

ShriShankaracharyaInstituteofProfessionalManagement&TechnologyDepartmentofCivil Engineering

OnlineClass Test– I Session: Jan–June, 2023 Month–June

Semester–4th Subject – Hydraulic Engineering Code – B020412(020) Time Allowed: 2 hrs. Max Marks: 40

Note:-InPartI & II, QuestionA is compulsoryand attempt anytwofrom B, C& D.

Q.No.	Questions	Marks	Levels of Bloom's taxonomy
PartI			
A.	Explain the concept of Geometric, Kinematic and Dynamic similarities.	[4]	Understand
B.	The thrust T of a propeller depends upon its diameter D, fluid density ρ , dynamic viscosity μ , the rotating speed N, and the velocity V. Using Buckingham's π - theorem, obtain a relation for the thrust T.	[8]	Apply
C.	In the model test of a spillway the discharge and velocity of flow in the model are $6\text{m}^3/\text{s}$ and 3m/s respectively. Calculate- (1) Velocity in prototype (2) Discharge in prototype (3) Force Scale ratio (4) Power Scale ratio Given- $\rho_m = \rho_{\text{air}} = 1.2 \text{ kg/m}^3$, $\rho_p = \rho_{\text{water}} = 1000 \text{ kg/m}^3$, $L_p/L_m = 40$.	[8]	Apply
D.	Derive an expression for calculation of water hammer pressure and pressure head developed for sudden closure in elastic pipes.	[8]	Analyze
PartII			
A.	Explain the concept of shear stress in turbulent flows	[4]	Understand
B.	A smooth pipe of diameter 80mm and 800m long carries water at the rate of $0.480\text{m}^3/\text{minute}$. Calculate the loss of head, wall shearing stress, center line velocity, velocity, and shear stress at 30mm from pipe wall. Also calculate the thickness of laminar sub-layer. Take kinematic viscosity of water as 0.015 stokes. Take the value of co-efficient of friction f from the relation given as- $f = 0.0791 / (\text{Re})^{1/4}$ where Re= Reynolds Number	[8]	Apply
C.	A Pelton Wheel is to be designed for the following specifications: - Shaft power = 11772 KW Gross Head = 400m Head lost in friction = 5% Speed = 800 rpm Overall efficiency = 90%, If the jet diameter is not to exceed $1/8^{\text{th}}$ of the wheel diameter. Calculate- (i) Wheel diameter (ii) Number of Jets required (iii) Jet diameter (iv) Power developed by the jet nozzle (v) Hydraulic efficiency (vi) Mechanical efficiency (Take $C_v = 0.975$ and $\phi = 0.45$)	[8]	Apply
D.	(1) Obtain an expression for specific speed of Turbine with proper explanation (2) A pump develops 500KW power under a head of 100 meters at 200 rpm. Determine its speed and power under a head of 80 meters.	[8]	Apply



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Department of Civil Engineering

Class Test – II Session: Jan – June, 2023

Semester – 4th, Subject – Building Construction, Code – B020414(020)

Time Allowed: 2 hrs Max Marks: 40

Note: -Part (a) is compulsory. Attempt any two from Part (b), (c) and (d). Draw neat sketch wherever required.

Q. No.	Questions	Marks	Levels of Bloom's taxonomy	COs
UNIT- III				
(a)	What is purpose of providing floors? What are its various components?	[4]	Understand	CO3
(b)	What is Roof? What are its various types, explain with neat sketches?	[8]	Understand	CO3
(c)	Explain the method of construction of cement concrete flooring.	[8]	Understand	CO3
(d)	What do you understand by the term formwork? What are the requirements of a good form work?	[8]	Understand	CO3
UNIT- IV & V				
(a)	Define the term Plastering and Pointing.	[4]	Understand	CO4
(b)	Explain various defects occurs in plastering work.	[8]	Understand	CO4
(c)	Discuss various methods adopted for damp proofing of a building.	[8]	Understand	CO4
(d)	Give a detailed note on fire safety requirements for buildings.	[8]	Understand	CO5



Session: Jan – June, 2023 Month –June
Semester – 4th Subject –Surveying and Geomatics Subject Code –B020413(020)
 Time Allowed: 2 hrs. Max Marks: 40
 Note: - In Part I & II, Question A is compulsory and attempt any two from B, C & D.

Q. No	Questions	Marks	Levels of Bloom's taxonomy	CO's
Part I				
A.	Define the term Satellite station, Reconnaissance ,Trilateration and Triangulation	[4]	Remember	CO1
B.	From a satellite station, 14 m from A, angles measured to three triangulations A, B and C are as follows: $\angle CSA = 30^{\circ}45'48''$ and $\angle BSC = 68^{\circ}26'36''$. The length of sides AC and AB being 5678 m and 1441 m respectively. Find the $\angle BAC$.	[8]	Apply	CO1
C.	The altitude of two proposed stations A and B, 100 m apart are respectively 425 m and 750 m. The intervening obstruction situated at C , 60 km from A, has an elevation of 435 m. Ascertain if A and B are inter-visible and necessary, find how much B should raise so that the line of sight must nowhere be less than 3 m above the surface of the ground.	[8]	Apply	CO1
D.	What is tilt distortion? Prove that in a tilted photograph, tilt distortion is radial from the isocentre.	[8]	Understand	CO4
Part II				
A.	Define Stereo photogrammetry, Aerial surveying and Exposure station or Air station	[4]	Remember	CO4
B.	Two points A and B having elevation of 500 m and 300 m respectively above datum appear on the vertical photograph having focal length of 20 cm and flying altitude of 2500 m above datum. Their photographic co-ordinate are as follows :- Point Photographic Photographic x (cm) Y (cm) a +2.65 +1.36 b -1.92 +3.65 Determine the length of the ground line AB.	[8]	Apply	CO4
C.	A, B and C are three visible stations in a hydrographic survey. The computed sides of the triangle ABC are AB, 1150 m; BC, 1392 m; and CA, 1893m. Outside this triangle (and nearer to AC), a station P is established and its position is to be found by three point resection on A, B and C, the angles APB and BPC being respectively $43^{\circ}37'$ and $56^{\circ}25'$. Determine the distances PA and PC.	[8]	Apply	CO5
D.	Define the following Hydrographic Surveying, Sounding, Fathometer, Sextant and Shore line and range line	[8]	Remember	CO5



Shri Shankaracharya Institute of Professional Management & Technology

Department of Civil Engineering

Class Test – II

Session- Jan-June, 2023

Month-June

Sem- 4th

Subject- Engineering Geology

Code- B020415(020)

Time Allowed: 2 hrs

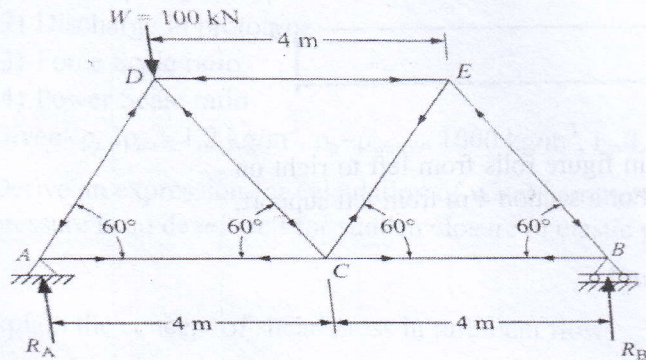
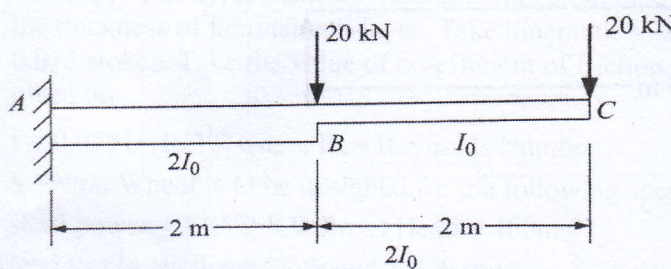
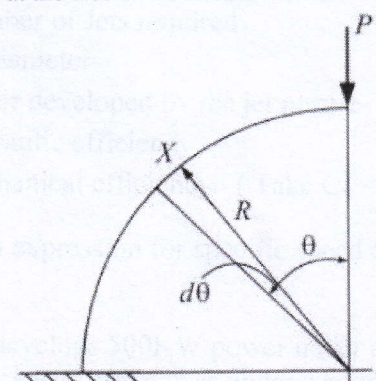
Max Marks: 40

Note: - Question Q1 is compulsory. Attempt any 2 questions from Q2, Q3 and Q4.

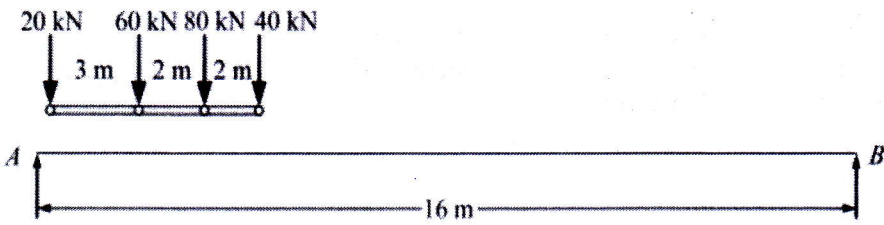
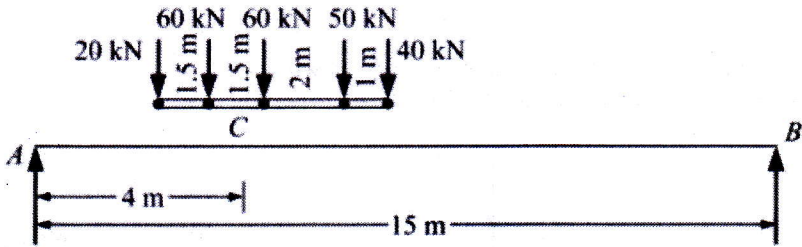
Q.N.	Questions	Marks	Levels of Bloom's taxonomy	COs
PART-I				
Q1	Describe rock cycle with the neat sketch.	[4]	Understanding	CO3
Q2	Describe petrological notes on: (any four) (i) Basalt (ii) Dolerite (iii) Gabbro (iv) Gneiss (v) Schist	[8]	Understanding	CO3
Q3	Classify igneous rocks and describe major structures and textures of igneous rocks.	[8]	Understanding	CO3
Q4	Discuss fold And give classification of fold.	[8]	Understanding	CO4
PART-II				
Q1	Discuss unconformity and mention its types.	[4]	Understanding	CO4
Q2	Describe the various types of faults occur in rocks with neat sketch.	[8]	Understanding	CO4
Q3	Describe land subsidence with examples.,	[8]	Understanding	CO5
Q4	Describe the causes of land slide and suggest the preventive measure of it.	[8]	Understanding	CO5

Note: - Question (A) of every part is compulsory and solve any two questions from (B), (C) and (D)



Q. No.	Questions	Marks	Levels of Bloom's taxonomy	COs
Part-I				
(A)	Discuss the following: (I) Betti's theorem (II) Maxwell reciprocal theorem	[04]	Understand	CO3
(B)	Figure shows a pin-jointed truss loaded with a single load $W=100$ kN. If the area of cross-section of all members shown in Figure is 1000 mm ² , what is the vertical deflection of Point C? Take $E = 200$ kN/mm ² for all members. 	[08]	Evaluate	CO3
(C)	Determine the deflection and rotation at the free end of the cantilever beam shown in Figure 3.16(a). Use unit load method. Given $E=2 \times 10^5$ N/mm ² and $I=12 \times 10^6$ mm ⁴ . 	[08]	Apply	CO3
(D)	A cantilever beam is in the form of a quarter of a circle in the vertical plane and is subjected to a vertical load P at its free end as shown in fig. Find the vertical and horizontal displacements at the free end. Assume constant flexural rigidity. 	[08]	Evaluate	CO3

Part- II

(A)	Discuss the difference between construction of an influence line and construction of shear force and bending moment diagram.	[04]	Understand	CO4
(B)	Asymmetrical parabolic arch hinged at springing and crown has a span of 30 m. The central rise of the arch is 4m. It is loaded with UDL of 2.5 kN/m on the left 8m length. Calculate: a) The direction and the magnitude of reaction at the hinges. b) The bending moment, normal, thrust and shears at 4m from left end.	[08]	Apply	CO5
(C)	<p>A train of concentrated loads as shown in figure crosses a simply supported beam of span 16 m from left to right. Determine the absolute maximum shear force and absolute maximum Bending Moment developed in the beam.</p> 	[08]	Evaluate	CO4
(D)	<p>The system of concentrated loads as shown in figure rolls from left to right on the girder of span 15 m, 40 kN load leading. For a section 4 m from left support, determine</p> <p>(I) Maximum bending moment (II) Maximum shear force</p> 	[08]	Apply	CO4