Shri Shankaracharya Institute of Professional Management & Technology
Department of Civil Engineering
SSIPMT
RAIPUR
Class Test – I   Session: Jan – Jun, 2022,   Month – June
Semester – 4th   Subject – SA-I   Code – B020411(020)
Time Allowed: 2 hrs   Max Marks: 40

Note: - Solve any two Questions from Part I. From part II, Question (A) is compulsory and solve any two questions from (B), (C) and (D)

Q. No.	Questions	Marks	Levels of Bloom's taxonomy	COs

Part- I

I.   Differentiate between static and kinematic indeterminacy.

II. Discuss Tension Coefficient.

III. Determine the degree of static indeterminacy of the following structures and comment on stability of the structure:

(A)

(A)   (B)   (C)

[10]   Apply   CO1

(B) Using the method of tension coefficient analyse the plane truss shown in figure. Find the member forces.

[10]   Analyse   CO1

(C) A space frame shown in Fig. is supported at A, B, C and D in a horizontal plane through ball joints. The member EF is horizontal and is at a height of 3 m above the base. The loads at the joints E and F, shown in the figure act in a horizontal plane. Find the forces in all the members of the frame.

[10]   Analyse   CO1

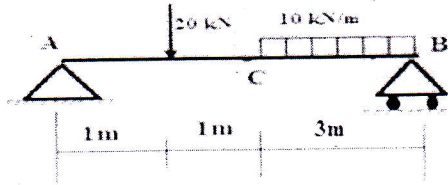**Part- II**

(A)	I. Discuss the Relation between Loading, SF, BM, Slope and Deflection. II. Discuss elastic curve; draw an elastic curve for a simply supported beam with UDL.	[06]	Understand	CO2

A beam AB of 5 meters span is simply supported at the end and is loaded as shown in figure. Using Macaulay's method determine:
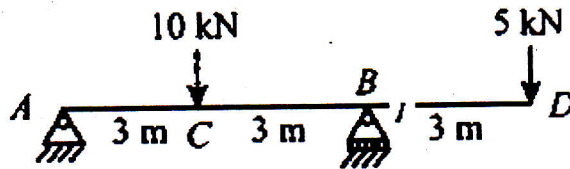(I) Deflection at C
(II) Slope at A and B

(B)	[07]	Evaluate	CO2

Determine the slope at A and B and the deflection at C and D in the beam shown in figure. EI = constant (Use Macaulay's Method)
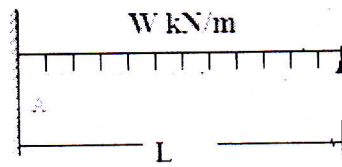

(C)	[07]	Evaluate	CO2

A 3 meters long cantilever carries a uniformly distributed load over the entire length. By using double integration method calculate the slope and deflection at free end.

(D)	[07]	Evaluate	CO2

print
CIVIL-4th
13/06/22

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

SSIPMT
RAIPUR

Class Test – I   Session: Jan – Jun, 2022,   Month – June

Semester – 4th   Subject – SA-I   Code – B020411(020)

Time Allowed: 2 hrs   Max Marks: 40

Note: - Solve any two Questions from Part I. From part II, Question (A) is compulsory and solve any two questions from (B), (C) and (D)

Q. No.	Questions	Marks	Levels of Bloom's taxonomy	COs

Part- I

I.   Differentiate between static and kinematic indeterminacy.

II. Discuss Tension Coefficient.

III. Determine the degree of static indeterminacy of the following structures and comment on stability of the structure:

(A)

(A)   (B)   (C)

[10]   Apply   CO1

(B) Using the method of tension coefficient analyse the plane truss shown in figure. Find the member forces.

[10]   Analyse   CO1

(C) A space frame shown in Fig. is supported at A, B, C and D in a horizontal plane through ball joints. The member EF is horizontal and is at a height of 3 m above the base. The loads at the joints E and F, shown in the figure act in a horizontal plane. Find the forces in all the members of the frame.

[10]   Analyse   CO1

Part- II

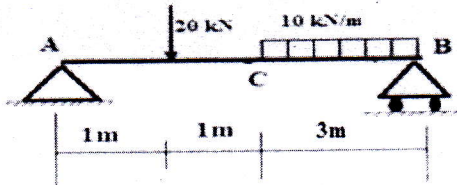|		Question	Marks	Bloom's Level	CO

(A)

I. Discuss the Relation between Loading, SF, BM, Slope and Deflection.

II. Discuss elastic curve; draw an elastic curve for a simply supported beam with UDL.

[06]   Understand   CO2

(B)

A beam AB of 5 meters span is simply supported at the end and is loaded as shown in figure. Using Macaulay's method determine:

(I) Deflection at C

(II) Slope at A and B

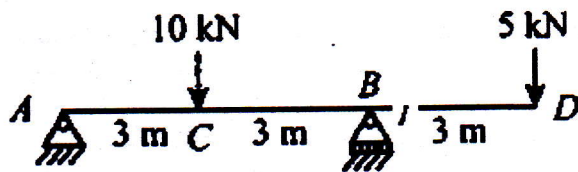
[07]   Evaluate   CO2

(C)

Determine the slope at A and B and the deflection at C and D in the beam shown in figure. EI = constant (Use Macaulay's Method)
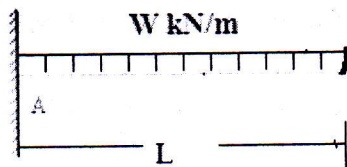

[07]   Evaluate   CO2

(D)

A 3 meters long cantilever carries a uniformly distributed load over the entire length. By using double integration method calculate the slope and deflection at free end.

[07]   Evaluate   CO2

Shri Shankaracharya Institute of Professional Management & Technology
Department of Civil Engineering
Class Test – I   Session: Jan-June 2022   Month – June
Semester – 4th   Subject – Engineering Geology   Code – B020415(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.	What is Engineering Geology? Enumerate the various hypothesises of the origin of the earth.	[4]	Remember	CO1
B.	Describe the radioactive method for dating the earth. How old is the earth according to this estimate? Why radiometric dating is the most reliable method of dating?	[8]	Understand	CO1
C.	Give a brief account of the internal structure of the earth. What are the major characteristics of each region?	[8]	Understand	CO1
D.	Define minerals? Describe various physical properties used for the identification of minerals.	[8]	Remember, Understand	CO1
	Part II			
A.	What is metamorphism? Define metamorphic rock and give two examples of such rock.	[4]	Remember	CO3
B.	What is mineralogy? Describe the various chemical and optical properties of minerals.	[8]	Remember, Understand	CO2
C.	Define Ore? Explain the various properties of the following minerals, Silica, Feldspar, Garnet, Graphite and Hematite.	[8]	Remember, Understand Apply	CO2
D.	Define Rocks? Explain igneous and sedimentary rocks in the following manner; their definition, mode of occurrence, structure, texture, and classification.	[8]	Remember, Understand	CO3

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

Note: - In Part I & II, All Question is compulsory and attempt any two from B and C

Q. No.	Questions	Marks	Levels of Bloom's taxonomy	COs
	Part-1			
A.	Define Uniform flow and non-uniform flow.	[4]	Understand	3
B.	Define Specific energy. Draw specific energy curve and derive expression for critical depth and critical velocity.	[16]	Understand	3
C.	Explain the term hydraulic jump. Derive an expression for the depth of hydraulic jump.	[16]	Understand	3
	Part- II			
A.	Write the dimension of the following term Viscosity, Power, Density and Discharge	[4]	Understand	4
B.	Derive an expression for the variation of depth along the length of the bed of the channel for gradually varied flow in an open channel. State clearly all the assumption made.	[16]	Understand	3
C.	(i) The discharge of water through a rectangular channel of width 8m, is $15 m^3/s$ when depth of flow of water is 1.2 m. Calculate Specific energy, Critical depth, critical velocity and Minimum specific energy. (ii) Find an expression for the drag force on smooth sphere of diameter D, moving with uniform velocity V in a fluid of density ρ and dynamic viscosity μ.	[16]	Understand ,Analyze	3 and 4

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

SSIPMT RAIPUR

Class Test – I Session: Jan – July, 2022

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

Time Allowed: 2 hrs Max Marks: 40

Note: - *Part (a) is compulsory of each unit and carries 4 marks. Attempt any 2 questions from b, c & d that carries 8 marks each.*

Q. No.	Questions	Marks	Levels of Bloom's taxonomy	COs
	Unit- I			
(a)	Describe the function of foundation.	[4]	Understand , Remember	CO1
(b)	Explain with the help of sketches various types of shallow foundation.	[8]	Understand , Remember	CO1
(c)	What do mean by well foundation. Elaborate with all component and with neat sketch	[8]	Understand	CO1
(d)	What are the causes of foundation failure and their rectification?	[8]	Understand	CO1
	Unit- II			
(a)	What do you understand by masonry? Write down the different types of brick and stone masonry.	[4]	Remember	CO2
(b)	Explain the various types of stone masonry with neat sketch.	[8]	Understand	CO2
(c)	Explain the following: (any three) a) Course b) Header c) Stretcher d) Quoins	[8]	Understand	CO2
(d)	Sketch and explain the various forms of bond pattern.	[8]	Understand	CO2

Shri Shankaracharya Institute of Professional Management & Technology

Department of Civil Engineering

Class Test – I   Session: Jan – July 2022, Month –June

Semester – 4th, Subject –Surveying and Geomatics Surveying, Code – B020413(020)

Time Allowed: 2 hrs   Max Marks: 40

Note:- Question A is compulsory. Answer any two questions from B, C & D.

SSIPMT
RAIPUR

Q. No.	Questions	Marks	Levels of Bloom's taxonomy	COs

Part- I

A	Write short note on Subtense Theodolite.	4	Understand	CO3

B A tacheometer was set up at a station C and the following readings were obtained on a staff vertically held.

Instrument station	Staff station	Vertical angle	Hair readings(m)			Remarks
C	BM	-5°20'	1.5	1.8	2.45	RL of BM=750.50m
C	D	+8°12'	0.75	1.5	2.25	

Calculate the horizontal distance CD and RL of D, when the constants of instruments are 100 and 0.15.

B		8	Analyse	CO3

C Derive the expression for horizontal and vertical distance and the reduced level of the staff station in the tangential method when-
- Both angles are angles of elevation.
- Both angles are angles of depression.
- One is of elevation and other is of depression.

C		8	Apply	CO3

D Two points A and B are opposite sides of a summit. The tacheometer was set up at P on the top of the summit, and the following readings were taken. The tacheometer is fitted with an Anallatic lens, the multiplying constant being 100. The staff was held normal to the line of sight. Calculate :

1. The distance between A and B.

2. The gradient of lines PA and PB

D		8	Analyse	CO3

Instrument Station	Height of Instrument	Staff Station	Vertical Angle	Hair Readings			Remarks
P	1.5	A	-10°30'	1.15	2.05	2.95	RL of P=450.5m
P	1.5	B	-12°30'	0.855	1.605	2.355	

Part- II

A	Define the following 1. Independent Quantity	4	Understand	CO2

2. Conditioned Quantity

3. Residual Error

4. Most Probable Value

B

The following angles were measured at a station O so as to close the horizon :

<AOB= 84°42'28".75   weight - 3

<BOC= 101° 15' 43".26   weight - 2

<COD= 95° 38' 27".22   weight - 4

<DOA= 78° 23' 23".77   weight - 2

Adjust the angles by using method of correlates.

8   Analyse   CO2

C

The following observations of three angles A,B and C were taken at one station:

A	75°32'46".3	With weight 3
B	55° 09' 53".2	With weight 2
C	108° 09' 28".8	With weight 2
A+B	130° 42' 41".6	With weight 2
B+C	163° 19' 22".5	With weight 1
A+B+C	238° 52' 9".8	With weight 1

Determine the most probable value of each angle by using method of differences.

8   Analyse   CO2

D

The angles A, B & C of a triangle ABC have been observed several times with the following results:

A	B	C
56° 12'36"	68° 36'12"	55° 11'14"
56° 12'32"	68° 36'14"	55° 11'18"
56° 12'34"	68° 36'16"	55° 11'12"
56° 12'32"	68° 36'14"	55° 11'15"
56° 12'38"	68° 36'16"	55° 11'16"
56° 12'35"	68° 36'18"	
	68° 36'12"	
	68° 36'14"	

Assign weights to the angles by Gauss rule and determine their least squares estimate.

8   Analyse   CO2

Shri Shankaracharya Institute of Professional Management & Technology

Department of Civil Engineering

Class Test – I   Session: Jan – July 2022, Month –June

Semester – 4th, Subject –Surveying and Geomatics Surveying, Code – B020413(020)

Time Allowed: 2 hrs   Max Marks: 40

Note:- Question A is compulsory. Answer any two questions from B, C & D.

Q. No.	Questions	Marks	Levels of Bloom's taxonomy	COs

Part- I

Q. No.	Questions	Marks	Levels of Bloom's taxonomy	COs
A	Write short note on Subtense Theodolite.	4	Understand	CO3

B — A tacheometer was set up at a station C and the following readings were obtained on a staff vertically held.

Instrument station	Staff station	Vertical angle	Hair readings(m)			Remarks
C	BM	-5°20'	1.5	1.8	2.45	RL of BM=750.50m
C	D	+8°12'	0.75	1.5	2.25	

Calculate the horizontal distance CD and RL of D, when the constants of instruments are 100 and 0.15.

(B — Marks: 8, Analyse, CO3)

C — Derive the expression for horizontal and vertical distance and the reduced level of the staff station in the tangential method when-

- Both angles are angles of elevation.
- Both angles are angles of depression.
- One is of elevation and other is of depression.

(C — Marks: 8, Apply, CO3)

D — Two points A and B are opposite sides of a summit. The tacheometer was set up at P on the top of the summit, and the following readings were taken. The tacheometer is fitted with an Anallatic lens, the multiplying constant being 100. The staff was held normal to the line of sight. Calculate :

1. The distance between A and B.

2. The gradient of lines PA and PB

(D — Marks: 8, Analyse, CO3)

Instrument Station	Height of Instrument	Staff Station	Vertical Angle	Hair Readings			Remarks
P	1.5	A	-10°30'	1.15	2.05	2.95	RL of P=450.5m
P	1.5	B	-12°30'	0.855	1.605	2.355	

Part- II

Q. No.	Questions	Marks	Levels of Bloom's taxonomy	COs
A	Define the following 1. Independent Quantity	4	Understand	CO2

| | 2. Conditioned Quantity | | | |
| | | | | |

2. Conditioned Quantity

3. Residual Error

4. Most Probable Value

| B | The following angles were measured at a station O so as to close the horizon :

<AOB= 84°42'28".75   weight - 3

<BOC= 101° 15' 43".26   weight - 2

<COD= 95° 38' 27".22   weight - 4

<DOA= 78° 23' 23".77   weight - 2

Adjust the angles by using method of correlates. | 8 | Analyse | CO2 |

The following observations of three angles A,B and C were taken at one station:

A	75°32'46".3	With weight 3
B	55° 09' 53".2	With weight 2
C	108° 09' 28".8	With weight 2
A+B	130° 42' 41".6	With weight 2
B+C	163° 19' 22".5	With weight 1
A+B+C	238° 52' 9".8	With weight 1

| C | | 8 | Analyse | CO2 |

Determine the most probable value of each angle by using method of differences.

D The angles A, B & C of a triangle ABC have been observed several times with the following results:

A	B	C
56° 12'36"	68° 36'12"	55° 11'14"
56° 12'32"	68° 36'14"	55° 11'18"
56° 12'34"	68° 36'16"	55° 11'12"
56° 12'32"	68° 36'14"	55° 11'15"
56° 12'38"	68° 36'16"	55° 11'16"
56° 12'35"	68° 36'18"	
	68° 36'12"	
	68° 36'14"	

8   Analyse   CO2

Assign weights to the angles by Gauss rule and determine their least squares estimate.