Ref No:

SRI KRISHNA INSTITUTE OF TECHNOLOGY BANGALORE-90

COURSE PLAN

Academic Year 2019-20

Program:	B E – Civil Engineering
Semester :	7
Course Code:	15CV72
Course Title:	Design Of RCC and Steel Structures
Credit / L-T-P:	4 / 4-0-0
Total Contact Hours:	50
Course Plan Author:	SHIVASHANKAR R

Academic Evaluation and Monitoring Cell

#29, Hesaragatta Main Road, Chimney Hills
Chikkabanavara Post Bangalore-560090
PH-080-23821488/23821315
www.Skit.org, Email: skitprinci1@gmail.com

Table of Contents

Note : Remove “Table of Content” before including in CP Book
Each Course Plan shall be printed and made into a book with cover page
Blooms Level in all sections match with A.2, only if you plan to teach / learn at higher levels

COURSE PLAN - CAY 2019-20

15CV72 : Design of RCC and STEEL STRUCTURES

A. COURSE INFORMATION

1. Course Overview

Degree:	BE	Program:	CV
Year / Semester :	2019-20/VII	Academic Year:	2019-20
Course Title:	Deisgn of RCC and steel structures	Course Code:	15CV72
Credit / L-T-P:	04	SEE Duration:	180 Minutes
Total Contact Hours:	50	SEE Marks:	80 Marks
CIA Marks:	20	Assignment	1 / Module
Course Plan Author:	SHIVASHANKAR R	Sign	Dt:
Checked By:	SHIVAPRASAD D G	Sign	Dt:
CO Targets	CIA Target : 80 %	SEE Target:	70 %

2. Course Content

Module	Module Content	Teaching Hours	Module Concepts	Blooms Level
1	Footings : design of rectangular slab type combined footing	06	Analysis of footing	L6
1	Retaining walls: design of cantilever and counterfort retaining wall	06	Analysis of retaining wall	L6
1	Water tanks: design of circular, rectangular water tanks	07	Analysis of water tanks	L6
1	Design of portal frames with fixed and hinged supports	06	Analysis of portal frame	L6
2	Roof truss: design of roof truss for different cases of loading	09	Analysis of roof trusses	L6
2	Plate girder: design of welded plate girder with intermediate stiffener	08	Analysis of plate girder	L6
2	Gantry girder: design of gantry girder with all necessary checks	08	Analysis of gantry girder	L6

3. Course Material

Module	Details	Available
1	Text books	
	N krishnaraju Design of RCC structures	In Lib
	N subramanian design of steel structures	Available
2	Reference books	
	Dayarathnam P design of steel structures	In dept
	S N sinha reinforced concrete design	
3	Others (Web, Video, Simulation, Notes etc.)	
	NPTEL videos	Not Available

4. Course Prerequisites

SNo	Course	Course Name	Module / Topic / Description	Sem	Remarks	Blooms

	Code					Level
1	15CV72	Design of RCC & steel structures	1. Knowledge on limit state method	7		L2

Note: If prerequisites are not taught earlier, GAP in curriculum needs to be addressed. Include in Remarks and implement in B.5.

B. OBE PARAMETERS

1. Course Outcomes

#	COs	Teach. Hours	Concept	Instr Method	Assessment Method	Blooms' Level
15CV72	Students should be able to Analyze and design the components of footing	06	Analysis of footing	Lecture	slip Test	L6
.2	Students should be able to Analyze and design the components of retaining walls	06	Analysis of retaining wall	Lecture	Assignment	L6
.3	Students should be able to Analyze and design the components of water tank	07	Analysis of water tank	Lecture	Assignment and slip Test	L6
CO4	Students should be able to Analyze and design the components of portal frame	06	Analysis of portal frame	Lecture / PPT	Assignment	L6
CO5	Students should be able to Design the members of a truss according to their nature	09	Analysis of roof truss	Lecture	slip test	L6
CO6	Students should be able to Analyze and design the suitable built up section for plate girder	08	Analysis of plate girder	Lecture and Tutorial	Assignment	L6
CO7	Students should be able to Choose the suitable built up section for gantry girder	08	Analysis of gantry girder	Lecture	Assignment and Slip Test	L6
-	**Total**	**50**	-	-	-	-

Note: Identify a max of 2 Concepts per Module. Write 1 CO per concept.

2. Course Applications

SNo	Application Area	CO	Level
1	In the construction site	CO1	L4
2	Is used in subways	CO2	L4
3	Water retaining structures such as below and above ground level and elevated water tanks	CO3	L4
4	Multistoried buildings	CO4	L4
5	Adopted in case of industrial structures.	CO5	L4
6	In long span bridges such as sub water ways , railways	CO6	L4
7	For the movement of heavy materials in industries	CO7	L4
8			
9			
10			

Note: Write 1 or 2 applications per CO.

3. Articulation Matrix

(CO – PO MAPPING)

-	Course Outcomes	Program Outcomes												
#	COs	PO1	PO2	PO3	PO4	PO5	PO 6	PO7	PO 8	PO9	PO1 0	PO1 1	PO1 2	Level
15CV72 PC.1	Analyze and design the components of footing	2	2	3	-	3	-	-	-	-	-	-	-	L4
15CV72 PC.2	Analyze and design the components of retaining walls	2	2	3	-	3	-	-	-	-	-	-	-	L4
15CV72 PC.3	Analyze and design the components of water tank	2	2	3	-	3	-	-	-	-	-	-	-	L4
15CV72 PC.4	Analyze and design the components of portal frame	2	2	3	-	3	-	-	-	-	-	-	-	L4
15CV72 PC.5	Design the members of a truss according to their nature	2	2	3	-	3	-	-	-	-	-	-	-	L4
15CV72 PC.6	Analyze and design the suitable built up section for plate girder	2	2	3	-	3	-	-	-	-	-	-	-	L4
15CV72 PC.7	Choose the suitable built up section for gantry girder	2	2	3	-	3	-	-	-	-	-	-	-	L4
15CV72PC.	Average	**2**	**2**	**3**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	
Note: Mention the mapping strength as 1, 3,4 or 5														

4. Mapping Justification

Mapping		Justification	Mapping Level
CO	**PO**	**-**	**-**
CO1	PO1	Engineering fundamentals & knowledge of maths required	L1
CO1	PO2	Problem analysis is required	L3
CO1	PO3	Should do the design	L4
CO1	PO5	Autocad tool is required for the drawing	L5
CO2	PO1	Engineering fundamentals & knowledge of maths required	L1
CO2	PO2	Problem analysis is required	L3
CO2	PO3	Should do the design	L4
CO2	PO5	Autocad tool is required for the drawing	L5
CO3	PO1	Engineering fundamentals & knowledge of maths required	L1
CO3	PO2	Problem analysis is required	L3
CO3	PO3	Should do the design	L4
CO3	PO5	Autocad tool is required for the drawing	L5
CO4	PO1	Engineering fundamentals & knowledge of maths required	L1
CO4	PO2	Problem analysis is required	L3
CO4	PO3	Should do the design	L4
CO4	PO5	Autocad tool is required for the drawing	L5
CO5	PO1	Engineering fundamentals & knowledge of maths required	L1
CO5	PO2	Problem analysis is required	L3
CO5	PO3	Should do the design	L4
CO5	PO5	Autocad tool is required for the drawing	L5
CO6	PO1	Engineering fundamentals & knowledge of maths required	L1
CO6	PO2	Problem analysis is required	L3
CO6	PO3	Should do the design	L4
CO6	PO5	Autocad tool is required for the drawing	L5
CO7	PO1	Engineering fundamentals & knowledge of maths required	L1
CO7	PO2	Problem analysis is required	L3
CO7	PO3	Should do the design	L4
CO7	PO5	Autocad tool is required for the drawing	L5

Note: Write justification for each CO-PO mapping.

5. Curricular Gap and Content

SNo	Gap Topic	Actions Planned	Schedule Planned	Resources Person	PO Mapping
1					
2					
3					
4					
5					

Note: Write Gap topics from A.4 and add others also.

6. Content Beyond Syllabus

SNo	Gap Topic	Actions Planned	Schedule Planned	Resources Person	PO Mapping
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

Note: Anything not covered above is included here.

C. COURSE ASSESSMENT

1. Course Coverage

Module #	Title	Teaching Hours	No. of question in Exam						CO	Levels
			CIA-1	CIA-2	CIA-3	Asg	Extra Asg	SEE		
1	Footings	06	1	-	-	1	1	2	CO1,	L4
2	Retaining wall	06	1	-	-	1	1	2	CO2,	L2, L3
3	Water tank , roof truss	16	-	2	-	1	1	2	CO3, CO5	L3, L4
4	Gantry girder , plate girder	16	-	-	1	1	1	2	CO6, C07	L2, L3
5	Portal frame	06	-	-	1	1	1	2	CO4	L4, L5
-	**Total**	**50**	**2**	**2**	**2**	**5**	**5**	**10**	**-**	**-**

Note: Distinct assignment for each student. 1 Assignment per chapter per student. 1 seminar per test per student.

2. Continuous Internal Assessment (CIA)

Evaluation	Weightage in Marks	CO	Levels
CIA Exam – 1	15	CO1, CO2, CO3, CO5	L4
CIA Exam – 2	15	CO6, CO7,	L4
CIA Exam – 3	15	CO4	L4
Assignment - 1	05	CO1, CO2, CO3, CO5	L4
Assignment - 2	05	CO6, CO7,	L4

Assignment - 3	05	CO4	L4
Seminar - 1	05	CO1, CO2, CO3, CO5	L4
Seminar - 2	05	CO6, CO7,	L4
Seminar - 3	05	CO4	L4
Other Activities – define – Slip test		CO1 to Co7	L4 . ..
Final CIA Marks	**20**	**-**	**-**

Note : Blooms Level in last column shall match with A.2 above.

D1. TEACHING PLAN - 1

Module - 1

Title:	Footings	Appr Time:	12 Hrs
a	***Course Outcomes***	-	**Blooms**
-	The student should be able to:	-	**Level**
1	Analyze and design the components of footing	CO1	L4
2	Design the slab type combined footing	CO2	L4
b	***Course Schedule***	-	-
Class No	**Module Content Covered**	**CO**	**Level**
1	footings	C01	L4
2	Combined footing	CO2	L4
c	**Application Areas**	**CO**	**Level**
1	In the construction of buildings	CO1	L4
2	Where the site area is less	CO2	L4
d	**Review Questions**	-	-
1	Design a combined footing for two columns to support an axial load of 1200KN each and spaced at 5m c/c. one of the column is at a distance of 1m from the property line. Safe bearing capacity of the soil is 150KN/m2. Use M20 concrete mix and Fe415 grade steel.	CO1	L4
2	Design slab type combined footing	CO2	L4
3	Design cantilever type retaining wall	CO2	L4
e	**Experiences**	-	-
1		CO1	L2
2			
3			
4		CO3	L3
5			

Module – 2

Title:	Retaining wall	Appr Time:	13 Hrs
a	***Course Outcomes***	-	**Blooms**
-	The student should be able to:	-	**Level**
1	Analyze and design the cantilever retaining wall	CO3	L4
2	Analyze and design the counterfort retaining wall	CO4	L4

b	*Course Schedule*	-	-
Class No	**Module Content Covered**	**CO**	**Level**
1	cantilever retaining wall	CO3	L4
2	counterfort retaining wall	CO3	L4
c	**Application Areas**	**CO**	**Level**
1	To avoid land sliding	CO3	L4
2	In case of hilly areas	CO3	L4
d	**Review Questions**	-	-
1	Design a counter fort retaining wall based on the following data height of wall above G.L=10m, SBC of soil=160KN/m2, angle of internal friction=30 degree, density of soil=16KN/m3, spacing of counter forts=3mc/c, coefficient of friction=0.6 adopt M20 grade concrete and Fe415 steel	CO3	L4
2	Design a cantilever retaining wall retaining wall based on the following data height of wall above G.L=6m, SBC of soil=160KN/m2, angle of internal friction=30 degree, density of soil=16KN/m3, spacing of counter forts=3mc/c, coefficient of friction=0.6 adopt M20 grade concrete and Fe415 steel	CO3	L4
e	**Experiences**	-	
1		CO1	
2			
3			
4		CO3	L3
5			

E1. CIA EXAM – 1

a. Model Question Paper - 1

Crs Code:	15CV72	Sem:	7	Marks:	15	Time:	75 minutes
Course:	Design of RCC and steel structures						

-	-	**Note: Answer any 1 question, each carry equal marks.**	**Marks**	**CO**	**Level**
1		Design a combined footing for two columns to support an axial load of 1200KN each and spaced at 5m c/c. one of the column is at a distance of 1m from the property line. Safe bearing capacity of the soil is 150KN/m2. Use M20 concrete mix and Fe415 grade steel.	15	CO1	L4
2		Design a counter fort retaining wall based on the following data height of wall above G.L=10m, SBC of soil=160KN/m2, angle of internal friction=30 degree, density of soil=16KN/m3, spacing of counter forts=3mc/c, coefficient of friction=0.6 adopt M20 grade concrete and Fe415 steel	15	CO3	L4
3		Design a cantilever retaining wall retaining wall based on the following data height of wall above G.L=6m, SBC of soil=160KN/m2, angle of internal friction=30 degree, density of soil=16KN/m3,	15	CO3	L4

		spacing of counter forts=3mc/c, coefficient of friction=0.6 adopt M20 grade concrete and Fe415 steel			

b. Assignment -1

Note: A distinct assignment to be assigned to each student.

Model Assignment Questions							
Crs Code:	15CV72	Sem:	7	Marks:	5	Time:	90 – 120 minutes
Course:	Design and Analysis of Algorithms						
Note: Each student to answer 2-3 assignments. Each assignment carries equal mark.							

SNo	USN	Assignment Description	Marks	CO	Level
1		Design a counter fort retaining wall based on the following data height of wall above G.L=10m, SBC of soil=160KN/m2, angle of internal friction=30 degree, density of soil=16KN/m3, spacing of counter forts=3mc/c, coefficient of friction=0.6 adopt M20 grade concrete and Fe415 steel	5	CO1	L4
2		Design a combined footing for two columns to support an axial load of 1200KN each and spaced at 5m c/c. one of the column is at a distance of 1m from the property line. Safe bearing capacity of the soil is 150KN/m2. Use M20 concrete mix and Fe415 grade steel.	5	CO2	L4
3		Design a counter fort retaining wall based on the following data height of wall above G.L=10m, SBC of soil=160KN/m2, angle of internal friction=30 degree, density of soil=16KN/m3, spacing of counter forts=3mc/c, coefficient of friction=0.6 adopt M20 grade concrete and Fe415 steel			

D2. TEACHING PLAN - 2

Module – 1

Title:	Water tanks	Appr Time:	16 Hrs
a	***Course Outcomes***	-	**Blooms**
-	The student should be able to:	-	**Level**
1	Analyze and design the components of water tank	CO4	L4
2	Analyze and design the components of circular water tank	CO4	L4
3	Analyze and design the components of rectangular water tank	CO4	L4
b	***Course Schedule***		
Class No	**Module Content Covered**	**CO**	**Level**
1	circular water tank	CO4	L4
2	rectangular water tank	CO4	L4
3		CO4	L4
c	**Application Areas**		
1	Used to store water		
2	Overhead tanks		
3	Underground water tanks		
c	**Review Questions**	**CO**	**Level**
	Design of circular water tank	CO4	L4
	Design of rectangular water tank	CO4	L4
	Water tanks		
d	**Review Questions**	-	-
1	Design a rectangular water tank of capacity 1000m3 resting on the ground and having a fixed base condition due to a rigid joint between the wall and the base slab. The materials to be used are M25 grade concrete and HYSD steel of grade Fe415. Use the method	CO4	L4

	recommended in IS 3370 (part IV).		
2	Design a circular water tank of capacity 400m3 resting on the ground and having a fixed base condition due to a rigid joint between the wall and the base slab. The materials to be used are M25 grade concrete and HYSD steel of grade Fe415. Use the method recommended in IS 3370 (part IV).	CO4	L4
e	**Experiences**	-	-
1		CO1	L2
2			
3			
4		CO3	L3
5			

Module – 2

Title:	roof truss	Appr Time:	16 Hrs
a	***Course Outcomes***	-	**Blooms**
-	The student should be able to:	-	**Level**
1	Design the members in a truss for the given loading and their nature	CO5	L4
b	***Course Schedule***		
Class No	**Module Content Covered**	**CO**	**Level**
1	Members in a truss for the given loading and their nature	CO5	L4
2	Design of members for the given dead laod live load and wind load	CO5	L4
c	**Application Areas**	**CO**	**Level**
1	Used to construct industrial building	CO5	L4
2	network towers		
d	**Review Questions**	-	-
1	Design a roof truss shown in figure1(a) with forces in each member along with its nature. Also design end with gusset plate using black bolts of property class 4.6. also design the supports consisting of shoe angle and bearing plate by considering support reaction of 150KN. Anchor bolts are subjected to an uplift of 15KN at each support. M20 concrete is used at the supports.	CO5	L4
	The central line diagram of a steel truss is shown in the figure. The magnitude and nature of forces on different member of the truss are given in the table the size of the truss is 300*300mm.use M20 concrete for column .design the truss using bolted or welded connection .also design anchor bolts for an uplift force of 15KN at each support.		
e	**Experiences**	-	-
1		CO7	L2
2			
3			
4		CO8	L3
5			

E2. CIA EXAM – 2

a. Model Question Paper - 2

Crs Code:	15CV72	Sem:	7	Marks:	15	Time:	75 minutes		
Course:	Design of RCC & steel structures								
-	**-**	**Note: Answer any 1 question, each carry equal marks.**					**Marks**	**CO**	**Level**

1		The central line diagram of a steel truss is shown in the figure. The magnitude and nature of forces on Different member of the truss are given in the table the size of the truss is 300*300mm.use M20 concrete for column .design the truss using bolted or welded connection .also design anchor bolts for an uplift force of 15KN at each support.	15	CO4	L4
2		Forces in the member are DL and LL and also WL is given below table. Design the truss and support give Upward reaction at support is equal to 180KN uplift force is equal to 50KN. Use M16 bolts for connections	15	CO4	L4
3		The central line diagram of a steel truss is shown in the figure. The magnitude and nature of forces on different member of the truss are given in the table the size of the truss is 300*300mm.use M20 concrete for column .design the truss using bolted or welded connection .also design anchor bolts for an uplift force of 15KN at each support.	15		L3
4		Forces in the member are DL and LL and also WL is given below table. Design the truss and support given Upward reaction at support is equal to 180KN uplift force is equal to 50KN. Use M16 bolts for connections	15		

b. Assignment – 2

Note: A distinct assignment to be assigned to each student.

Model Assignment Questions							
Crs Code:	15CV72	Sem:	7	Marks:	5 / 10	Time:	90 – 120 minutes
Course:	Design of RCC & steel structures						
Note: Each student to answer 2-3 assignments. Each assignment carries equal mark.							

SNo	USN	Assignment Description	Marks	CO	Level
1		The central line diagram of a steel truss is shown in the figure. The magnitude and nature of forces on Different member of the truss are given in the table the size of the truss is 300*300mm.use M20 concrete for column .design the truss using bolted or welded connection .also design anchor bolts for an uplift force of 15KN at each support.	5	CO8	L2
2		Forces in the member are DL and LL and also WL is given below table. Design the truss and support give Upward reaction at support is equal to 180KN uplift force is equal to 50KN. Use M16 bolts for connections	5	CO9	L3
3		Design a roof truss shown in figure1(a) with forces in each member along with its nature. Also design end with gusset plate using black bolts of property class 4.6. also design the supports consisting of shoe angle and bearing plate by considering support reaction of 150KN. Anchor bolts are subjected to an uplift of 15KN at each support. M20 concrete is used at the supports.		CO10	L4
4		The forces in the members of the roof truss shown in figure 2(a), due to dead load, live load and wind load is tabulated in table below. Design rafter (Lo-U3) main tie (Lo-L5) and main sling (U3-L2) members and bolted joints of this truss. Use HSFG bolts of property class8.8.	5	CO9	L3
5		Design a circular water tank of capacity 400m3 resting on the ground and having a fixed base condition due to a rigid joint between the wall and the base slab. The materials to be used are M25 grade concrete and HYSD steel of grade Fe415. Use the method recommended in IS 3370 (part IV).			
		Design a rectangular water tank of capacity 1000m3			

		resting on the ground and having a fixed base condition due to a rigid joint between the wall and the base slab. The materials to be used are M25 grade concrete and HYSD steel of grade Fe415. Use the method recommended in IS 3370 (part IV).			

D3. TEACHING PLAN - 3

Module – 5

Title:	Gantry and plate girder	Appr Time:	16 Hrs
a	***Course Outcomes***	-	**Blooms**
-	The student should be able to:	-	**Level**
1	Design the suitable builtup section for plate girder	CO9	L4
2	Design the plate girder with intermediate stiffener	CO9	L4
	Design the gatry girder for industrial building	CO10	L4
b	***Course Schedule***		
Class No	**Module Content Covered**	**CO**	**Level**
1	Gantry girder for industrial structures with bolted connection		
2	Plate gider with intermediate stiffeners		
3	Plate gider without intermediate stiffeners		
4	Plate gider with end stiffeners		
5	Gantry girder for industrial structures with welded connection		
6	Welded plate girder		
7	bolted plate girder		
c	**Application Areas**	**CO**	**Level**
1	Industrial buildings	CO10	L4
2	Long span bridges	CO9	L4
d	**Review Questions**	-	-
1	Design a gantry girder for a mill building to carry an electric overhead travelling crane having the following data: a) crane capacity=250KN b) weight of crane excluding crab=200KN c)weight of crab=60KN d) span of crane between rails=20m e) minimum hook approach=1.1m f) wheel base=3.4m g) span of gantry girder=7m h) mass of rail section=30Kg/m I) height of rail section=75mm j) fy=250N/mm2 and E=2X10^5.	CO10	L4
2	Design a welded plate girder for a mill building to carry an electric overhead travelling crane having the following data: a) crane capacity=250KN b) weight of crane excluding crab=200KN c)weight of crab=60KN d) span of crane between rails=20m e) minimum hook approach=1.1m f) wheel base=3.4m g) span of gantry girder=7m h) mass of rail section=30Kg/m I) height of rail section=75mm j) fy=250N/mm2 and E=2X10^5.	CO9	L4
3	Design a bolted plate girder for a bridge with intermediate stiffener having the following data: a) crane capacity=250KN b) weight of crane excluding crab=200KN c)weight of crab=60KN d) span of crane between rails=20m e) minimum hook approach=1.1m f) wheel base=3.4m g) span of gantry girder=7m h) mass of rail section=30Kg/m I) height of rail section=75mm j) fy=250N/mm2 and E=2X10^5.	CO9	L4
e	**Experiences**	-	-
1		CO10	L2
2			

3			
4		CO9	L3
5			

E3. CIA EXAM – 3

a. Model Question Paper - 3

Crs Code:	CS501PC	Sem:	I	Marks:	30	Time:	75 minutes
Course:	Design of gantry girder						

-	-	**Note: Answer any 2 questions, each carry equal marks.**	**Marks**	**CO**	**Level**
1		Design a gantry girder for a mill building to carry an electric overhead travelling crane having the following data: a) crane capacity=250KN b) weight of crane excluding crab=200KN c)weight of crab=60KN d) span of crane between rails=20m e) minimum hook approach=1.1m f) wheel base=3.4m g) span of gantry girder=7m h) mass of rail section=30Kg/m I) height of rail section=75mm j) fy=250N/mm2 and E=2X10^5.	15	CO9	L4
2		Design a welded plate girder for a mill building to carry an electric overhead travelling crane having the following data: a) crane capacity=250KN b) weight of crane excluding crab=200KN c)weight of crab=60KN d) span of crane between rails=20m e) minimum hook approach=1.1m f) wheel base=3.4m g) span of gantry girder=7m h) mass of rail section=30Kg/m I) height of rail section=75mm j) fy=250N/mm2 and E=2X10^5.	15	CO10	L4

b. Assignment – 3

Note: A distinct assignment to be assigned to each student.

Model Assignment Questions							
Crs Code:	CS501PC	Sem:	I	Marks:	5 / 10	Time:	90 – 120 minutes
Course:	Design and Analysis of Algorithms						

Note: Each student to answer 2-3 assignments. Each assignment carries equal mark.

SNo	**USN**	**Assignment Description**	**Marks**	**CO**	**Level**
1		Design a welded plate girder for a mill building to carry an electric overhead travelling crane having the following data: a) crane capacity=250KN b) weight of crane excluding crab=200KN c)weight of crab=60KN d) span of crane between rails=20m e) minimum hook approach=1.1m f) wheel base=3.4m g) span of gantry girder=7m h) mass of rail section=30Kg/m I) height of rail section=75mm j) fy=250N/mm2 and E=2X10^5.	5	CO9	L2
2		Design a gantry girder for a mill building to carry an electric overhead travelling crane having the following data: a) crane capacity=250KN b) weight of crane excluding crab=200KN c)weight of crab=60KN d) span of crane between rails=20m e) minimum hook approach=1.1m f) wheel base=3.4m g) span of gantry girder=7m h) mass of rail section=30Kg/m I) height of rail section=75mm j) fy=250N/mm2 and E=2X10^5.	5	CO9	L3
3		Design a bolted plate girder for a bridge with intermediate stiffener having the following data: a) crane capacity=250KN b) weight of crane excluding crab=200KN c)weight of crab=60KN d) span of crane between rails=20m e) minimum hook approach=1.1m f) wheel base=3.4m g) span of gantry girder=7m h) mass of rail		CO10	L4

		section=30Kg/m I) height of rail section=75mm j) fy=250N/mm2 and E=2X10^5.			

F. EXAM PREPARATION

1. University Model Question Paper

Course:							Month / Year	May /2018	
Crs Code:	CS501PC	Sem:	I	Marks:	100		Time:	180 minutes	
-	**Note**	Answer all FIVE full questions. All questions carry equal marks.					**Marks**	**CO**	**Level**
1	a	The central line diagram of a steel truss is shown in the figure. The magnitude and nature of forces on different member of the truss are given in the table the size of the truss is 300*300mm.use M20 concrete for column .design the truss using bolted or welded connection .also design anchor bolts for an uplift force of 15KN at each support.					15	CO1	
2		Design a combined footing for two columns to support an axial load of 1200KN each and spaced at 5m c/c. one of the column is at a distance of 1m from the property line. Safe bearing capacity of the soil is 150KN/m2. Use M20 concrete mix and Fe415 grade steel.					15	CO2	
3		Design a counter fort retaining wall based on the following data height of wall above G.L=6m, SBC of soil=160KN/m2, angle of internal friction=30 degree, density of soil=16KN/m3, spacing of counter forts=3mc/c, coefficient of friction=0.6 adopt M20 grade concrete and Fe415 steel					15	CO3	
4		Design a circular water tank of capacity 400m3 resting on the ground and having a fixed base condition due to a rigid joint between the wall and the base slab. The materials to be used are M25 grade concrete and HYSD steel of grade Fe415. Use the method recommended in IS 3370 (part IV).					15	CO4	
5		Design a cantilever retaining wall retaining wall based on the following data height of wall above G.L=6m, SBC of soil=160KN/m2, angle of internal friction=30 degree, density of soil=16KN/m3, spacing of counter forts=3mc/c, coefficient of friction=0.6 adopt M20 grade concrete and Fe415 steel					15	CO5	
6		Forces in the member are DL and LL and also WL is given below table. Design the truss and support give Upward reaction at support is equal to 180KN uplift force is equal to 50KN. Use M16 bolts for connections					15	CO6	
7		The central line diagram of a steel truss is shown in the figure. The magnitude and nature of forces on different member of the truss are given in the table the size of the truss is 300*300mm.use M20 concrete for column .design the truss using bolted or welded connection .also design anchor bolts for an uplift force of 15KN at each support.					15	CO7	
	c	Forces in the member are DL and LL and also WL is given below table. Design the truss and support given Upward reaction at support is equal to 180KN uplift force is equal to 50KN. Use M16 bolts for connections					15	CO8	

2. SEE Important Questions

Course:	Design and Analysis of Algorithms					Month / Year	May /2018	
Crs Code:	CS501PC	Sem:	3	Marks:	100	Time:	180 minutes	
	Note	Answer all FIVE full questions. All questions carry equal marks.				-	-	
Module	Qno.	Important Question				**Marks**	**CO**	**Year**
1	1	Design a cantilever retaining wall retaining wall based on the				15		2004

		following data height of wall above G.L=6m, SBC of soil=160KN/m2, angle of internal friction=30 degree, density of soil=16KN/m3, spacing of counter forts=3mc/c, coefficient of friction=0.6 adopt M20 grade concrete and Fe415 steel			
	2	Design a counter fort retaining wall based on the following data height of wall above G.L=6m, SBC of soil=160KN/m2, angle of internal friction=30 degree, density of soil=16KN/m3, spacing of counter forts=3mc/c, coefficient of friction=0.6 adopt M20 grade concrete and Fe415 steel	15		2004
	3	The central line diagram of a steel truss is shown in the figure. The magnitude and nature of forces on different member of the truss are given in the table the size of the truss is 300*300mm.use M20 concrete for column .design the truss using bolted or welded connection .also design anchor bolts for an uplift force of 15KN at each support.	15		2004
	4	Design a combined footing for two columns to support an axial load of 1200KN each and spaced at 5m c/c. one of the column is at a distance of 1m from the property line. Safe bearing capacity of the soil is 150KN/m2. Use M20 concrete mix and Fe415 grade steel.	15		2007
	5	The central line diagram of a steel truss is shown in the figure. The magnitude and nature of forces on different member of the truss are given in the table the size of the truss is 300*300mm.use M20 concrete for column .design the truss using bolted or welded connection .also design anchor bolts for an uplift force of 15KN at each support.	15		2007
		Forces in the member are DL and LL and also WL is given below table. Design the truss and support give Upward reaction at support is equal to 180KN uplift force is equal to 50KN. Use M16 bolts for connections	15		
2	1	Design a welded plate girder for a mill building to carry an electric overhead travelling crane having the following data: a) crane capacity=250KN b) weight of crane excluding crab=200KN c)weight of crab=60KN d) span of crane between rails=20m e) minimum hook approach=1.1m f) wheel base=3.4m g) span of gantry girder=7m h) mass of rail section=30Kg/m I) height of rail section=75mm j) fy=250N/mm2 and E=2X10^5.	15		2005
	2	Design a gantry girder for a mill building to carry an electric overhead travelling crane having the following data: a) crane capacity=250KN b) weight of crane excluding crab=200KN c)weight of crab=60KN d) span of crane between rails=20m e) minimum hook approach=1.1m f) wheel base=3.4m g) span of gantry girder=7m h) mass of rail section=30Kg/m I) height of rail section=75mm j) fy=250N/mm2	15		2005