Enroll. No.	

K. E. Society's

Rajarambapu Institute of Technology, Rajaramnagar

(An Autonomous Institute, affiliated to SUK)

MM683

MID SEMESTER EXAMINATION, MARCH 2015

F. Y. M. Tech. (Semester-II)

INDUSTRIAL SAFETY AND RISK ASSESSMENT

(Course Code: IET 520)

Day & Date: 13 / 03/2015

Time : 2 Hrs Max. Marks : 50

Instructions :

i. All questions are compulsory

ii. Figures to the right indicate full marks

Q.1. a What does ergonomics mean and how may it affect you? 05

OR

a Explain the terms incident and near miss with examples. 05

b What do you understand by industrial hazard? Discuss various Physical and chemical hazards present in industries. 12

Q.2. a Differentiate between hazard and risk giving examples. 05

OR

a Illustrate the terms Hazard Analysis and Risk Assessment. 05

b **A Scenario:** 12

Sharma's Car Park Operators provide parking management services to a local authority, which involves services for ten car parks. Various works include enforcement actions such as issuing parking tickets etc. To service this contract, the company employs 40 people, full-time and part-time. Eight do mainly clerical jobs and the rest are parking attendants **(PAs)** working in shifts of 6.00 am to 2.00 pm, 2.00 pm to 10.00 pm and 10 pm to 6.00 am, seven days a week. They work in teams, each team led by a supervisor who reports to the contract manager. Four of the car parks are open at night and eight staff work during nights.

Perform the risk assessment for the PA's.

(Note: include; probable hazards, actions/control majors)

Q.3. a Compare FMEA and FMECA techniques of hazard identification 06

OR

a Compare the purposes of safety observation, safety audit and safety inspection in a safety and health implementation programme. 06

b Reason why is it important to include supervisors and workers in Job Hazard Analysis (JHA) process? You are assigned as a construction site safety supervisor. Perform a JHA for wall painting job. 10

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Rajarambapu Institute of Technology, Rajaramnagar

(An Autonomous Institute)

MID SEMESTER EXAMINATION, 2014-15

First Year M. Tech. Civil –Structure SEMISTER-II

THEORY OF PLATES AND SHELLS (Course Code: CST 508)

Day & Date: Thur. 12/08/2015

Time : 2 Hrs 10:30 - 12:30 pm. Max. Marks : 50

Instructions :

i) All questions are compulsory

ii)Figures to the right indicate full marks

Q.1 a Derive moment curvature relations for simply supported rectangular plate 08

b Derive 4th order differential equation for deflection of simply supported rectangular plate. State boundary conditions for same. 10

OR

b Derive equation for deflection of simply supported rectangular plate stated by Navier. Explain the concept of constant used. 12

Q2 a Illustrate the concept of 'deflection suggested by Levy. Find max deflection for a square plate of size a x a. 12

b Illustrate concept of patch load. Derive the formulae to find deflection for various locations of loading. 06

OR

b Explain the concept of continuum mechanics, state stress and strain concept in them 06

Q.3 A Plate 5 x 6 m is subjected to UDL of 12 KN/m2. Find out deflection, moment and Shear force at quarter span. Use appropriate method of analysis. Assume h= 100 mm, E= 0.2 x 10^5, Poisson's ratio= .300 14

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Rajarambapu Institute of Technology, Rajaramnagar

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MID SEMESTER EXAMINATION, 2014-15

F.Y. M. Tech. Civil Engineering SEMESTER-II Constru. Mgt.

DISASTER MANAGEMENT

Course Code: **CCM 512**

mm 650

Day & Date: Thur. 12/8/2015

Time : 2Hrs 10:30 - 12:30 pm. Max. Marks 50

Instructions :

i. All questions are compulsory

ii. Figures to the right indicate full marks

iii. Assume suitable data if necessary and mention it.

Que.1	a. Explain in details stages in disaster management.	6
	b. Explain in detail pre disaster management stages for flood conditions.	7
	OR	
	b. Explain in detail pre disaster management stages for Tsunami.	7
	c. Explain in detail Financing reliefexpenditure for disaster management.	7
Que.2	a. List out impact of manmadedisasterschemicalandindustrialhazardson living and non-living things.	7
	OR	
	a. List out impact of manmadenuclearhazards andfirehazardson living and non-living things.	7
	b. Explain disaster management strategy in Earthquake conditions	8
Que.3	a. Explain in detail types of costal hazards	6
	b. Explain in detail causality management	4
	c. Explain the steps required in rescue operation in Disaster condition	5

K. E. Society's Rajarambapu Institute of Technology, Sakharale
(An Autonomous Institute)
First Year M. Tech Civil Structure Semester- II
Mid Semester Examination (MSE) March 2015
Name of Course & Code No: Advanced Design of Steel Structures, CST506

mm 607

Day &Date: Wed. 11/03/2015
Time: 2 Hrs 10:30 - 12:30 pm.

Max Marks: 50

Instructions:

i. All questions are compulsory
ii. Figures to the right indicate full marks
iii. Assume suitable data if necessary and mention it clearly
iv. Use of IS: 800-2007, IS: 800-1984, IS-Hand Book or Steel Table, IS: 11384-1985, IS:801-1975 is allowed.

1 a A through type trussed girder bridge consists of two Pratt trusses. It consists of 6 panels of 5 m each so that effective span becomes 30 m. The height of the truss is 6 m. The bridge supports an equivalent uniformly distributed live of 170 kN/m. The dead load transmitted to each truss including self weight is 15 kN/m. Construct ILD for diagonal member meeting at the center and calculate design forces. **10**

b Design a compression member of trussed girder bridge for a maximum compressive force of 1500 kN. The effective length is 6.5 m. **08**

OR

b Design a tension member of trussed girder bridge for a maximum tensile force of 1500 kN. **08**

2 Design a simply supported composite beam to support the slab of a building 10 m × 24 m with beams spaced at 3 m center to center. The thickness of the concrete slab is 125 mm. Consider a floor finish load of 1 kN/m^2 and a live load of 2 kN/m^2. Grade of concrete is M20 and yield strength of the steel is 250 N/mm^2. Assume that the propped method of the construction is used. Also design shear connectors. ***Check for deflection is not expected.*** **16**

3 a Explain the post buckling phenomenon with the help of neat sketch. **06**

b Determine the safe axial load carrying capacity of the square column section 100 mm × 100 mm with thickness of material 1.6 mm. The inner radius of the curve at corners is 1.6 mm. The effective length of the column is 3 m. The yield strength of the steel, f_y = 250 N/mm^2. **10**

OR

b Design a hat section for a simply supported beam of effective span 2.5 m. The superimposed load is 2 kN/m. The yield strength of the steel, f_y = 300 MPa. **10**

Enrollment No	

Q.P. Code	MM608

K.E.Society's

Rajarambapu Institute of Technology, Rajaramnagar.

(An Autonomous Institute)

Mid Semester Examination- March 2015

First Year M. Tech. Civil Construction Management SEMESTER – II

Project Economics & Financial Management (CCM 506)

Day and Date: Wed, 11/3/15

Time: 10:30 – 12:30 pm Max Marks- **50**

Instructions:

1) All questions are compulsory.

2) Assume suitable data where ever necessary.

Q.1 Attempt any two.

a) Describe the different methods used for economic analysis of different alternatives and also suggest under which circumstances which method is used. **(8)**

b) Differentiate between real interest rate, inflation adjusted interest rate and inflation rate and its impact on economic calculations with suitable example. **(8)**

c) A construction company signed a contract for 10 years. The contract will pay the company Rs. 2.5 million now and amount increases by Rs. 250000 each year through 10 years. At an interest rate of 10% per year, what is the present worth of the contract to the company? **(8)**

Q. 2 Attempt any two.

a) Two engineers have presented a proposal for composite materials. Select the better material if the rate of interest is 12% per year and other details are as given below. **(9)**

	Material A	Material B
INITIAL COST	Rs. 40000	Rs. 60000
SALVAGE VALUE	Rs. 10000	Rs. 8000
ANNUAL MAINTENANCE	Rs. 13000	Rs. 5000
LIFE	5 Yrs.	5Yrs.

b) A construction company wants to evaluate two equipments. If rate of interest is 12% per year determine which alternative is economically better. **(9)**

EQUIPMENT	X	Y
INITIAL COST	Rs. 40000	Rs. 75000
SALVAGE VALUE	Rs. 10000	Rs. 7000
ANNUAL MAINTENANCE	Rs. 25000	Rs. 15000
LIFE	4 Yrs.	6Yrs.

c) Calculate the conventional and modified B/C ratio for the cash flow estimates shown at a discount rate of 8% per year. **(9)**

Item	Cash Flow
PW of benefits	Rs. 38,00,000
AW of disbenefits per year	Rs. 65,000
First cost	Rs. 12,00.000
O&M costs per year	Rs. 300,000
LIFE	20 Yrs.

Q.3 Attempt the following.

a) i. Val lok industry manufactures miniature fittings and valves. Over a five years period, the costs associated with one product line were as follows:

Initial investment Rs. 24000, annual cost Rs. 17000 and annual revenue was Rs. 27000. What rate of return did the company make on this product? **(8)**

ii. White Appliances has the following cost and revenue estimates for its new model:

Fixed cost= Rs. 2.58 million per year.
Cost per unit = Rs. 395
Revenue per unit = Rs. 550

Determine the annual quantity needed for break even and estimate the profit at 20% above breakeven. **(8)**

OR

b) The property appraisal district for Marin County has just installed new software to track residential market values for property tax computations. The manager wants to know the total equivalent cost of all future costs incurred when the three county judges agreed to purchase the software. If the new system will be used for the indefinite future, find the equivalent value (a) now and (b) for each year thereafter.

The system has an installed cost of Rs. 1,50,000 and an additional cost of Rs. 50,000 after 10 years. The annual software maintenance contract cost is Rs. 5000 for the first 4 years and Rs. 8000 thereafter. In addition, there is expected to be a recurring major upgrade cost of Rs.15000 every 13 years. Assume that I = 5% per year for county funds. **(16)**

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Rajarambapu Institute of Technology, Rajaramnagar

(An Autonomous Institute)

MM565

MID SEMESTER EXAMINATION, 2015

First Year M. Tech. Civil Engineering SEMESTER-II

Design of Earthquake Resistant Structures

Course Code: CES 504

Day & Date: Tues, 10/3/15

Time : 2Hrs 10:30 – 12:30 pm

Max. Marks : 50

Instructions :

i. All questions are compulsory

ii. Figures to the right indicate full marks

iii. Assume suitable data if necessary and mention it.

1. A) Explain different types of seismic waves with the help of neat sketches. Which of the waves are detrimental to structures and how? 08

   B) What are plate tectonics and how are they related to continental drift and sea floor spreading? 08

   OR

   B) On what is the assignment of an earthquake's magnitude based? Is magnitude the same as intensity? Explain. 08

2. A) Write in brief on "response of structure to earthquake motion 08

   B) Construct design response spectrum. (L5) (CO2) 09

   OR

   B) Write short note on "Tripartite response spectrum" 09

3. A) How do functional requirements affect the building structure from the point of view of earthquake resistance? 08

   B) Discuss how to increase the following for a building in an earthquake-prone area:

   a) Period of vibration b) Energy dissipation capacity c) Ductility 09

Enroll. No | mm 517

KE'S

Rajarambapu Institute of Technology, Rajaramnagar.

(An Autonomous Institute)

Mid Semester Examination (MSE) Year 2014 -15

***F.Y.M. Tech. (Civil -Structure)* Sem. –II**

Course & Code: Finite Element Analysis, CST 502

Day & Date: Mon, 9/3/2015 Time: 2 hrs Max. Marks: 50

Instructions :

01 *Attempt any three questions*

02 *Figures to the right indicate full marks*

03 *Assume suitable data, if required and mention it clearly*

04 *Nonprogrammable Calculator is permitted*

Q.1a) State the advantages and disadvantages of FEM over classical method. 4

b) Determine the nodal displacement, element stresses and support reactions of the axially loaded bar as shown in fig.1. Take E= 200 GPa and P=30 kN 12

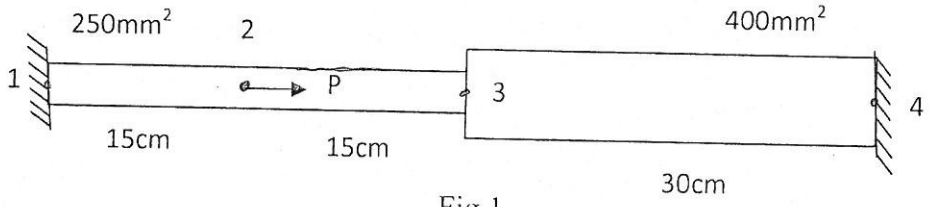

Fig.1

Q.2a) Using variational method derive element stiffness matrix of plane truss element. 10

b) Write procedure to derive stiffness matrix [K] for LST element starting from displacement function. 7

Q.3 Analyse the beam loaded and supported as shown in fig.2. by using finite element method. 17

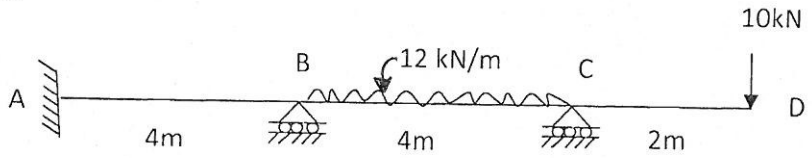

Fig.2.

Q.4. Find the solution of the differential equation 16

$\frac{d^2\emptyset}{dx^2} + \emptyset + x = 0$ for ($0 \le x \le 1$), B C – $\emptyset\,(x = 0) = \emptyset\,(x = 1) = 0$, using

i) The point collocation method at point x= 0.25 and x = 0.5

i) Galerkin method

[Use trial solution $\emptyset x = C_1\, x\,(1- x) + C_2\, x^2\,(1- x)$]

Enroll. No.	

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Rajarambapu Institute of Technology, Rajaramnagar

(An Autonomous Institute)

MM518

MID SEMESTER EXAMINATION, 2015

First Year M. Tech. Construction Management SEMESTER-II

Advanced Construction Techniques and Equipments

Course Code: CCM502

Day & Date: Mon, 9/3/2015

Time : 2Hrs 10:30 am to 12:30 pm

Max. Marks : 50

Instructions :

i. All questions are compulsory

ii. Figures to the right indicate full marks

iii. Assume suitable data if necessary and mention it.

Q.1 a Tabulate various dredging equipments. List and explain factors influencing dredging equipment selection. 06

b *Dredging for deepening the entrance channel and turning circle is proposed by M/S Vishakhapatnam Port Trust. The depth of channel when completed will be 14 meters for allowing bigger draft vessels into the port.*
Tabulate based on the various types of strata's, methods you will propose. Also list equipments and/or method you propose for economical and timely completion of the project. 10

c List various component/tasks involved in the construction of artificial harbor and organize them in sequence of construction. Explain construction methods involved in constructing every component and align appropriate equipments for each task. 10

Q.2 *Solve any three*

a Reason, Why construction dewatering is required? State advantages of dewatering. 08

b Tabulate various ground water control methods, their applications and your remarks. 08

c List methods for design of dewatering system. Describe one in detail. 08

d List methods of trenchless technology and explain one in detail. 08

Enrollment No	

Q.P. Code	MM566

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Rajarambapu Institute of Technology, Rajaramnagar.

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Mid Semester Examination- March 2015

First Year M. Tech. Construction Management SEMESTER – II

Operations Research in Construction (CCM 504)

Day and Date: Tues. 10/3/2015.

Time: 10:30 - 12:30 pm Max Marks- **50**

Instructions:

1) All questions are compulsory.
2) Figures to the right indicate marks.
3) Use of non-programmable calculator is allowed.

Que.1 a) Discuss the various phases in solving an OR problem. 08

b) Discuss the origin and development of OR. 06

OR

b) Discuss the applications of OR. 06

Que.2 a) Wings corner wants to decide how many men's shirts to order for the Diwali season. For a particular type of shirt, Wings must order in lots of 50 shirts. If it orders 50 shirts, cost is Rs.60 per shirt; if it orders 100 shirts cost is Rs. 55 per shirt, and if it orders 150 or more shirts the cost Rs. 50 per shirt. Wings selling price is Rs. 95, but any leftover at the end of the season will be sold at 50 percent discount. It is assumed that demand will be either 50,100,150,200 or 250 shirts and that the corner will not suffer any loss the season at the beginning, with no opportunity for reordering. Wings have estimated the probability of demands as follows. 10

Demand	50	100	150	200	250
Probability	0.15	0.25	0.25	0.20	0.15

Prepare the matrix table to determine the order quantity that will maximize the expected contribution.

Calculate the expected value of perfect information.

b) A newspaper boy buys his newspaper for Rs. 0.20 each and sells it for Rs. 0.40 each. Any paper not sold by the end of the day becomes useless for him. His problem is to determine the optimum number of papers that he should buy. If he stocks more his profits are reduced to extent of cost of unsold newspapers, and if he stocks less, he loses his opportunity to earn more profits. An analysis of past records shows the 08

A.S.Thorbole

probability distribution of demand of newspapers as given in the table below.

Demand	0	10	20	30	40
Probability	0.20	0.25	0.40	0.10	0.05

Interpret the optimum no. of newspapers he should stock.

OR

b) Following payoff table shows details about batching plant size and its state of nature. 08

Size of batching plant	**Good Market(Rs.)**	**Fair Market(Rs.)**	**Poor Market(Rs.)**
Small(S)	50,000	20,000	-10,000
Medium(M)	70,000	35,000	-25,000
Large(L)	90,000	35,000	-45,000
Very Large(VL)	2,00,000	25,000	-1,20,000

Interpret the decision taken under following criterion

a) Maximax Criterion

b) Maximin Criterion

c) Equal likely decision (Laplace)

d) Criterion of realism (Use $\alpha = 0.8$)

Que.3 a) Explain the principle of dominance in game theory and solve the following game. 10

		Player B					
		I	II	III	IV	V	VI
Player A	1	4	2	0	2	1	1
	2	4	3	1	3	2	2
	3	4	3	7	-5	1	2
	4	4	3	4	-1	2	2
	5	4	3	3	-2	2	2

b) Explain the following terms (**Any TWO**) 08

i) Two person zero sum game

ii) Pure strategy in game theory

iii) Value of Game