SHRI SHANKARACHARYA INSTITUTE OF PROFESSIONAL MANAGEMENT AND TECHNOLOGY RAIPUR
DEPARTMENT OF MATHEMATICS

Class Test – I	Session- July – Dec 2022	Month- December
Semester- B.Tech-III	Subject- Mathematics-III	
Code – B000311(014)	Time Allowed: 2 hrs	Max Marks: 40

Note: - 1) Attempt any TWO from unit II

2) Attempt any THREE from unit III

Q. No	Questions	Marks	Levels of Bloom's taxonomy	CO
	Unit – II			
1.A	Solve $x^2(y-z)p + y^2(z-x)q = z^2(x-y)$	8	Applying	CO2
1.B	Solve $4\frac{\partial^2 z}{\partial x^2} - 4\frac{\partial^2 z}{\partial x\,\partial y} + \frac{\partial^2 z}{\partial y^2} = 16\log(x+2y)$	8	Applying	CO2
1.C	Solve by using method of separation of variables ,solve $$\frac{\partial u}{\partial x} = 2\frac{\partial u}{\partial t} + u \quad , \quad where\ u(x,0) = 6e^{-3x}$$	8	Applying	CO2

	Unit – III			
2.A	The probability density function of a variate X is X :0 1 2 3 4 5 6 P(X): k 3k 5k 7k 9k 11k 13k i) Find $P(X<4)$, $P(X\geq 5)$, $P(3<X\leq 6)$ ii) What will be the minimum value of k so that $P(X\leq 2) > 0.3$	8	Evaluating	CO3
2.B	Fit a Binomial distribution for the following data and compare the theoretical frequencies with the actual ones. 	X	0	1	2	3	4	5
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f	2	14	20	34	22	8		8	Evaluating	CO3
2.C	Out of 800 families with 5 children each, how many would you expect to have a) 3 boys b) 5 girls c) either 2 or 3 boy? Assume equal probabilities for boy and girl.	8	Applying	CO3
2.D	In a precision bombing attack there is a 50 % chance that any bomb will strike the target .Two direct hits are needed to destroy the Target completely. How many bombs must be dropped to give a 99% chance or better of completely destroying the target?	8	Applying	CO3

Shri Shankaracharya Institute of Professional Management & Technology
Department of Civil Engineering
Class Test – I   Session: July – Dec, 2022 Month – December

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.

Q. No.	Questions	Marks	Levels of Bloom's taxonomy	COs
	Part- I			
(a)	Discuss the hydration of cement	[4]	Understand	CO1
(b)	List the chemical composition of cement and explain their function.	[8]	Understand	CO1
(c)	Explain initial and final setting time of cement.	[8]	Understand	CO1
(d)	Describe the types of pozzolanic with their functions	[8]	Understand	CO1
	Part- II			
(a)	List the various proportioning of concrete for different grade.	[4]	Understand	CO2
(b)	Explain the factors affecting Strength and durability of Concrete	[8]	Evaluate	CO2
(c)	Explain Properties of fresh and hardened concrete.	[8]	Create	CO2
(d)	Illustrate any one test of hardened cocnrete.	[8]	Evaluate	CO2

Shri Shankaracharya Institute of Professional Management & Technology
Department of Civil Engineering

Class Test – I   Session: July-December, 2022   Month – December
Semester – 3rd (B-Tech)   Subject – IFM   Code – B000312(020)

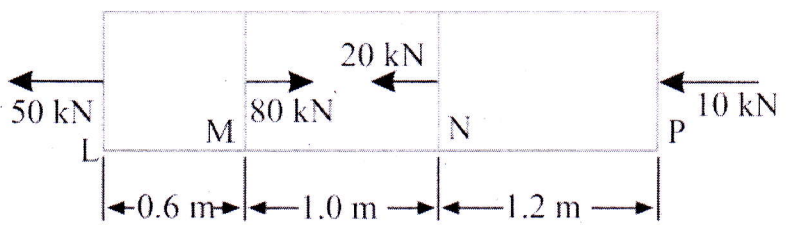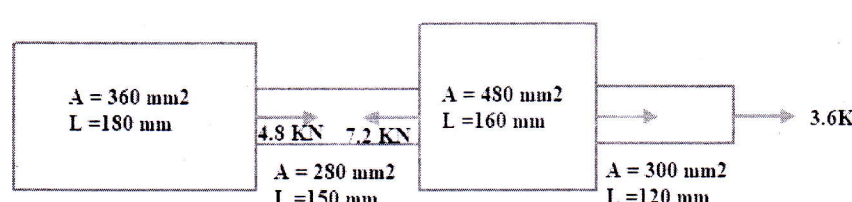SSIPMT   Time Allowed: 2 hrs.   Max Marks: 40

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 following Viscosity, Specific gravity and Newtonian fluid	[4]	Understand	CO1
B.	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
C.	A differential manometer is connected at the two points A and B shown in fig. At B air pressure is 7.848 N/cm^2 (abs.), find the absolute pressure at A.	[8]	Apply	CO1
D.	Find the total pressure and position of centre of pressure on a triangular plate of base 4m and height 7m which is immersed in water in such a way that the plane of the plate males an angle tan^{-1}($\sqrt{3}$) with the free surface of the water. The base of the plate is parallel to water surface and at a depth of 3.5 m from water surface.	[8]	Apply	CO1
	Part II			
A.	Define the following Meta-Centre, Steady and unsteady flow and Uniform and Non-uniform flow	[4]	Understand	CO1 & CO2
B.	The Velocity vector in a fluid flow is given V = x^{2}yi + y^{2}z j – (2xyz+yz^2) k. Find the velocity and acceleration of a fluid particle at (2, 1, 3).	[8]	Apply	CO2
C.	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
D.	Derive an expression for the meta-centric height of a floating body.	[8]	Understand	CO1

Shri Shankaracharya Institute of Professional Management & Technology
Department of Civil Engineering

Class Test – I	Session- July-Dec, 2022	Month-December
Sem- 3rd	Subject- Plane Surveying – I	Code- B020314(020)
Time Allowed: 2 hrs		Max Marks: 40

Note: - Question Q1 and Q2 are compulsory. Attempt any 2 questins from Q3, Q4 and Q5.

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	COs
	PART-I			
Q1	Find the correction for curvature and refraction for a distance of 1440m.	[2]	Applying	CO1
Q2	What is bench mark and its classifications?	[2]	Remembering	CO1
Q3	What do you mean by "sensitiveness" of bubble tube? Determine the sensitivity of bubble tube and radius of curvature given: The length of one division is 2mm. The reading taken on the staff 100m from the level with bubble center was 1.872m. The bubble is moved 5 divisions out of center the staff reading was observed to be 1.806m.	[8]	Applying	CO1
Q4	1 The following reciprocal levels were taken with one level.	[8]	Applying	CO1

Instrument at	Readings on		Remarks
	P	**Q**	
P	1.725	2.245	Distance PQ = 200m
Q	2.145	3.045	RL of P = 450.00m

Determine:
1. The true difference in elevation between P and Q.
2. The RL of Q
3. Combined correction for curvature and refraction.

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	COs
Q5	What do you mean by levelling? What are the different methods of levelling?	[8]	Understanding	CO1
	PART-II			
Q1	What do you mean by watershed line and valley line?	[2]	Understanding	CO2
Q2	Define contour map and contour line.	[2]	Understanding	CO2
Q3	What is interpolation of contour? Explain any one method of contour interpolation.	[8]	Understanding	CO2
Q4	How contour maps can be used to determine the intervisibility between two points.	[8]	Applying	CO2
Q5	What are different characteristics of contour. Support your answer with neat sketch.	[8]	Understanding	CO2

Shri Shankaracharya Institute of Professional Management & Technology, Raipur
Department of Civil Engineering
Online Class Test – I   Session: JULY – DEC, 2022   Month – DECEMBER
Semester – 3rd Subject – Introduction to Solid Mechanics,   Subject Code – B020313 (020)
Time Allowed: 2 hrs.   Max Marks: 40
Note: - Part A is compulsory. Attempt Any 2 from part B, C,D

SSIPMT

Q. No.	Questions	Marks	Levels of Bloom's taxonomy	CO's
	SECTION- I			
A.	Explain Different types of stress with neat diagrams	[4]	Understand	CO1
B.	A brass bar having cross-sectional area of 1000 mm2 is subjected to axial forces shown in the Fig. 1. Find the total elongation of the bar. Modulus of elasticity of brass = 100 GN/m^2 *Fig. 1*	[8]	Understand	CO1
C.	A steel cube of 50 mm side is subjected to a tensile force of 10 KN along X-direction, compressive force of 12.5 KN along y-direction and a tensile force of 7.5 KN along z-direction. Determine change in volume of the cube. Take E = 2 X 10^5 N/ mm^2 and Poisson's ratio = 0.3	[8]	Understand	CO1
D.	Calculate the total elongation of the non-uniform bar with loads as shown in figure 2. Modulus of elasticity of brass = 200 GN/m^2. The cross-section of the bar is given in figure below. *Fig. 2*	[8]	Understand	CO1
	SECTION -II			
A.	Explain Hoop Stress.	[4]	Understand	CO1
B.	Explain Universal Tensile Test procedure. Draw Stress-strain curve for steel with salient points.	[8]	Understand	CO1
C.	Establish a relationship between E , K and G.	[8]	Understand	CO1
D.	A bar 35 mm in diameter was subjected to a tensile load of 54 KN and measured extension on 300 mm gauge length was 0.112 mm and change in diameter was 0.00366 mm. Calculate the Poisson's ratio and value of three modulus.	[8]	Understand	CO1