



Shri Shankaracharya Institute of Professional Management & Technology

DEPARTMENT OF CIVIL ENGINEERING

Class Test – I

Session- July-Dec,2023 Month-NOV 2023

Sem- 3rd Subject-Mathematics-III Code-B000312(014)

Time Allowed: 2 hrs.

Max Marks: 40

Note: - First question is Compulsory from PART I & II. Solve any 2 questions from PART I & II

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	Cos
PART - A				
Q1	Form partial differential equation from $z = y^2 + 2f\left(\frac{1}{x} + \log y\right)$	[4]	Apply	CO1
Q2	Solve $(x^2 - y^2 - z^2)p + 2xyq = 2xz$	[8]	Apply	CO1
Q3	Solve Separation of variable $\frac{\partial u}{\partial x} = 2\frac{\partial u}{\partial t} + u$, where $u(x,0) = 6e^{-3x}$	[8]	Understanding	CO1
Q4	Solve $\frac{\partial^2 z}{\partial x^2} + \frac{\partial^2 z}{\partial x \partial y} - 6\frac{\partial^2 z}{\partial y^2} = y \cos x$	[8]	Understanding	CO1
PART - B				
Q1	Bessel's formula is most appropriate when p lies betweenand Write Bessel's formula.	[4]	Applying	CO2
Q2	From the following table, estimate the number of students who obtained marks between 40 and 45: Marks: 30-40 40-50 50-60 60-70 70-80 No. of st.: 31 42 51 35 31	[8]	Understanding	CO2
Q3	Given θ° : 0 5 10 15 20 25 30 $\tan \theta$: 0 .0875 .1763 .2679 .3640 .4663 .5774 Using Stirling's formula estimate the value of $\tan 16^\circ$	[8]	Understanding	CO2
Q4	Apply Bessel's formula to obtain y_{25} , given $y_{20} = 2854$, $y_{24} = 3162$, $y_{28} = 3544$, $y_{32} = 3992$.	[8]	Understanding	CO2



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Department of Civil Engineering

Class Test – I Session: Nov-Dec 2023 Month– November

Semester–3rd Subject–Plane Surveying, Code–B020314 (020)

Time Allowed: 2 hrs Max Marks:40

Note:- Part (A) form each section is compulsory. Attempt any two from B, C and D.

Q. No.	Questions	Marks	Levelsof Bloom's taxonomy	CO's
PartI				
A.	What is Levelling and why it is important in survey work?	[4]	Understand	CO1
B.	Explain with neat sketch temporary adjustment of a level?	[8]	Understand	CO1
C.	What do you mean by “sensitiveness” of bubble tube?	[8]	Understand	CO1
D.	On a level the angular value of one division of the bubble tube is 30 sec and the graduation are 2mm long. Calculate : (i) the radius of curvature of the tube. (ii) Reading on a staff held 100m away for a shift of bubble 3 division from centre towards the observer, reading with bubble in the centre being 2.540 m .	[8]	Apply	CO1
PartII				
A.	What is contour and contour interval?	[4]	Understand	CO2
B.	What are the different uses of contour?	[8]	Understand	CO2
C.	What are the characteristics of contours? Explain with neat sketch.	[8]	Understand	CO2
D.	What are the various methods of interpolating contour?	[8]	Understand	CO2



Q. No.	Questions	Marks	Levels of Bloom's taxonomy	CO's
Part I				
A.	Explain the properties of fluids density, weight density, specific volume and specific gravity	[4]	Understand	CO1
B.	The velocity distribution for the flow over a flat plate is given by $u = 3/4 y - y^2$ in which u is the velocity in meter per second at a distance y metre above the plate. Determine the shear stress at $y = 0.15$ m. Take dynamic viscosity of fluid as 8.6 Poise.	[8]	Apply	CO1
C.	The vertical gap 2.2 cm wide of infinite extent contains a fluid of viscosity 2 Ns/m ² and specific gravity 0.9. A metallic plate 1.2 m x 1.2 m x 0.2 cm is to be lifted up with a constant velocity of 0.15 m/sec, through the gap. If the plate is in the middle of the gap, find the force required. The weight of the plate is 40 N.	[8]	Apply	CO1
D.	An open tank contains water up to a depth of 2m and above it an oil of sp.gr. 0.9 for a depth of 1m. Find the pressure intensity (i) at the interface of the liquids and (ii) at the bottom of the tank	[8]	Apply	CO1
Part II				
A.	Explain the following Steady and unsteady flow ,Uniform and Non-uniform flow, Laminar and turbulent flow	[4]	Understand	CO2
B.	A 40 cm diameter pipe, conveying water, branches into two pipes of diameters 30cm and 20cm respectively. If the velocity in the 40cm diameter pipe is 3 m/s. Find the discharge in this pipe. Also determine the velocity in 20cm pipe if the average velocity in 30cm diameter pipe is 2m/s.	[8]	Apply	CO2
C.	Derive an expression for continuity equation in 3D.	[8]	Understand	CO2
D.	The Velocity vector in a fluid flow is given $V = x^2y i + y^2z j - (2xyz + yz^2) k$. Find the velocity and acceleration of a fluid particle at (2, 1, 3).	[8]	Apply	CO2



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Department of Civil Engineering

Class Test – I Session: July – Dec, 2023 Month – November

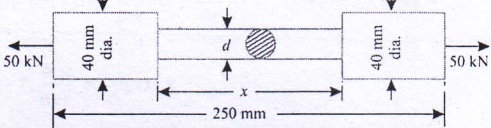
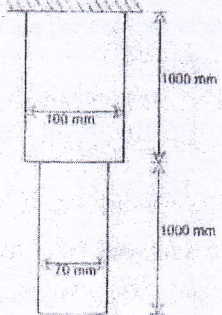
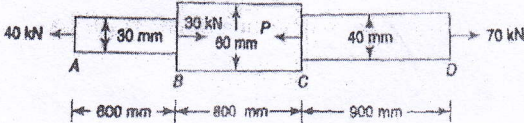
Semester – 3rd Subject – Building Material, Code – B020315 (020)

Time Allowed: 2 hrs Max Marks: 40

Note: -Attempt all questions. Part (a) from each question is compulsory. Attempt any two from part (b), (c) and (d).

Q. No.	Questions	Marks	Levels of Bloom's taxonomy	COs
Part- I				
(a)	Describe the function of ball mills and tube mills in cement manufacturing.	[4]	Understand	CO1
(b)	Explain how does the cement set? List out the function of four principle compound responsible for setting action.	[8]	Understand	CO1
(c)	Describe in details the modern manufacturing process of ordinary cement.	[8]	Understand	CO1
(d)	Briefly explain the following (Attempt any two) : (a) Dry process and wet process (b) Initial setting time and final setting time of Cement (c) Compressive strength test	[8]	Understand	CO1
Part- II				
(a)	Briefly describe the meant of fineness modulus of aggregate.	[4]	Understand	CO2
(b)	Describe the classification of aggregate on the basis of size using sieve analysis.	[8]	Understand	CO2
(c)	Explain the factors affecting Strength and durability of Concrete	[8]	Understand	CO2
(d)	Explain any one test of hardened concrete.	[8]	Understand	CO2



Q. No	Questions	Marks	Levels of Bloom's taxonomy	CO's
Part-I				
A.	Define the term Poisson's Ratio. Write the expression between the three moduli.	[4]	Understand	CO1
B.	<p>The bar shown in Fig. 1.10 is subjected to a tensile load of 50 kN. Find the diameter of the middle portion if the stress is limited to 130 MN/m². Also calculate the length of the middle portion if the total elongation of the bar is 0.15 mm. Take E = 200 GN/m².</p> 	[8]	Apply	CO1
C.	<p>A stepped bar with circular cross section and supported at top, hangs vertically under its own weight. Dimensions of bar are shown in figure below. Calculate the Elongation of the bar under its own weight. Take E = 2 X 10⁵ N/mm² and density, $\gamma = 8 \times 10^{-5}$ N/mm²</p> 	[8]	Apply	CO1
D.	<p>A circular steel bar having three segments is subjected to various forces at different cross section as shown in figure below. Determine the necessary forces to be applied at section C for the equilibrium of the bar. Also, calculate the total elongation of the bar. Take E = 2 X 10⁵ N/mm²</p> 	[8]	Apply	CO1
Part-II				
A.	Define Bending Moment and Shear force.	[4]	Understand	CO2
B.	A C.I. flat, 300 mm long and of 30 mm x 50 mm uniform section, is acted upon by the following forces uniformly distributed over the respective cross-section; 25 kN in the direction of length (tensile); 350 kN in the direction of the width (compressive); and 200 kN in the direction of thickness (tensile). Calculate the change in volume of the flat. Take E = 140 GN/m ² , and m = 4.	[8]	Apply	CO1