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

Class Test – I Session: Jan – June, 2019 Month – February

Semester – 6th   Subject – Geotechnical Engg. 2 Code – 320652(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
	Part I			
A.	Explain the mechanism of Plastic Equilibrium. Discuss the assumptions used in Rankine's theory of earth pressure.	[4]	Understand	CO2
B.	Describe the Coulomb's Wedge theory and state its applications.	[8]	Apply	CO2
C.	A 5m high retaining wall with a smooth vertical back retains a dry sand backfill with horizontal surface and has the following properties: $c=0$, $\emptyset=28^0$, $Y_d=16kN/m^3$. Calculate the magnitude of total active thrust against the following conditions: (1) When wall is restrained against yielding (2) Wall is free to yield (3) Wall is pushed against the backfill	[8]	Analyse	CO2
D.	A retaining wall with a stratified backfill has a surcharge of $10kN/m^2$. For the top 3m of the wall $Y=15kN/m^3$, $\emptyset=30^0$ and $c=0$. For the lower 3m $Y=20kN/m^3$, $\emptyset=10^0$ and $c=0$. Determine the magnitude of resultant active thrust on the wall and its respective point of application. What will be the % change in active thrust if water table is present at a height of 3m from the ground surface?	[8]	Analyse	CO2
	Part II			
A.	What is Stability number? What is its utility in the analysis of stability of Slopes?	[4]	Understand	CO1
B.	Explain the procedure of analysis of infinite slopes.	[8]	Apply	CO1
C.	An infinite slope is to be constructed for a soil with $c=0$ and $\emptyset=36^0$. It is to be assumed that water level may occasionally reach the surface of the slope with seepage taking place parallel to the slope. Calculate for the following cases: a) The maximum slope angle when water table reaches the surface of the slope and FOS=1.5 b) FOS for this slope angle when water table is well below the surface of the slope $Y_{sat}=19kN/m^3$, $Y_w=9.81kN/m^3$	[8]	Analyse	CO1
D.	Derive the expression used for calculating FOS using Swedish method of slices for the following soil types: a) $\emptyset=0^0$ soil b) C-$\emptyset$ soil	[8]	Apply	CO1

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

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

Semester – 6th   Subject – Modern Construction Material   Code – 320671(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	COs
	Unit I			
A.	Discuss general properties of HPC.	[4]	Understand	CO 1
B.	Discuss short notes on- (i) High Performance Concrete (ii) High Strength Concrete	[8]	Understand	CO 1
C.	Explain the criteria for selecting the materials for making high strength concrete.	[8]	Understand	CO 1
D.	Describe fiber reinforced concrete with its applications	[8]	Understand	CO 1
	Unit II			
A.	Discuss metal and its properties.	[4]	Understand	CO 2
B.	Discuss the applications of steel aluminum alloy	[8]	Understand	CO 2
C.	Explain the different coating materials applied in bars.	[8]	Understand	CO 2
D.	Explain the properties and uses of wrought iron.	[8]	Understand	CO 2

Shri Shankaracharya Institute of Professional Management & Technology
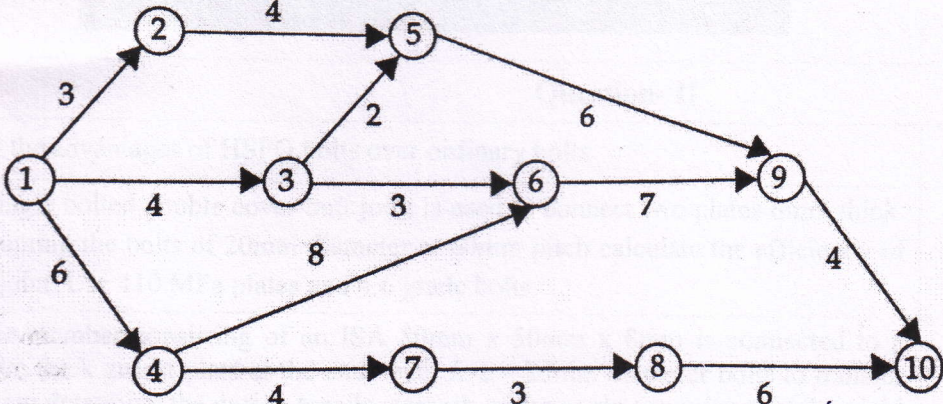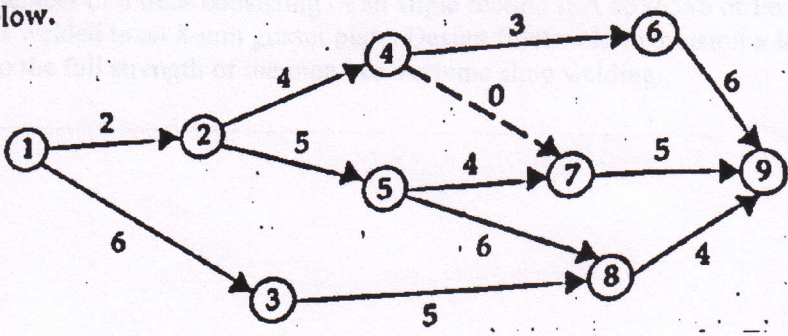## Department of Civil Engineering
Class Test – II   Session – Jan – Jun, 2020 Month – February
Semester – 6th Subject – Construction Planning Code – 320654(20)
Time Allowed: 2 hrs   Max Marks: 40
Note: - In Unit I & II, Question A is compulsory and attempt any two from B, C & D.

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Q. No.	Questions	Marks	Levels of Bloom's taxonomy	COs
	Unit I			
A.	Explain the objective of planning	[4]	Application	1
B.	Sketch the schematic diagram for feasibility study.	[8]	Application	1
C.	Compare the Bar Charts and Milestone Charts with graph.	[8]	Evaluate	1
D.	Explain Job Layout and also explain factors affecting job layout and advantages of job layout	[8]	Evaluate	1
	Unit II			
A.	Explain the A-O-A and A-O-N	[4]	Evaluation	2
B.	Explain the types of event with neat sketch	[8]	Evaluation	2
C.	Estimate the T_E and T_L of all the events of the networks given below	[8]	Evaluation	2
D.	Estimate the expected time for each of the path and construct the critical path.	[8]	Evaluation	2

Shri Shankaracharya Institute of Professional Management & Technology

Department of Civil Engineering

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

Semester – 6th Subject – SED-II, Code – 320651(20)
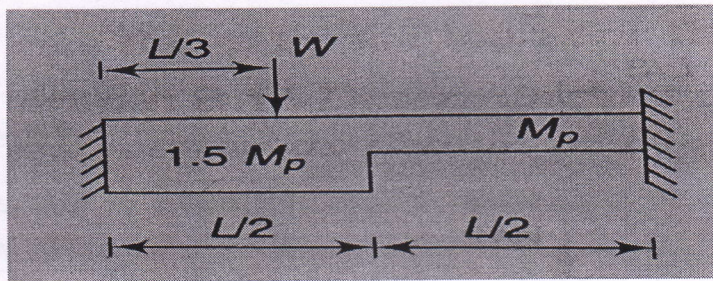
Time Allowed: 2 hrs   Max Marks: 40

Note: - (I) Part (a) of each question is compulsory, solve any two parts from (b), (c) & (d)

(II) Use of IS 800:2007 and steel table is permitted.

Q. No.	Questions	Marks	Levels of Bloom's taxonomy	COs
	Question- I			
(a)	Describe the various types of steel shapes rolled with neat sketches.	[4]	Understand	CO1
(b)	Explain advantages and disadvantages of steel as structural members.	[8]	Understand	CO1
(c)	Determine the shape factor for a triangular section of base b and height h.	[8]	Apply	CO1, CO2
(d)	Determine the collapse load for a continuous beam shown in figure.	[8]	Apply	CO1, CO2
	Question- II			
(a)	List the advantages of HSFG bolts over ordinary bolts	[4]	Understand	CO2
(b)	A single bolted double cover butt joint is used to connect two plates 6mm thick. Assuming the bolts of 20mm diameter at 60mm pitch calculate the efficiency of the joint. Use 410 MPa plates and 4.6 grade bolts.	[8]	Apply	CO2, CO3
(c)	A tie member consisting of an ISA 80mm x 50mm x 8mm is connected to a 10mm thick gusset plate at the ends with five – 20mm diameter bolts to transfer tension determine the design tensile strength of the angle assuming that the yield and the ultimate stress of steel used are 250 MPa and 410 MPa. If the gusset plate is connected to 80mm leg and gauge distance is 40mm.	[8]	Create	CO2, CO3
(d)	A tie member of a truss consisting of an angle section ISA 65x65x6 of Fe 410 grade is welded to an 8-mm gusset plate. Design fillet weld to transmit a load equal to the full strength of the member. Assume shop welding.	[8]	Create	CO2, CO3

Shri Shankaracharya Institute of Professional Management & Technology
Department of Civil Engineering
Class Test – I   Session: Jan – Jun, 2020 Month – February
Semester – 6TH Subject –Concrete Technology Code- 320654(20)
Time Allowed: 2 hrs   Max Marks: 40

Note: - In Part A & B, Question 1 is compulsory and attempt any two from 2, 3 & 4.

Q. No.	Questions	Marks	Levels of Bloom's taxonomy	COs
	PART - I			
1	Explain fineness modulus of Aggregate.	[4]	Understand	CO1
2	Differentiate between flakiness index and elongation index.	[8]	Analyze	CO1
3	Explain alkali aggregate reaction. How is it dangerous for concrete?	[8]	Understand	CO1
4	Describe the importance of the quality of water used for concreting.	[8]	Understand	CO1
	PART -II			
1	Describe different function of admixture.	[4]	Understand	CO2
2	Describe term of Admixture? Explain various types of admixture with example.	[8]	Understand	CO2
3	Describe the various fetors which affect the work ability of concrete? Explain each point in detail.	[8]	Understand	CO2
4	Discuss any two test for quality of concrete in fresh state.	[8]	Understand	CO2

Shri Shankaracharya Institute of Professional Management & Technology
Department of Civil Engineering
Class Test – I   Session: Jan – June, 2020 Month – February
Semester – 6th Subject – Environmental Engineering-I, Code – 320653 (20)
Time Allowed: 2 hrs   Max Marks: 40

Note:- Question (1) of Part-I & Part-II is compulsory which carries 4 marks. Solve any two from 2, 3,& 4 of Part-I & Part-II. Solve any one from Part-III.

Q. No.	Questions	Marks	Levels of Bloom's taxonomy	COs
Part- I				
(1)	1.Suggest most suitable method of population forecast when extension is required for small duration and past record is available for long duration? a) Graphical comparison method b) Graphical extension method c) Logistic curve method d) Zoning method	[2]	Apply .	CO1
(2)	3. Predict the population for year 1994 from following census figures of town by incremental increase method. Year 1901 1911 1921 1931 1941 1951 1961 1971 Population 60 65 63 72 79 89 97 120 (thousand)	[7]	Apply	CO1
(3)	What are various types of intake works? Describe a river intake with the help of neat sketches.	[7]	Apply	CO1
(4)	In a water treatment plant, the pH values of incoming and outgoing waters are 7.2 and 8.4 respectively. Assuming a linear variation of pH with time, determine the average pH value of water.	[7]	Apply	CO2
Part- II				
(1)	2. If in a city, the maximum daily draft is 25MLD, fire draft is 35MLD and maximum hourly draft is 40MLD, what is the coincident draft? a) 60MLD b) 40MLD c) 25MLD d) 35MLD	[2]	Understand	CO1
(2)	Describe different types of settling in brief and prove that the efficiency of sedimentation process is independent of the depth of sedimentation tank ?	[7]	Apply	CO3
(3)	Name a few coagulants used in purification of water. Determine quantity of copperas and the lime required per year to treat 4×10^6 l/day, if 11mg of copperas is consumed with lime at a coagulation basin. Molecular wt. of Fe = 55.85, S = 32, O= 16, H = 1, Ca = 40.	[7]	Apply	CO3
(4)	Enumerate the various impurities of physical, chemical and micro-organic in raw water supplies and stack their maximum permissible limiting values for obtaining potable municipal supplies	[7]	Apply	CO2
Part- III				
(1)	Two million liters of water per day is passing through a sedimentation tank which is 6 m wide, 15 m long and having a water depth of 3 m. (a) Find the detention time for the tank. (b) What is the average flow velocity through the tank? (c) If 60 ppm is the concentration of suspended solids present in turbid raw water, how much dry solids will be deposited per day in the tank, assuming 70% removal in the basin, and average specific gravity of the deposit as 2. (d) Compute the overflow rate.	[8]	Analyze	CO3
(2)	A coagulation treatment plant with a flow of 0.5 m^3/sec is dosing alum at 23 mg/L. No other chemicals are being added. The raw water suspended solids concentration is 37 mg/L. The effluent suspended solids concentration is measured as 12 mg/L. The sludge content is 1 percent and the specific gravity of sludge solids is 3.01. What volume of sludge must be disposed of each day? Based on your result, remark with reference to water treatment process.	[8]	Analyze	CO3

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Department of Civil Engineering

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

Semester – 6th   Subject – GIS and its applications Code – 320676(20)

Time Allowed: 2 hrs.   Max Marks: 40

Note – Questions 1 in each Part is compulsory. Attempt any 2 questions from other part.

Q. No.	Questions	Marks	Levels of Bloom's taxonomy	CO's
	PART-I			
1.	Define GIS? Explain the advantages of geographical information system?	[4]	U,R	CO1
2.	Differentiate between raster data and vector data in GIS.	[8]	U,R	CO1
3.	Explain different types of terminologies used in GIS.	[8]	U	CO1
4.	Explain components of GIS system with example.	[8]	U	CO1
5.	Explain the applications of GIS in civil engineering?	[8]	U	CO1
	PART-II			
1.	Define spatial data?	[4]	R	CO2
2.	How vector data differs from raster data?	[8]	U	CO2
3.	Explain about scanning and digitizing?	[8]	U	CO2
4.	Explain the errors in database creation?	[8]	U	CO2