SHRI SHANKARACHARYA INSTITUTE OF PROFESSIONAL MANAGEMENT AND TECHNOLOGY		
DEPARTMENT OF CIVIL ENGINEERING		
Class Test – I	Session- 2020	Month- Jan-Feb
Sem- 4th	Subject- Fluid Machines	
Code –320452(20)	Time Allowed: Two Hours	Max Marks: 40

Note: - Que 1(a) and 2(a) is compulsory. Attempt any two ques from 1(b),(c),(d) and two from 2(b),(c),(d).

Q. No	Questions	Marks	Levels of Bloom's taxonomy	CO
	Unit – I			
1.A	Prove that the draft-tube has negative pressure head at at inlet.	**4**	R	CO6
1.B	The three jet Pelton turbine is required to generate 10000 KW under a head of 400 m. The blade angle at outlet is 15° and the reduction in relative velocity while passing over a blade is 5%. If overall efficiency of wheel is 80%, Cv = 0.98 and speed ratio = 0.46, then find (i) the diameter of jet (ii) total flow in m^3/s (iii) the force exerted by a jet on buckets.	**8**	R,A	CO6
1.C	An inward flow reaction turbine has external and internal diameters as 1.0 m and 0.6 m respectively. The hydraulic efficiency of turbine is 90% when the head on the turbine is 36 m. The velocity of flow at outlet is 2.5 m/s and discharge at outlet is radial. If the vane angle at outlet is 15° and width of the wheel is 100 mm at inlet and outlet,determine (i) the guide blade angle (ii) speed of turbine (iii) vane angle of the runner at inlet (iv) volume flow rate of turbine (v) power developed.	**8**	R,A	CO6
1.D	Define specific speed. Derive the formula for specific speed in case of turbine and pump. Write significance of specific speed.	**8**	R,U	CO6
	Unit – I			
2.A	A turbine is to operate under a head of 25m at 200 rpm. The discharge is 9 cumec. If efficiency is 90%, determine the performance of turbine under a head of 20m.	**4**	R,A	CO6
2.B	Write short notes on (i) cavitation (ii) priming of pump (iii) hydraulic efficiency of turbine (iv) draft-tube	**8**	U,R	CO6
2.C	Find the power required to drive the centrifugal pump which deliver $0.04m^3/s$ of water to a height of 20 m through a 15 cm diameter pipe and 100 m long. The overall efficiency of pump is 70% and coefficient of friction 'f' = 0.15 in the formula $h_f = 4fLV^2/2gd$.	**8**	R,A	CO6
2.D	The diameter of a centrifugal pump, which is discharging $0.03m^3/s$ of water against a total head of 20 m is 0.04 m. The pump is running at 1500 rpm. Find head, discharge and ratio of power of a geometrically similar pump of diameter 0.25 m when it is running at 3000 rpm.	**8**	R,A	CO6

Shri Shankaracharya Institute of Professional Management & Technology

Department of Civil Engineering

Class Test – I Session: Jan – Jun 2020 Month – February

Semester – 4th Subject – Building Construction, Code – 320455 (20)

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	COs
	Part- I			
(a)	(a) Enumerate the types of foundation. (b) Define shallow foundation.	[4]	Understand	CO1
(b)	Explain the following terms: (1)Bearing Capacity (2)Gross Pressure Intensity (3)Ultimate Bearing Capacity (4)Safe Bearing Capacity (5)Factor of Safety (6)Relationship between S.B.C.,U.B.C and F.O.S. (7)Allowable bearing Pressure (8)Differential settlement	[8]	Understand	CO1
(c)	Write short notes on: (i)Alluvial and Residual soils (ii)Underreamed Piles	[8]	Apply	CO1
(d)	Discuss are the causes of failure of foundation? What remedial measures would you adopt?	[8]	Apply	CO1
	Part- II			
(a)	Describe the general principles to be observed in stone masonry construction.	[4]	Apply	CO2
(b)	Explain the technical terms used in stone masonry. Or Explain some important terms used in brick masonry.	[8]	Remember	CO2
(c)	Discuss various types of bonds used in brick masonry.	[8]	Apply	CO2
(d)	Define Partition wall. List out various types of partition walls. Explain with sketches any one type of partition walls.	[8]	Understand	CO2

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

Class Test – I Session: Jan – June, 2020 Month – February

Semester – 4th Subject – CED, Code – 320454 (20)

Time Allowed: 2 hrs Max Marks: 40

Note:- Attempt all questions

Q. No.	Questions	Marks	Levels of Bloom's taxonomy	COs
	Part- I			
(1)	Define the term (a) Aspect and prospect (b) Roominess (c) Grouping and Circulation (d) Privacy (e) Sanitation and Elegance	[10]	Understand	CO1
(2)	Describe Building bye's laws for residential Building. OR Explain basic requirement of a buildings and good site selection of residential building.	[10]	Understand	CO1
	Part- II			
(1)	Draw double line plan for residential building with proper scale. OR Draw single line plan for Primary health centre with proper scale	[20]	Analyze	CO2, CO4,

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

Class Test – I Session: Jan – June, 2020 Month – February

Semester – 4th Subject – CED, Code – 320454 (20)

Time Allowed: 2 hrs Max Marks: 40

Note:- Attempt all questions

Q. No.	Questions	Marks	Levels of Bloom's taxonomy	COs
	Part- I			
(1)	Define the term (a) Aspect and prospect (b) Roominess (c) Grouping and Circulation (d) Privacy (e) Sanitation and Elegance	[10]	Understand	CO1
(2)	Describe Building bye's laws for residential Building. OR Explain basic requirement of a buildings and good site selection of residential building.	[10]	Understand	CO1
	Part- II			
(1)	Draw double line plan for residential building with proper scale. OR Draw single line plan for Primary health centre with proper scale	[20]	Analyze	CO2, CO4,

Shri Shankaracharya Institute of Professional Management & Technology
Department of Civil Engineering
Class Test – I Session: Jan – July, 2020
Semester – 4th Subject – SURVEY-II, Code – 320453 (20)
Time Allowed: 2 hrs Max Marks: 40

Note- Solve each unit for 20 marks.

<table>
<tr><th>Q. No.</th><th>Questions</th><th>Marks</th><th>Bloom's taxonomy</th><th>COs</th></tr>
<tr><td colspan="5">Part- I</td></tr>
<tr><td>(1)</td><td>Define tacheometry. What are the various methods employed in the tachometric survey?</td><td>[4]</td><td>Understand</td><td>CO3</td></tr>
<tr><td>(2)</td><td>Determine the gradient from a point 'A' to a point 'B' from the following observations made with a tacheometer fitted with an anallatic lens. The constant of the instrument was 100 and the staff was held vertically.
<table>
<tr><th rowspan="2">Inst. Stn.</th><th rowspan="2">Staff at</th><th rowspan="2">Bearing</th><th rowspan="2">Vertical angle</th><th colspan="3">Staff Readings</th></tr>
<tr><th>Bottom</th><th>Centre</th><th>Top</th></tr>
<tr><td>P</td><td>A</td><td>134°</td><td>+10°32'</td><td>1.360</td><td>1.915</td><td>2.470</td></tr>
<tr><td></td><td>B</td><td>224°</td><td>+5°6'</td><td>1.065</td><td>1.885</td><td>2.705</td></tr>
</table></td><td>[8]</td><td>Apply</td><td>CO3</td></tr>
<tr><td>(3)</td><td>A tachometer is set up at an intermediate point on a traverse course PQ and the following observation were made on a vertically held stay.
<table>
<tr><th>Staff at</th><th>Vertical Angle</th><th>Staff intercept (m)</th><th>Axial hair reading (m)</th></tr>
<tr><td>P</td><td>$+8^0 36^0$</td><td>2.350</td><td>2.105</td></tr>
<tr><td>Q</td><td>$+6^0 6^0$</td><td>2.055</td><td>1.895</td></tr>
</table>
The instrument is fitted with an anallactic lens the multiplying constant = 100. Compute the length PQ and RL of Q if RL of P = 321.50m</td><td>[8]</td><td>Apply</td><td>CO3</td></tr>
<tr><td>(4)</td><td>Derive the formula for horizontal distance and vertical distance in a tacheometric surveying with staff vertical, sight inclined ?</td><td>[8]</td><td>Apply</td><td>CO3</td></tr>
<tr><td colspan="5">Part- II</td></tr>
<tr><td>(1)</td><td>(a) Explain laws of accidental errors
(b) Enlist the general principle of least squares with brief explanation</td><td>[4]</td><td>Understand</td><td>CO2</td></tr>
<tr><td>(2)</td><td>The following round of angles was observed from central station to the surrounding stations of a triangulation survey:
A = 93°43′22" wt 3
B = 74°32′39" wt 2
C = 101°13′44" wt 2
D = 90°29′50" wt 3
In addition, one angle (A+B) was measured separately as combined angle with a mean value of 168°16′06" wt. 2. Determine the most probable values of the angles A,B,C and D.</td><td>[8]</td><td>Apply</td><td>CO2</td></tr>
<tr><td>(3)</td><td>A surveyor carried out leveling operations of a closed circuit ABCDA starting from A and made the following observations.
B was 8.164 m above A, wt 2
C was 6.284 m above B, wt 2
D was 5.626 m above C, wt 3
D was 19.964 m above A, wt 3
Determine the probable heights of B, C and D above A?</td><td>[8]</td><td>Apply</td><td>CO2</td></tr>
<tr><td>(4)</td><td>Define:
1. Weight of an observation
2.Most probable value
3. Normal equation
4. Observed value of quantity
5. Principles of least squares</td><td>[8]</td><td>Understand</td><td></td></tr>
</table>

Shri Shankaracharya Institute of Professional Management & Technology

Department of Civil Engineering

SSIPMT

Class Test – I Section – A+B Session: July – Dec, 2019 Month – February

Semester – 4th Subject – Transportation Engineering – I Code – 320456(20)

Time Allowed: 2 hrs Max Marks: 40

Note: - In Unit 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
	Unit – I			
A.	*Explain PIEV theory with neat sketch.*	[4]	Understand	1
B.	1. *Calculating the stopping site distance on a highway at a descending gradient of 2% for a design speed of 80 kmph. Assume other data as per IRC recommendation.* 2. *The speed of overtaking and overtaken vehicles are 70 and 40 kmph, respectively on a two way traffic road. If the acceleration of overtaking vehicle is 0.99 m/sec^2* a) *Calculate safe overtaking sight distance* b) *Mention the minimum length of overtaking zone* c) *Draw a neat sketch of the overtaking zone and show the position of the sign posts.*	[8]	Analyze	1
C.	*Drive the equation of superelevation and design the rate of superelevation for a horizontal highway curve of radius 500 m and speed 100 kmph*	[8]	Create	1
D.	*Explain the mechanical and psychological widening of pavement and calculate the extra widening required for pavement of within 7m on a horizontal curve of radius 250 m if the longest wheel base of vehicle expected on the road is 7.0 m and design speed is 70 kmph.*	[8]	Understand	1
	Unit II			
A.	*Explain the combination of stresses in rigid pavement*	[4]	Understand	2
B.	*Explain with neat sketch* a) *ESWL* b) *Contact Pressure*	[8]	Understand	2
C.	*Design the pavement section by triaxial test method using the following data:* a) *Wheel load = 4100 kg* b) *Radius of contact area = 15 cm* c) *Traffic coefficient = 1.5* d) *Rainfall coefficient = 0.25* e) *E value of subgrade soil = 100 kb/cm^2* f) *E value of base course material = 400 kg/cm^2* g) *E value of 7.5 cm thick bituminous concrete surface course = 1000 kg/cm^2*	[8]	Create	2
D.	*Calculate the warping stresses at interior, edge and corner regions of a cement concrete pavement in 25 cm thick concrete pavement with transverse joints at 11 m interval and longitudinal joints at 3.6 m intervals. The modulus of subgrade reaction is 6.9 kg/cm^3. Assume temperature differential for day conditions to be 0.6^{0}C per cm slab thickness. Assume radius of loaded area as 15 cm* *e = 10 x 10^{-6} per ^{0}C* *E = 3 x 10^5 kg/cm^2* *μ = 0.15*	[8]	Analyze	2

Shri Shankaracharya Institute of Professional Management & Technology

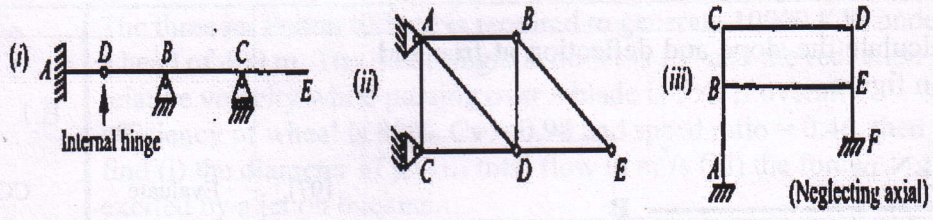
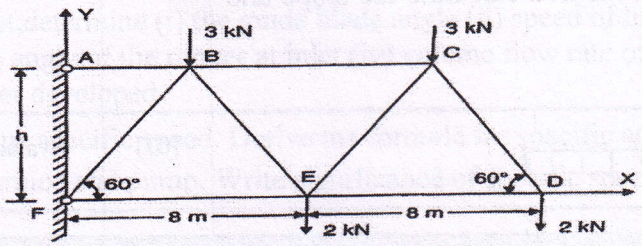
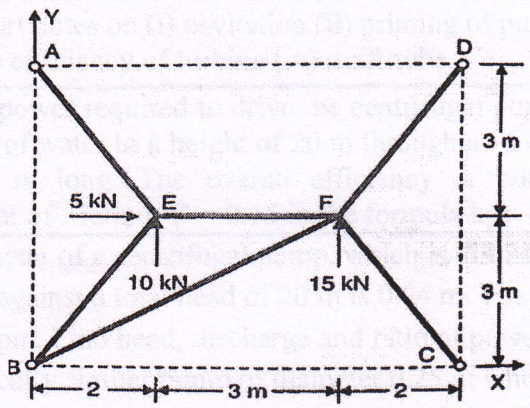
Department of Civil Engineering

Class Test – I Session: Jan – Jun, 2020, Month – February

Semester – 4th Subject – SA-I Code – 320451(20)

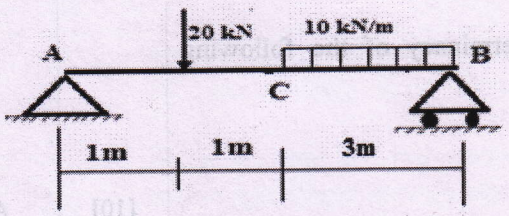
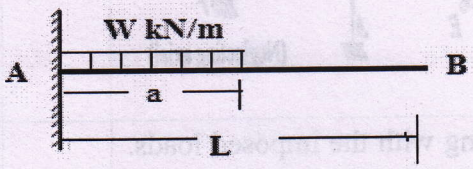
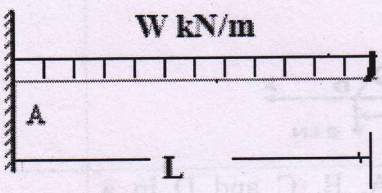
Time Allowed: 2 hrs Max Marks: 40

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			
(A)	I. Differentiate between static and kinematic indeterminacy. II. Discuss Tension Coefficient. III. Determine the degree of kinematic indeterminacy of the following structures: 	[10]	Apply	CO1
(B)	Figure show a warren type cantilever truss along with the imposed loads. Determine the forces in all the members, using the method of tension coefficients. 	[10]	Apply	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]	Apply	CO1

120

Part- II

(A)	I. Discuss the Relation between Loading, SF, BM, Slope and Deflection. II. Discuss Mohr's theorem of slope and deflection. III. Discuss conjugate beam method	[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)	Using moment area method calculate the slope and deflection at free end of the canrtiliver beam shown in figure. 	[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