

Printing Pages : 1

Paper Code : - BHU-502

(C) (SVSU) : 2023-2024/R

Enrollment No.

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B.TECH (CE)

**III YEAR, V SEMESTER EXAMINATION
PROFESSIONAL PRACTICE LAW & ETHICS**

[Time : 03:00 Hours]

[Max. Marks : 70]

NOTE:- ATTEMPT ALL THE QUESTIONS AS PER GIVEN INSTRUCTIONS.**QUESTION NO.-1: ATTEMPT ANY FOUR PARTS.**

(4*3=12)

a)	What is an industrial dispute?
b)	What is the importance of code of ethics?
c)	What is the importance of intellectual properties rights?
d)	Explain gift vs. bribe.
e)	What is professional ethics?
f)	What is ethics? Explain different type of ethics?

QUESTION NO.-2: ATTEMPT ANY THREE PARTS.

(3*4=12)

a)	Discuss workers compensation Act, 1923.
b)	What is conflict of interest?
c)	What is collective bargaining?
d)	List the objectives of engineering ethics?

QUESTION NO.-3: ATTEMPT ANY THREE PARTS.

(3*6=18)

a)	What is intellectual property? What are the types of intellectual properties?
b)	Discuss BIS and IRC.
c)	Discuss Industrial dispute Act 1947?
d)	What is business ethics? What is the importance of business ethics?

QUESTION NO.-4: ATTEMPT ANY TWO PARTS.

(2*7=14)

a)	What is Patent and also explain the Patent Act 1970.
b)	What are the salient features of RERA Act?
c)	Discuss the role of various stakeholders in professional practice.

QUESTION NO.-5: ATTEMPT ANY TWO PARTS.

(2*7=14)

a)	Discuss NBC Act 2017
b)	Define intellectual property law, also discuss the historical evolution of copyright Act, 1957
c)	What is sub-contract? Explain role of prime contractor in subcontracting.

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B.TECH (CE)

**III YEAR, V SEMESTER EXAMINATION
CONSTITUTION OF INDIA**

[Time : 03:00 Hours]

[Max. Marks : 70]

NOTE:- ATTEMPT ALL THE QUESTIONS AS PER GIVEN INSTRUCTIONS.**QUESTION NO.-1: ATTEMPT ANY FOUR PARTS.**

(4*3=12)

a)	What are the roles of women in panchayat?
b)	Define Rajya Sabha and Loksabha
c)	Briefly discuss about Simon commission.
d)	Write down the key points of Morley Minto reforms.
e)	Discuss regulating act of 1773.
f)	Write a short note on Cripps mission.

QUESTION NO.-2: ATTEMPT ANY THREE PARTS.

(3*4=12)

a)	List the key features of Indian Constitution.
b)	In which charter Indian civil services exams are allowed for Indian? Explain its key point of that charter also.
c)	Explain in detail about Directive Principle of State policy.
d)	Write about the roles and responsibilities of Assembly speaker?

QUESTION NO.-3: ATTEMPT ANY THREE PARTS.

(3*6=18)

a)	Supreme Court of India has power to use writs. Explain these writs.
b)	Write about the assessment of working of Parliamentary system in India.
c)	What are the directive principles of states? Under which part of constitution it lies.
d)	Write about the important commission and explain in detail.

QUESTION NO.-4: ATTEMPT ANY TWO PARTS.

(2*7=14)

a)	How our constitution is an instrument of socio-economic change?
b)	Discuss about the veto power of the president of India.
c)	Explain in detail about the emergency power of the Indian President.

QUESTION NO.-5: ATTEMPT ANY TWO PARTS.

(2*7=14)

a)	Explain in detail about the State Legislature.
b)	Discuss the feature of federal government.
c)	Explain Lokpal jurisdiction and its powers.

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Paper Code : - BCE-504

(B) (SVSU) : 2023-2024/R

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B.TECH (CE)
III YEAR, V SEMESTER EXAMINATION
MECHANICS OF MATERIAL

[Time : 03:00 Hours]

[Max. Marks : 70]

NOTE:- ATTEMPT ALL THE QUESTIONS AS PER GIVEN INSTRUCTIONS.

Q1.ATTEMPT ANY FOUR OF THE FOLLOWING (3.5X4=14)

1. List the various loads that may act on steel structure.
2. Differentiate between diameter of rivet and diameter of rivet hole.
3. What role does carbon plays in steel?
4. Differentiate between fillet weld and butt weld.
5. Briefly explain the stress strain behavior of mild steel with curve.

Q2.ATTEMPT ANY TWO OF THE FOLLOWING (7X2=14)

1. Why is steel considered superior for structural applications compared to the cast iron and wrought iron?
2. Write a short note on:-
 - a. Gusset Plate
 - b. Lug angle.
 - c. Efficiency of joint.
3. What is the slenderness ratio? Write the values for different load conditions.

Q3.ATTEMPT ANY TWO OF THE FOLLOWING (7X2=14)

1. What is the Rivet Value? Find out rivet value for 20mm diameter rivet, which is used to connect two 12mm thick plates. Assume all necessary data.
2. Differentiate between column and strut. Explain the criteria for effective length of strut.
3. Write a short note on:-
 - a. Kern or Core
 - b. Snow load

Q4.ATTEMPT ANY TWO OF THE FOLLOWING (7X2=14)

1. Write a short note on:-
 - a. Ductile Material
 - b. Brittle Material
 - c. Young's Modulus
2. What is the effective length of column? Explain various end conditions of column section
3. Design a suitable rolled steel section to carry a load of 400 kN. The height of the column is 5 meter. Take the ends unrestrained in direction only.

Q5.ATTEMPT ANY TWO OF THE FOLLOWING (7X2=14)

1. Write a short note on:-
 - a. Slenderness ratio.
 - b. Radius of gyration.
2. What is difference between lacing and battens? Explain the specification of lacing member.
3. Find the suitable pitch for single riveted lap joint for plate 12mm thick if $f_t = 150\text{Mpa}$ and $f_b = 300\text{Mpa}$ and $f_s = 100\text{Mpa}$.

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B.TECH (CE)

**III YEAR, V SEMESTER EXAMINATION
GEOTECHNICAL ENGG**

[Time : 03:00 Hours]

[Max. Marks : 70]

NOTE:- ATTEMPT ALL THE QUESTIONS AS PER GIVEN INSTRUCTIONS.**QUESTION NO.-1: ATTEMPT ANY FOUR PARTS.**

(4*3=12)

a)	Draw the phase diagram for Partially Saturated, Fully Saturated and Fully dry soil.
b)	Explain the terms liquid limit and plastic limit?
c)	Defined un-drained shearing strength.
d)	What are the limitations of coulomb's theory?
e)	Define total stress, neutral stress and effective stress.
f)	What is time factor? How it is related to the average degree of consolidation

QUESTION NO.-2: ATTEMPT ANY THREE PARTS.

(3*4=12)

a)	What are different methods for determination of the coefficient of permeability in a laboratory? Discuss their limitations.
b)	Differentiate between gross and net bearing capacity. What are the assumptions made in the Terzaghi's bearing capacity theory?
c)	Briefly differentiate between compression index, swelling index and recompression index
d)	What are the basic characteristics of the failure mechanisms in general shear failure, local shear failure and punching shear failure

QUESTION NO.-3: ATTEMPT ANY THREE PARTS.

(3*6=18)

a)	Derive the expression for average Permeability for flow perpendicular to the bedding plan.
b)	List the assumptions made in boussinesq & westergurd theory
c)	Define the terms Liquid limit, Plastic limit and Shrinkage limit.
d)	Derive the equation for variable head permeability determination in fine grained soil.

QUESTION NO.-4: ATTEMPT ANY TWO PARTS.

(2*7=14)

a)	What are the properties of flow net also derive an expression for the Laplace Equation of continuity for the two dimensional seepage flow
b)	Explain the relation between dry unit weight and OMC (optimum moisture content) with the help of graph?
c)	What is foundation and Explain different types of foundation with neat sketch.

QUESTION NO.-5: ATTEMPT ANY TWO PARTS.

(2*7=14)

a)	Name the various types of ground improvement techniques and Explain compaction piles and cement stabilisation
b)	Differentiate between normally consolidated and over consolidated soils
c)	What is plasticity index and how will you classify the soil with the help of plasticity chart?

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Enrollment No.

(A) (SVSU) : 2023-2024/R

B.TECH (CE)
III YEAR, V SEMESTER EXAMINATION
STRUCTURAL ANALYSIS

[Time : 03:00 Hours]

[Max. Marks : 70]

NOTE:- ATTEMPT ALL THE QUESTIONS AS PER GIVEN INSTRUCTIONS

QUESTION NO.-1: ATTEMPT ANY FOUR PARTS.

- State Muller Breslau principle.
- State eddy's theorem. What is a linear arch?
- Distinguish between plane and space truss with example
- What do you mean by compound and complex space truss.
- What do you mean by bending of curved bars?
- How arch is different from a similar beam

(4*3=12)

QUESTION NO.-2: ATTEMPT ANY THREE PARTS.

- Discuss about various types of Arches
- Explain the uses of ILD
- State and Discuss Betti's theorem
- Explain the difference Slope and deflection of beam

(3*4=12)

QUESTION NO.-3: ATTEMPT ANY THREE PARTS.

- Explain the classification of pin jointed determinate trusses with the aid of neat sketches.
- State and explain castiglano Theorem I and Theorem II
- A cantilever of span L is subjected to point load w at the free end. Determine the slope and deflection at the free end. Take EI as constant.
- What are the methods available for the analysis of trusses? Explain

(3*6=18)

QUESTION NO.-4: ATTEMPT ANY TWO PARTS.

- Draw the schematic ILD for reaction SF and BM at a section when a unit load moves over a simply supported girder
- State and prove the Maxwell reciprocal theorem.
- Describe the static and kinematic indeterminacy and degree of freedom.

(2*7=14)

QUESTION NO.-5: ATTEMPT ANY TWO PARTS.

- Explain the classification of pin jointed determinate trusses with the aid of neat sketches.
- What are the methods available for the analysis of trusses? Explain.
- A uniformly distributed load of 10kN/m intensity covering a length of 2m crosses a simply supported beam of span 8m. Determine the maximum positive shear force, maximum negative shear force and maximum bending moment at a section 3m from left support.

(2*7=14)

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B.TECH (CE)
III YEAR, V SEMESTER EXAMINATION
ENVIRONMENTAL ENGINEERING

[Time : 03:00 Hours]

[Max. Marks : 70]

NOTE:- ATTEMPT ALL THE QUESTIONS AS PER GIVEN INSTRUCTIONS. CALCULATOR IS ALLOWED (100MS).

QUESTION NO.-1: ATTEMPT ANY FOUR PARTS.**(4*3=12)**

a)	What is per capita demand?
b)	What is meant by population forecast?
c)	Discuss the factor affecting runoff.
d)	What is conduit? Gives the detail classification with diagram.
e)	Name the different types of distribution reservoir.
f)	What do you understand by demand curve?

QUESTION NO.-2: ATTEMPT ANY THREE PARTS.**(3*4=12)**

a)	Write a short note on water hammer pressure.
b)	Explain the Hardy Cross method for solving the network.
c)	Write a note on various water borne disease.
d)	How pipe corrosion can be prevented.

QUESTION NO.-3: ATTEMPT ANY THREE PARTS.**(3*6=18)**

a)	Discuss the advantages and disadvantages of various types of pipes used in water supply.
b)	Write a short note on : a) Gate valve b) Air relief valve c) fire hydrants d) collar joint
c)	How can leakage of water be detected and prevented?
d)	What are the different types of layout of the distribution system?

QUESTION NO.-4: ATTEMPT ANY TWO PARTS.**(2*7=14)**

a)	What are pipe joints? Explain its different types.						
b)	What is self cleaning velocity of sewer? Explain different types of sewer.						
c)	Predict the population for the year 2021, 2031, and 2041 from the following population data.						
	Year	1961	1971	1981	1991	2001	2011
	Population	8,58,545	10,15,672	12,01,553	16,91,538	20,77,820	25,85,862
	Use arithmetic increase method.						

QUESTION NO.-5: ATTEMPT ANY TWO PARTS.**(2*7=14)**

a)	What is the basic function of Intake? With the help of diagram explain its working.
b)	Discuss the basic needs and factors affecting the consumption of water in a city.
c)	A storage reservoir is situated at a distance of 6 km from a city of 3 lakh population. The total loss of head from the source to the city is not exceed 20 m. taking the daily demand of 200 l/capita/day, pumping is to be done for 12 hours only, determine the size of supply main by i. Darcy – Weisbach formula taking coefficient of friction as 0.015 ii. Hazen Williams formula taking $C = 130$. Assume minor losses = $10 \frac{V^2}{2g}$

**III YEAR, V SEMESTER EXAMINATION
HYDROLOGY & WATER RESOURCES ENGINEERING**

[Time : 03:00 Hours]

[Max. Marks : 70]

NOTE:- ATTEMPT ALL THE QUESTIONS AS PER GIVEN INSTRUCTIONS. CALCULATOR IS ALLOWED (100MS).

QUESTION NO.-1: ATTEMPT ANY FOUR PARTS.

(4*3=12)

a)	Discuss the objective of river training works.
b)	What do you mean by crop season & crop rotation?
c)	What do you mean by meandering of channel?
d)	Differentiate in between alluvial & non alluvial channel.
e)	What do you understand by consumptive use of water?
f)	Briefly discuss the factors that affect the runoff from a catchment area?

QUESTION NO.-2: ATTEMPT ANY THREE PARTS.

(3*4=12)

a)	Discuss the scope of Hydrology & Water Resources Engineering.
b)	Discuss the various type of channel losses.
c)	Explain various types of canal falls.
d)	Describe the different methods of recording of rainfall in detail.

QUESTION NO.-3: ATTEMPT ANY THREE PARTS.

(3*6=18)

a)	Discuss with the help of a diagram the concept of hydrologic cycle. What are the different components of Hydrological system? Describe in brief with suitable examples.
b)	Discuss the various forms of precipitation in detail.
c)	Explain the following terms: (1) Evaporation (2) Precipitation (3) Transpiration (4) Infiltration (5) Percolation (6) Aquifer
d)	Describe the main features of the cross-section of an irrigation channel with suitable sketches.

QUESTION NO.-4: ATTEMPT ANY TWO PARTS.

(2*7=14)

a)	Explain the various methods of irrigation in detail.
b)	Explain the methods of river training works.
c)	Discuss the various types of outlets & modules in detail.

QUESTION NO.-5: ATTEMPT ANY TWO PARTS.

(2*7=14)

a)	Design an irrigation channel by Kennedy Theory to carry 50 cumec, discharge, the channel is laid on a slope of 1 in 4000. The value of C.V.R.(m) = 1.1 for the given soil & the Kutter's roughness coefficient (n)=0.023
b)	Describe the water logging control measures in detail
c)	Enumerate various types of tube wells in detail.

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B.TECH (CE)
III YEAR, V SEMESTER EXAMINATION
HYDRAULIC ENGINEERING

[Time : 03:00 Hours]

[Max. Marks : 70]

NOTE:- ATTEMPT ALL THE QUESTIONS AS PER GIVEN INSTRUCTIONS.
CALCULATOR IS ALLOWED -100MS

QUESTION NO.-1: ATTEMPT ANY FOUR PARTS.

(4*3=12)

a)	Differentiate between pipe flow and open channel flow.
b)	Define different types of flow
c)	Find the depth of flow of water after the hydraulic jump in a rectangular channel of 4 m width having a discharge of $16 \text{ m}^3/\text{s}$. The depth of water in the channel before hydraulic jump was 0.5 m.
d)	How will you classify the turbine
e)	Differentiate between uniform and non-uniform flow; laminar and Turbulent flow
f)	Find the specific energy of the flowing water through a rectangular channel of width 5 m when the discharge is $10 \text{ m}^3/\text{sec}$ and depth of the flow is 3 m

QUESTION NO.-2: ATTEMPT ANY THREE PARTS.

(3*4=12)

a)	Discuss the various geometrical parameters used in design of a channel.
b)	A pelton wheel is having a mean bucket diameter of 1 m and is running at 1000 r.p.m the net head on pelton wheel is 700m. If the side clearance angle is 15° and discharge through nozzle is $0.1 \text{ m}^3/\text{s}$, find power available at the nozzle and hydraulic efficiency of the turbine.
c)	Discuss the classification of hydraulic jumps. Explain the celerity of gravity wave
d)	Prove that the loss of energy head in hydraulic jump is equal to $(d_2 - d_1) / 4d_1 d_2$ where d_1 and d_2 are the conjugate depths.

QUESTION NO.-3: ATTEMPT ANY THREE PARTS.

(3*6=18)

a)	Discuss the velocity distribution in open channel flow?
b)	What is length of jump, height of jump and efficiency of jump?
c)	Find the discharge through a rectangular channel 2.5 m wide having a depth of water 1.5 m and bed slope as 1 in 2000. $K=2.36$ in Bazin's formula.
d)	Describe the pelton wheel turbine and explain its components also.

QUESTION NO.-4: ATTEMPT ANY TWO PARTS.

(2*7=14)

a)	Derive the differential equation of GVF discuss its assumptions and limitations also
b)	Derive continuity equation for unsteady flow. Also arrive at the expression for rectangular channel.
c)	Find the critical depth and critical velocity of the water flowing through a rectangular channel of width 5 m, when discharge is $15 \text{ m}^3/\text{sec}$.

QUESTION NO.-5: ATTEMPT ANY TWO PARTS.

(2*7=14)

a)	What do you understand by specific energy for a flow in open channel? Draw the specific energy diagram?
b)	Find the slope of the free water surface in a rectangular channel of width 20 m having a depth of flow 5 m. the discharge through the channel is $50 \text{ m}^3/\text{sec}$. the bed of the channel is having a slope of 1 in 4000. Take $C=60$
c)	Show that for a rectangular channel with given area is most efficient when hydraulic radius is half of the depth of flow