
12	What do you understand by Recruitment Practice in India. Also explain Selection testing.	10	CO5	K4

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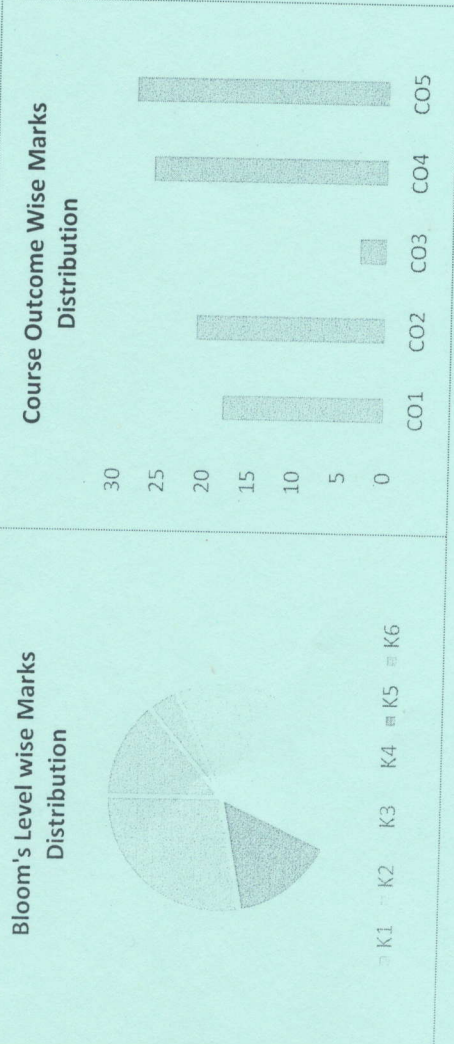
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Branch	Civil Engineering	Program	B. Tech
Subject Name	Ground Water Engineering	Semester	VIII
		Year	April 2024
Time: 3 Hour Max. Marks : 70	<ul style="list-style-type: none"> Start writing from 2nd page onwards; don't Write on the 1st Page Backside 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 <u>Mobile Phones</u> or any kind of <u>Written Material/ Arguments with the Invigilator or Discussing with Co-Student</u> will come under <u>Unfair Means</u> and will <u>Result in the Cancellation of the Papers.</u> 		
Knowledge Level (KL)	K1 : Remembering K2 : Understanding	K3 : Applying K4 : Analysing	K5 : Evaluating K6 : Creating

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

CO1	Recall the basic concepts of Hydrogeology, Well Hydraulics and Groundwater Management.
CO2	Address practical groundwater engineering problems.
CO3	Characterize the subsurface using aquifer tests, transport and remediation of contaminants, and innovations in groundwater management.
CO4	Select the best method of Surface and Subsurface investigation.
CO5	Develop a conceptual model of an areas hydrogeology that can be used to guide a site investigation or engineering design project

GRAFICAL REPRESENTATION



Section A (Each question Carry 02 Marks from Q1-i to x) – 20 Marks

Q. N1	QUESTIONS	Marks	COs	KL
i	Define Zone of Aeration.	2	CO1	K1
ii	Explain zone of saturation.	2	CO2	K1
iii	Define aquitard and Aquifuge.	2	CO1	K1
iv	Define Confined and Unconfined Aquifer.	2	CO2	K1
v	Explain Stratification and Coefficient of Permeability.	2	CO1	K1
vi	Explain the methods of Estimation of recharge.	2	CO1	K1
vii	Define Barometric and storage coefficient.	2	CO1	K1
viii	Define affluent and influent.	2	CO3	K1
ix	Explain Ephemeral and Effluent.	2	CO1	K1
x	Explain Ground water development.	2	CO4	K1

Section B (Answer any FOUR out of SIX) - 20 Marks (Each question Carry 5 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
2	What are the commonly used methods to assess the recharge of ground water in an area? Explain briefly any one of the methods.	5	CO4	K1
3	Derive the basic differential equation for Confined Groundwater flow.	5	CO3	K2
4	Describe briefly Drawdown Test.	5	CO5	K4
5	Define open wells also Recuperation Test.	5	CO2	K3
6	Explain Well loss and Specific Capacity.	5	CO5	K1
7	Explain the methods of Estimation of recharge.	5	CO1	K2
Section C (Answer any THREE out of FIVE) - 30 Marks- (Each question Carry 10 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
8	A 30cm diameter well completely Penetrates a confined aquifer of Performance ability 45/day. The length of strainer is 20 m. Under Steady state of pumping, the drawdown the well was found 3.0m and the radius of influence was 300m. Calculate the discharge.	10	CO3	K5
9	Explain briefly the formation of sea water interface in costal unconfined aquifer.	10	CO4	K4
10	Discuss the geological formations in India Which have Potential as aquifers.	10	CO2	K3
11	A filled test for permeability consists in observing the time required for a tracer to travel between two observation well. A tracer was found to take 10h to travel between two well 50m apart when the difference of water surface elevation in them was 0.5m. The mean particle size of the Aquifer was 2mm and the porosity of the medium 0.3. If $v=0.01 \text{ cm}^2/\text{s}$. Estimate a) The coefficient of Permeability and Intrinsic Permeability of the Aquifer. b) The Reynolds number of flow.	10	CO3	K5

12	The discharge from a fully penetration well operating under steady state in a confined aquifer of 30m thickness is 2100litre/minute The drawdowns observed at two observation well located at 15m and 150m from well are 3.2 and 0.28 respectively. Determine the transmissibility and the Permeability of the aquifer.	10	CO4	K5
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