

JALPAIGURI GOVERNMENT ENGINEERING COLLEGE
[A GOVERNMENT AUTONOMOUS COLLEGE]
JGEC/B.TECH/CIVIL/ES-CE401/2022-23
2023
SOLID MECHANICS

Full Marks: 70

Times: 3 Hours

The figures in the margin indicate full marks.
Candidates are instructed to write the answers in their own words as far as practicable.
Plain graph paper will be supplied for question no- 8(ii)

GROUP-A
[OBJECTIVE TYPE QUESTIONS]

Answer **all** questions

1. Define complementary stresses
2. Find out degree of indeterminacy of a single span beam with one end fixed and other end free
3. Show core of a circular column section having diameter 300mm with neat sketch
4. Write general formula for stresses in a pressure vessel.
5. Define poisson's ratio

5x2=10
2
2
2
2
2

GROUP-B
[LONG ANSWER TYPE QUESTIONS]

Answer any **five** questions

6.
 - i) Draw bending moment and shear force diagram of a simply supported beam of 5m span with 1m overhang from right support (total length of beam is 6m) , The beam is subjected to a uniformly distributed load 30Kn/m over the full length.
 - ii) Calculate maximum bending stress in the beam, size of the beam is 250mmX500mm
 7.
 - i) Calculate maximum shear stress in the beam given in Question no. 6
 - ii) Write assumptions for derivation $\frac{M}{I} = \frac{\sigma}{R} = \frac{E}{y}$ in pure bending
 8.
 - i) For a thin plate subjected to biaxial tension, derive equation for normal stress and shear stress at any plane.
 - ii) Draw Mohr's circle for a case of biaxial stress if $\sigma_x = 350.0 \text{ kg/cm}^2$ and $\sigma_y = 600.0 \text{ kg/cm}^2$. From this circle find σ_n and τ for the plane whose $\phi=20^\circ$
- For the given truss shown in Fig -A, find member forces for all the members and prepare a table for the same.

12x5=60

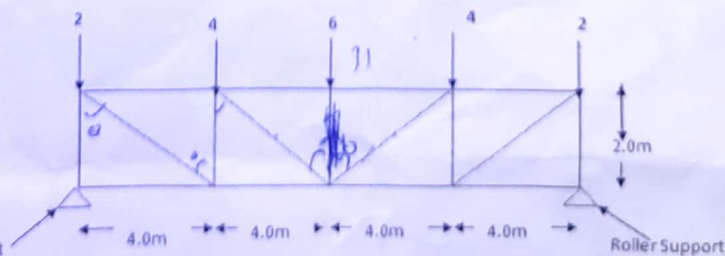


FIG-A

All loads in the given truss are in KN

10.
 - i) Calculate safe internal pressure P for spherical pressure vessel made of thin magnesium plate 0.25cm thick if mean diameter of sphere is D=500 cm and allowable stress in tension =1000 kg/cm²
 - ii) Determine the proper diameter d for a solid steel shaft to transmit 200 hp at 105 rpm if working stress in shear 420 kg/cm²

$$Z = \frac{V}{IY} \bar{AY}$$

$$\frac{\text{KN} \times \text{mm} \times \text{mm} \times \text{mm}}{\text{mm} \times \text{mm}^3}$$

$$\frac{100 \times 1000}{\text{cm} \times \text{mm}}$$

$$\frac{\sigma_1}{\gamma_1} + \frac{\tau}{\gamma_2} = \frac{P}{L}$$

11. i) Derive Euler's basic formula for critical load for column having one end fixed and other end pinned 7
 ii) A short column of size 300 mm x 300 mm is subjected to an axial load of 900 kN with an eccentricity 25 mm. If permissible compressive stress in column is 9 MPa. Check suitability of the column. 5
12. X) A steel bar of length 1 m is subjected to a tensile force of 100 kN. Diameter of the bar is 16 mm for 0.4 m length and 20 mm for rest 0.6 m length. Calculate total elongation of the bar. $E = 2 \times 10^6$ MPa. 6
 ii) Explain briefly a) Gauge length in tension test b) Factor of safety c) Modulus of rigidity 6

0.015

K

MPa

kN/mm²

100 N/mm²

$$\frac{2 \times 10^6}{10^3 \times 10^6}$$

$$\frac{\pi}{4} \times d^4$$

$$\frac{\pi}{4} \times 16^4$$

JALPAIGURI GOVERNMENT ENGINEERING COLLEGE
[A GOVERNMENT AUTONOMOUS COLLEGE]
JGEC/B.TECH/CE/CE(PC)401/2022-23
2023
CONCRETE TECHNOLOGY AND CONSTRUCTION MATERIALS

Full Marks: 70

Times: 3 Hours

The figures in the margin indicate full marks.

Candidates are instructed to write the answers in their own words as far as practicable. Use of IS 10262(2019) and IS 383 are allowed. Assume any other suitable data, if required.

GROUP-A
[OBJECTIVE TYPE QUESTIONS]

Answer **all** questions

5x2=10

1. What is a cement? What are the different ingredients of cement?
2. What are the different tests conducted on lime?
3. What is sulphate attack? What are its effect?
4. Define superplasticiser? Mention a few superplasticisers.
5. Define segregation.

GROUP-B
[LONG ANSWER TYPE QUESTIONS]

Answer any **four** questions

4x15=60

6. (i) Discuss the role of various major components of hydrated cement on the properties of cement. 7
(ii) What are the different grades of cement? What is strength test in case of cement? How will you perform it in the laboratory? 8
7. (i) Explain what are the different types of lime? What are the different impurities present in lime? 6
(ii) What is alkali aggregate reaction? What are the different factors promoting alkali aggregate reaction and how can it be minimised? 9
8. (i) Explain the characteristics of a good mortar. 5
(ii) How sea water influences the quality of a concrete? What are the effects of impurities present in water on properties of concrete? 10
9. (i) What do you mean by shrinkage? What are the different types of shrinkages present in a concrete? Explain. 7
(ii) Define Poisson's ratio, modulus of elasticity. What do you mean by maturity of a concrete? Explain. 8
10. Determine the mix proportion for concrete mix of grade 40 to suit the following data by IS method
 - i) Type of cement – OPC grade 43
 - ii) Type of aggregates – Crushed angular
 - iii) Maximum size of aggregate – 20 mm
 - iv) Maximum free water-cement ratio – 0.45
 - v) Minimum cement content – 320 kg/m³
 - vi) Slump required – 50 mm
 - vii) Quality control – Good
 - viii) Exposure condition - Severe (RCC)
 - ix) Specific gravity of cement – 3.15
 - x) Specific gravity of coarse aggregates – 2.7
 - xi) Specific gravity of fine aggregates – 2.65
 - xii) Water absorption: Coarse aggregate = 0.5%
Fine aggregate = 1.0%

Grading of coarse aggregate is conforming to table 2 IS 383 and grading of fine aggregate is conforming to zone II

11. Write short notes on

- i) Non destructive testing
- ii) Polymer concrete
- iii) Self compacting concrete

12. (i) What are the harmful substances present in brick earth?

5

(ii) What is brick bonding? Explain.

10

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[A GOVERNMENT AUTONOMOUS COLLEGE]
JGEC/B.TECH/CIVIL ENGINEERING/PC-CE402/2022-23
2023
ENGINEERING HYDROLOGY

Full Marks: 70

Times: 3 Hours

The figures in the margin indicate full marks. Assume any reasonable data, if required. Candidates are instructed to write the answers in their own words as far as practicable. Use graph paper where necessary.

GROUP-A
[OBJECTIVE TYPE QUESTIONS]

Answer **all** questions

5x2=10

1. Wind velocity at 1 m above ground surface is 15 kmph. Find wind velocity a height of 10 m above ground surface. 2
2. Define basin lag and time of concentration. 1+1
3. Write down the basic two assumptions of unit hydrograph. 2
4. What is linear storage? 2
5. Draw two typical catchment areas for two respective DRHs among which one is left skewed and another one is right skewed. 2

GROUP-B
[LONG ANSWER TYPE QUESTIONS]

Answer any **five** questions

12x5 = 60

6. i) A catchment area has seven raingauge stations. In a year, the annual rainfall recorded by the gauges are as follows: 4+2

Station	Jalpaiguri	Nagrakata	Dhupguri	Rajganj	Maynaguri	Mal	Matiali
Rainfall (cm)	125	146.1	120.2	158.5	195.2	122.1	126.9

- a) Determine the standard error in the estimation of mean rainfall in the existing set of raingauges.
- b) For a 20% error in the estimation of the mean rainfall, calculate the number of raingauge stations required to add or remove in that catchment.

- ii) Define drainage density.

- iii) The following data were collected during a stream-gauging operation in a river. Compute the discharge. 5

Distance from left water edge (m)	Depth (m)	Velocity (m/s)	
		at 0.2 d	at 0.8 d
0	0	0	0
1.5	1.1	0.5	0.3
3	2.4	0.8	0.6
4.5	1.6	0.6	0.4
6	1.2	0.5	0.3
7.5	0.6	0.3	0.2
9	0	0	0

7. i) For the infiltration data set given below, establish the Philip's equation. Use graph paper. 7

Time since start (Min.)	5	10	15	20	30	40	60	120	150	180
Cumulative Infiltration (mm)	10	19	27	40	56	78	95	110	137	163

- ii) Estimate the PET of an area for the season November to February in which wheat ($K=0.65$) is grown. The area is at a latitude of 25 degree North with mean monthly temperature as below. 5

Month	Nov.	Dec.	Jan.	Feb.
Temp. (°C)	17.5	15.6	12.3	14.2
Monthly daytime hours %	7.4	7.42	7.53	7.14

Use the Blaney-Criddle formula.

8. i) The stage-discharge data of a river are given below. Establish a stage-discharge relationship to predict the stage for a known discharge. Assume the stage value for zero discharge as 20.2 m. Determine the rating curve and its correlation coefficient. Also determine the stage of the river corresponding to a discharge of 1500 m³/s.

Stage (m)	Discharge (m ³ /s)	Stage (m)	Discharge (m ³ /s)
21.95	100	24.05	780
22.45	220	24.55	1010
22.8	295	24.85	1220
23	400	25.4	1300
23.4	490	25.15	1420
23.75	500	25.55	1550
23.65	640	25.9	1760

ii) Write down Meyer's formula.

iii) If maximum length of travel of water is 15 km; and slope of the catchment is 1 in 4000, find out the magnitude of time of concentration (t_c).

9. i) A structure on river Mahananda has been designed in such a way that it will not fail in next 50 years due to flood, with 80% assurance. Calculate the risk (%) for the structure to sustain another 30 years than its estimated design period.

ii) The coordinates of the IUH of a catchment are given below.

Time (hours)	0	1	2	3	4	5	6	7	8	9	10	11	12
IUH ordinate (m ³ /s)	0	9	32	51	48	39	30	22	14	9	5	2	0

a) Derive the direct runoff hydrograph (DRH) for this catchment due to storm of a duration 5 hours and having a rainfall excess of 4 cm.

b) What is the areal extent of the catchment?

10. i) Route the following flood hydrograph through a river reach whose Muskingum coefficient K (storage-time constant) = 13 h and $x = 0.25$. At the start of the inflow flood, the outflow discharge is 10 m³/s.

Time (h)	0	6	12	18	24	30	36	42	48	54
Inflow (m ³ /s)	10	25	45	65	58	50	40	32	24	16

Plot and estimate the attenuation also.

ii) Differentiate between cyclone and anticyclone.

11. i) For a 400 ha watershed in Chennai with predominantly non-black cotton soil, the CN_{II} has been estimated as 65. If the total rainfall in the past five days is 40 mm and the season is dormant season, estimate the runoff volume due to 85 mm rainfall in a day.

ii) Develop a 15-minute SCS triangular unit hydrograph for a watershed of an area 600 ha and time of concentration 85 min. What would be the peak discharge for the DRH for a 15-minute storm having 6 cm of excess rainfall. Draw both SCS triangular UH and DRH.

12. i) What is virgin flow?

4) Flood frequency computations for river Teesta at Gajoldoba barrage, by using Gumble's method, yielded the following results:

Return period T (years)	Peak flood (cumec)
50	41900
100	45800

- a) Estimate the flood magnitude in the river Teesta with a return period of 500 years.
- b) What are the 95% and 80% confidence limits for the estimate if $K_{500} = 4.256$; standard deviation of the annual flood series = $2560 \text{ m}^3/\text{s}$; and sample size = 80 years.

7
4

JALPAIGURI GOVERNMENT ENGINEERING COLLEGE
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JGEC/B.TECH/CE/PC-CE403/2022-23
2023
SOIL MECHANICS-I

$\frac{1}{V} = \frac{1}{\frac{M}{D}} = \frac{D}{M}$

Full Marks: 70

Times: 3 Hours

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GROUP-A
[OBJECTIVE TYPE QUESTIONS]

Answer **all** questions

5x2=10

1. How do you detect that a soil sample contains some clay without going through laboratory test? 2
2. Write the names of three important clay minerals and arrange them in ascending order of specific surface 2
3. Define flow index. 2
4. Horizontal hydraulic conductivity of two locations are K_{x1} and K_{x2} respectively; and vertical hydraulic conductivity of those two locations are K_{z1} and K_{z2} respectively. State the relationships for heterogeneous isotropic soil. 2
5. Hydraulic gradient of $i = 0.2$ drives water to flow from one point to other. Determine the pressure 2 3

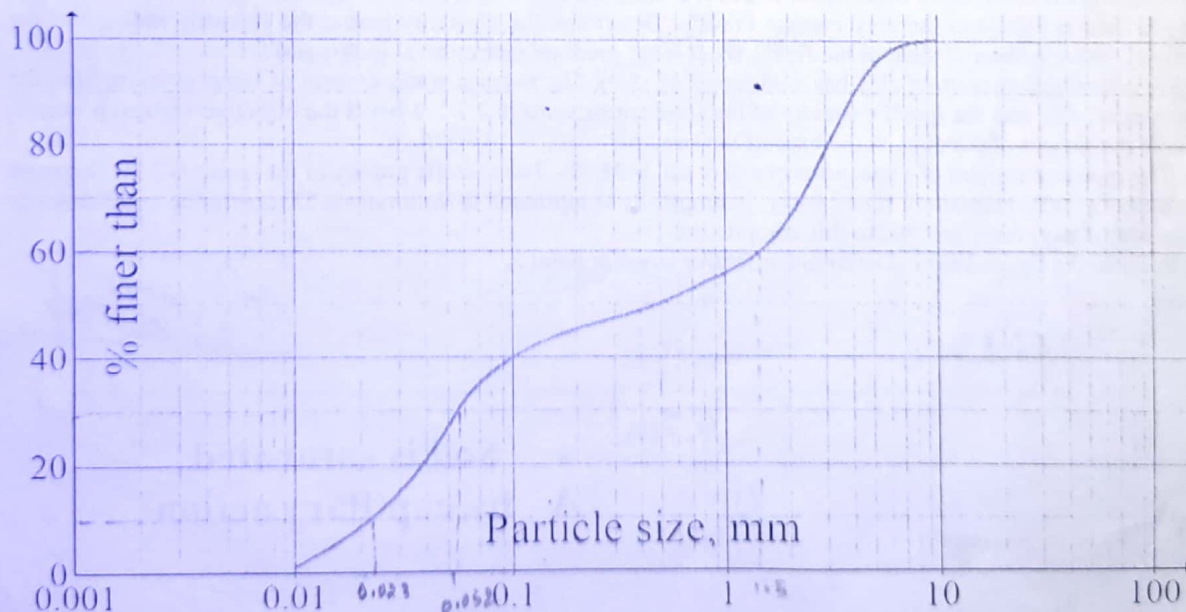
GROUP-B
[LONG ANSWER TYPE QUESTIONS]

Answer any **five** questions

$w_s = 42.5$

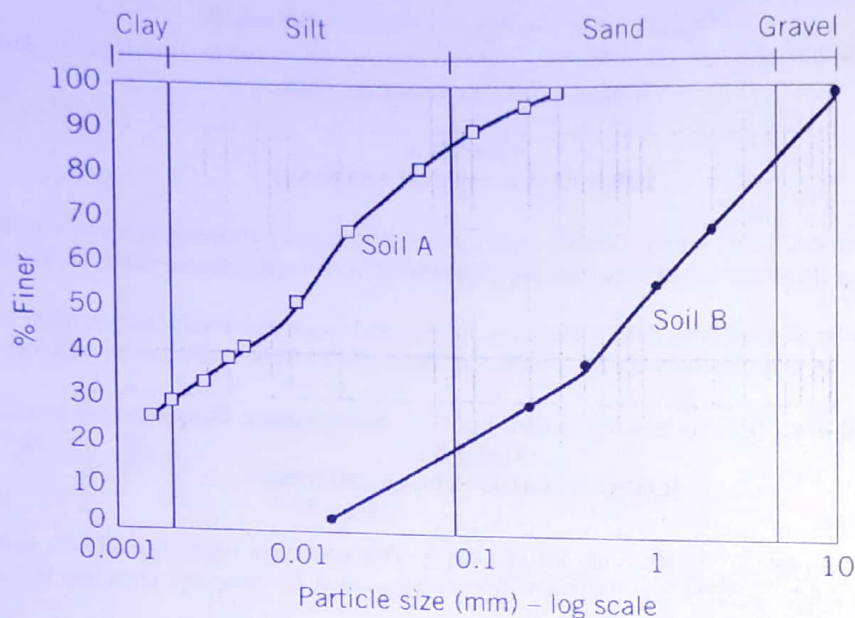
12x5 = 60

6. a) A container of volume $2.83 \times 10^{-3} \text{ m}^3$ weighs 9.8 N. Dry sand was poured to fill the container. The container and the sand weigh 52.3 N. Calculate the void ratio and the porosity. Describe the condition of the soil (loose or dense). Assume $G_s = 2.7$. 3
- b) Grain size distribution of a soil is given below. Determine C_u and C_c . Comment on the gradation of soil and determine sand content. 4



$C_u = \frac{D_{60}}{D_{10}} \quad \frac{D_{30}^2}{D_{60} \times D_{10}}$

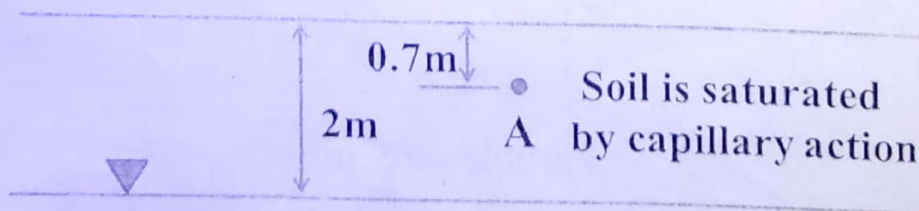
c) Particle size distribution of two soils is given in figure below. Atterberg's limits are: $LL = 26\%$, $PL = 18\%$. Classify soil A (see figure) as per USCS system.



d) How do you identify organic soil?

7. a) A fine-grained soil has a liquid limit of 300% and a plastic limit of 55%. The natural water content of the soil in the field is 80% and the clay content is 60%. Determine the plasticity index, the liquidity index, and the activity. What is the soil state in the field? What is the predominant mineral in this soil?
- (b) A submerged stratum of clay has a thickness of 15 m. The average water content of samples taken from the stratum is 54%, and the specific gravity of the solid constituents is 2.78. What is the effective vertical pressure, due to the weight of the clay, at the base of the stratum?
- c) The moisture content of a specimen of a clay soil is 24.3%. The specific gravity of the solids is 2.70. Compute void ratio at 60% saturation. If this soil is isotropically compressed to void ratio 0.52, determine amount water expelled (if any) from soil due to this compression.
- d) Refer to the figure below. Determine effective stress at point A.

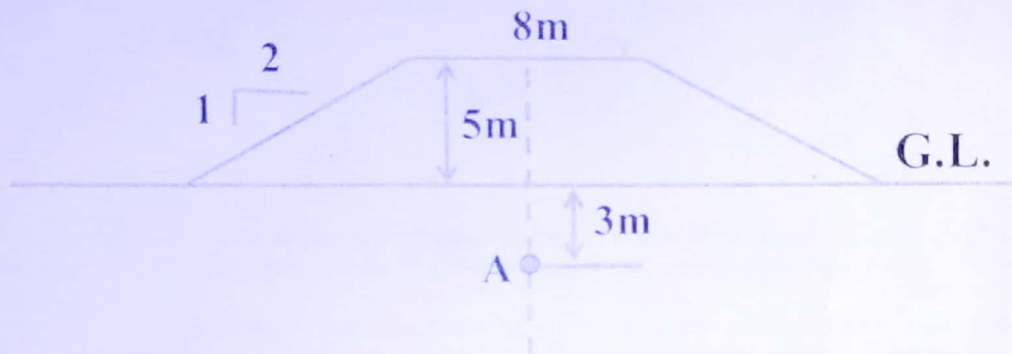
G.L.



$$\gamma_{sat} = 19.5 \text{ kN/m}^3$$

JALPAIGURI GOVERNMENT ENGINEERING COLLEGE
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JGEC/B.TECH/CE/PC-CE403/2022-23
2023
SOIL MECHANICS-I

8. a). Prove that horizontal permeability of a layered soil is greater than vertical permeability. 3
 b) Prove that seepage velocity through soil is greater than average velocity through a section. 2
 c) A cylindrical soil sample, 7.3 cm in diameter and 16.8 cm long, is tested in a constant-head permeability apparatus. A constant head of 75 cm is maintained during the test. After 1 min of testing, a total of 945.7 g of water was collected. The temperature was 20°C. The void ratio of the soil was 0.85. Compute the coefficient of permeability in cm/s. Also compute permeability if void ratio of the same soil sample is 0.75. 3
 d) An embankment is constructed with a soil having unit weight 17.6 kN/m³ (see figure below). Determine vertical stress for one triangular portion of the embankment at point A. 4

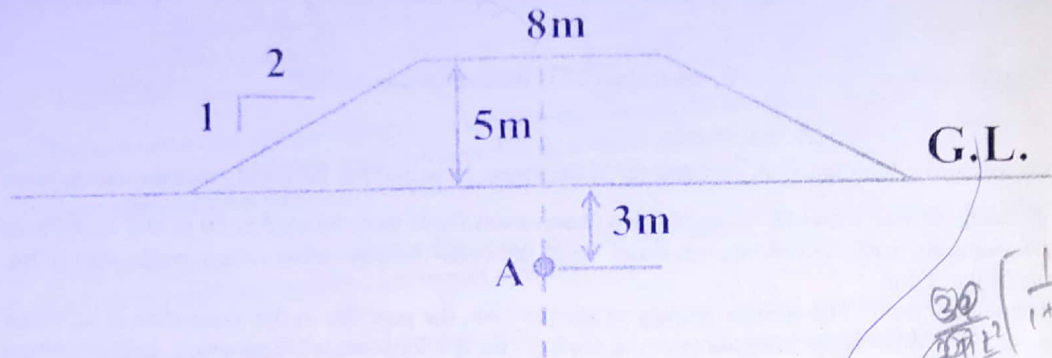


$$K = \frac{qL}{AhH}$$

3

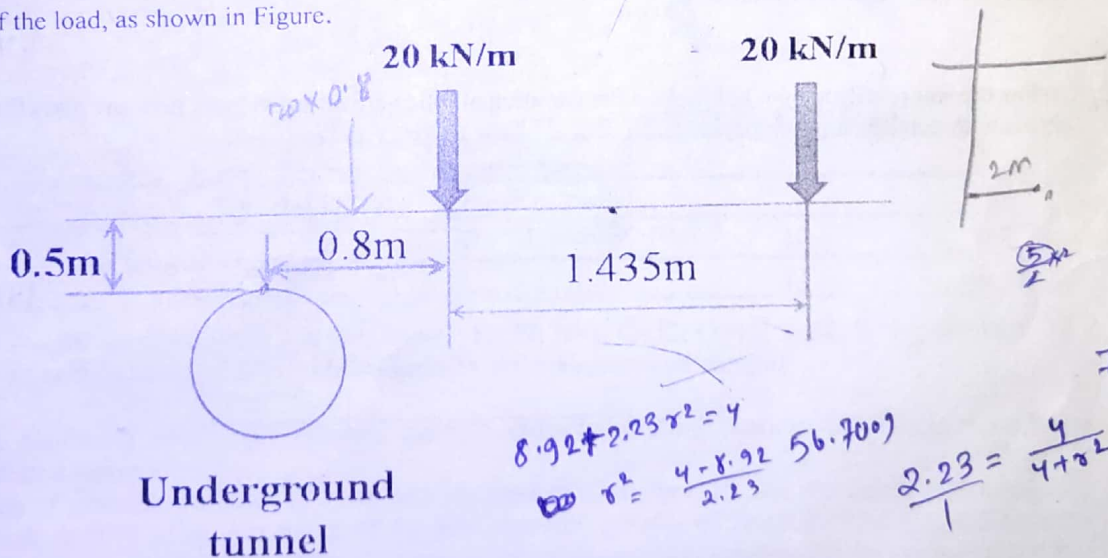
- c) A cylindrical soil sample, 7.3 cm in diameter and 16.8 cm long, is tested in a constant-head permeability apparatus. A constant head of 75 cm is maintained during the test. After 1 min of testing, a total of 945.7 g of water was collected. The temperature was 20°C. The void ratio of the soil was 0.85. Compute the coefficient of permeability in cm/s. Also compute permeability if void ratio of the same soil sample is 0.75.
- d) An embankment is constructed with a soil having unit weight 17.6 kN/m³ (see figure below). Determine vertical stress for one triangular portion of the embankment at point A.

4



$$\frac{30}{2 \times 1^2} \left(\frac{1}{1 + \left(\frac{2}{1} \right)^2} \right)^{5/2}$$

9. a) A point load of 200kN is placed on ground surface of a semi-infinite mass. Determine maximum vertical stress directly below the load at 3m depth and maximum stress below the ground at 2m away from the load. Use Boussinesq's theory.
- b) Two parallel line loads, 20 kN/m each, are applied at the surface of a semi-infinite soil mass as shown in Figure. Calculate the increase in vertical stress directly above the crown of the underground tunnel located in the vicinity of the load, as shown in Figure.



$$8.92 + 2.23r^2 = 4$$

$$r^2 = \frac{4 - 8.92}{2.23} = 56.7009$$

$$r = \frac{2.23}{1} = \frac{4}{4 + 8.92}$$

- c). A circular footing has UDL q kPa. Determine radius of the circle for which stress increment at depth 2m is 10% of total load.
- d). The vertical stress at some depth below the corner of a 2m x 3m rectangular footing due to a certain load intensity is 110 kN/m². What will be the vertical stress in kN/m² below the centre of a 4m x 6m rectangular footing at the same depth and same load intensity?

- 10 a) Describe the characteristics of equipotential line and flow line.
- b) For the sheet pile system shown in the Annexure 1, calculate the flow rate in m³/day/m by constructing the

(a) $k_x = k_z = 5.0 \times 10^{-5} \text{ m/s}$

(b) $k_x(\text{horiz}) = 5.0 \times 10^{-5} \text{ m/s}$, $k_z(\text{vert}) = 3.0 \times 10^{-5} \text{ m/s}$

Determine pore water pressure at A (see figure in Annexure 1).

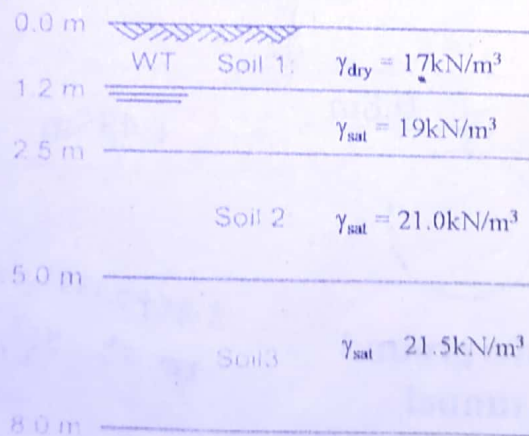
c) If continuity equation of two dimensional seepage for non-isotropic case, i.e. $k_x \frac{\partial^2 h}{\partial x^2} + k_z \frac{\partial^2 h}{\partial z^2} = 0$ is

transformed to isotropic case $\frac{\partial^2 h}{\partial x_f^2} + \frac{\partial^2 h}{\partial z^2} = 0$, what shall be the expression for x_f

- 11 a) A pumping test was carried out in a confined aquifer of thickness 10 m and the following measurements were recorded. Rate of pumping was $15.6 \times 10^{-3} \text{ m}^3/\text{s}$. Two observation wells were located at 10 m and 30 m from the center of the pumping well. Difference of water level between the two observation wells was 0.3m. Determine permeability of soil.
- b) What is quicksand condition? The specific gravity of sand is 2.66, the porosity in the loose state is 45% and in the dense state is 37%. What is the critical hydraulic gradient for the loose state? How quick sand condition can be prevented in the field?
- c) The density of a sand backfill was determined by field measurements to be 17.2 kN/m^3 . The water content at the time of the test was 8.6%, and the specific gravity of solid constituents was 2.60. In the laboratory the maximum and minimum dry density were 18.7 and 14.8 kN/m^3 , respectively. What was the relative density of the fill?
- d) True/false : Hydrometer reading in distilled water is less than hydrometer reading in mixture of soil and distilled water. Justify your answer.

$$G = \frac{(W + U) \gamma_w}{1 + e} \quad \text{wh}$$

- 12 a) For the soil profile shown below, plot the variation of total vertical stress, pore pressure and effective vertical stress with depth in a graph paper.



$$\gamma_{\text{dry}} = \frac{W \gamma_w}{1 + e}$$

$$1 + e = \frac{(2.60 + 0.086) 9.8}{17.2}$$

- b) Draw flow net below an impervious dam (shown in Annexure 2). Draw on Annexure 2, detach it and attach it to your answer script.

JALPAIGURI GOVERNMENT ENGINEERING COLLEGE
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JGEC/B.TECH/CE/ PC-CE404/2022-23
2023
ENVIRONMENTAL ENGINEERING-I

Full Marks: 70

Times: 3 Hours

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All the notations have their usual meanings unless specifically mentioned.

GROUP-A
[OBJECTIVE TYPE QUESTIONS]

Answer **all** questions

1. Establish the relationship between peak demand and annual average hourly demand. 5x2=10
2. Differentiate between shallow well and deep well. 2
3. Why does ground water normally contain more hardness than surface water? 2
4. Why is Delta formed at the confluence of the river? Explain this in light of coagulation theory? 2
5. Write down the various criteria to be a good disinfectant. 2

GROUP-B
[LONG ANSWER TYPE QUESTIONS]

Answer any **four** questions

6. i) Briefly describe the variation in demand and its effects on the design of various components of a water supply scheme. 4x15=60
- ii) In a water analysis, the concentration of sulfate (SO_4^{2-}) has not been determined due to instrumental break-down. Other analysis is given as shown under. From the law of electro-neutrality, find out the concentration of Sulfate in mg/L. 5

Cation		Anion	
Ion	Concentration (mg/L)	Ion	Concentration (mg/L)
Ca^{2+}	60	HCO_3^-	115
Mg^{2+}	10	SO_4^{2-}	?
Na^+	7	NO_3^-	10
K^+	20	Cl^-	11

The atomic weight (gm) of Ca=40; Mg=24; Na=23; K=39; H=1; C=12; O=16; S=32; N=14; Cl=35.5

- iii) Determine the carbonate and non carbonate hardness in the above water sample. 4
7. i) Define the following terms: (a) Discrete particle (b) Flocculating particle (c) Dilute suspension (d) Concentrated suspension. 8
- ii) A suspension of sand like particles in water with particles of diameter 0.10 mm and below is flowing into a settling tank at $0.10 \text{ m}^3/\text{s}$. Assume $g = 9.81 \text{ m/s}^2$, specific gravity of particles = 2.65, and kinematic viscosity of water = $1.0105 \times 10^{-2} \text{ cm}^2/\text{s}$. Determine the minimum surface area (in m^2) required for this settling tank to remove particles of size 0.06 mm with 100% efficiency. 7
8. i) Name the different source of underground water. 4
- ii) Find the dimension and power requirement of a circular clariflocculator along with flash mixer for the following data: 11
 - a) Desired outflow = $250 \text{ m}^3/\text{hr}$ and water lost in desludging = 2%
 - b) Detention time for flash mixer = 30s
 - c) Ratio of ht to dia for flash mixer = 2:1
 - d) Velocity Gradient (G) for flash mixer = 500 s^{-1}
 - e) Detention time in flocculation zone = 30 min
 - f) Average G value for flocculator = 30 s^{-1}
 - g) Surface overflow rate for clarifier = $40 \text{ m}^3/\text{day}/\text{m}^2$

250
40 m³/day

$\frac{1.0105 \times 10^{-2} \text{ cm}^2 \times 10^{-4}}{5}$
 $Q = A \times V$
 $A = \frac{Q}{V}$
 $A = \frac{Q}{V}$

9. 4) Compare between S.S.F. and R.G.F in light of the mentioned points: a) rate of filtration, b) filter media, c) base material, d) pre-treatment, e) method of cleaning, f) period of cleaning and g) efficiency. 7
- ii) Find the dimension of a R.G. F. along with wash water trough for the following data: 8
- Desired outflow = $400 \text{ m}^3/\text{hr}$
 - Quantity and time lost during back wash are 3% of filter output and 30 min respectively
 - Design rate of filtration = $5 \text{ m}^3/\text{hr}/\text{m}^2$
 - Ratio of length to width = 1.3:1
 - Use formula $Q = 1.376 \times b \times H^{1.5}$ for design of wash water trough. Design of under drainage system not required.
10. i) Explain the break point of chlorination curve with a neat sketch (Do not use graph paper). 6
- ii) Determine the concentration of the following ion in solutions at equilibrium with the solid at 25°C 4
- $$\text{Mg}^{2+} + \text{CO}_3^{2-} \leftrightarrow \text{MgCO}_3 \quad [K_{sp} = 4 \times 10^{-5}]$$
- iii) What is the objective of aeration process? What are the factors that govern aeration process? 3+2
11. i) Why alkalinity must be present for effective coagulation? 2
- ii) In two periods of each of 20 years, a city has grown from 40000 to 160000 and then 280000. 9
- Determine the saturation population. (b) The equation of logistic curve and (b) and expected population in next 20 years.
- iii) You have been given two samples. First sample contains low alkalinity and high turbidity. Second sample contains low alkalinity and low turbidity. Explain which mechanism of coagulation would be effective for each of the cases. What will you do externally to make the coagulation more effective? 4

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[A GOVERNMENT AUTONOMOUS COLLEGE]
JGEC/B.TECH/CE/HUCE-401/2022-23
2023
PAPER NAME- VALUES & ETHICS IN PROFESSION

Full Marks: 70

Times: 3 Hours

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GROUP-A
[OBJECTIVE TYPE QUESTIONS]

Answer *all* questions

5x2=10

- | | | |
|----|---------------------------------------------------|---|
| 1. | What is aesthetic values ? | 2 |
| 2. | What is Engineering Ethics ? | 2 |
| 3. | What is Virtue Ethics ? | 2 |
| 4. | What is Posture ? | 2 |
| 5. | _____ is the reach source of feedback . (Ear/Eye) | 2 |

GROUP-B
[LONG ANSWER TYPE QUESTIONS]

Answer any *four* questions

4x15=60

- | | | |
|-----|----------------------------------------------------------------------------|------|
| 6. | What is whistle blowing ? What are the features of whistle blowing ? | 4+11 |
| 7. | Explain the concept of good life ? | 15 |
| 8. | What is profession ? What is professional ethics ? | 5+10 |
| 9. | Write a short note on freedom ? | 15 |
| 10. | Explain the concept 'value crisis In contemporary society' | 15 |
| 11. | Write a short note on 'work culture & view points of worker and managers'. | 15 |
| 12. | Explain the concept of 'the modern search for a good society ? | 15 |
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JALPAIGURI GOVERNMENT ENGINEERING COLLEGE
[A GOVERNMENT AUTONOMOUS COLLEGE]
JGEC/B.TECH. /CE/ MC-CE401/ 2022-23
2023

Essence of Traditional Knowledge

Full Marks: 70

Times: 3 Hours

The figures in the margin indicate full marks.
Candidates are instructed to write the answers in their own words as far as practicable.

GROUP-A
[OBJECTIVE TYPE QUESTIONS]

Answer **all** questions

5x2=10

1. Define 'Traditional Knowledge (TK)'. 2
2. Write down few Traditional Knowledge system-based practices. 2
3. Categorize Traditional Knowledge based on its nature and types. 2
4. Differentiate between western knowledge and indigenous knowledge. 2
5. Describe different aspects of TK. 2

GROUP-B
[LONG ANSWER TYPE QUESTIONS]

Answer any **four** questions

4x15 = 60

6. (i) Why should we protect Traditional Knowledge? 5
(ii) Why do you think environmental, social, and economic sustainability are related to TK system? 5
(iii) How is Traditional Knowledge protected in India? 5
7. (i) Write a short note on various factors affecting the transmission, preservation, and protection of TK. 5
(ii) Briefly state the abuses of TK. 5
(iii) Explain OCAP in detail. 5
8. (i) Why was TKDL set up? 5
(ii) What are the goals of TKDL? 5
(iii) Name various international organizations that can access TKDL? 5
9. (i) What is biopiracy? 5
(ii) How does it happen? 5
(iii) Is biopiracy illegal? explain. 5
10. (i) Why there is a need to stop biopiracy? 5
(ii) Elaborate the various actions taken against biopiracy? 5
(iii) Why companies choose Biopiracy instead of Bioprospecting? 5
11. (i) Write a short note on "Convention on Biodiversity (CBD)". 5
(ii) Write a short note on "Bio prospecting Contracts". 5
(iii) Write a short note on "Patent Law". 5
12. (i) Write down the key features of "Biological Diversity Act, 2002". 5
(ii) Write down the key features of "Geographical Indication Act, 2003". 5
(iii) Write down the key features of "Protection of Plant Varieties and Farmers' Rights Act, 2001". 5