K.E. Society's
Rajarambapu Institute of Technology, Rajaramnagar
(An Autonomous Institute)
Unit Test No 1 Feb 2018
M Tech Civil (Structural Engineering) SEM – II
Advanced Design of Concrete Structures CES-2021

Day and Date – Thu., 08/02/2018   Maximum marks – 25
Time-   3.45 – 4.45 pm

Instructions –   All questions are compulsory
                 Figures to right indicates full marks

Q 1 a) A simply supported beam PQ of span 7 m, carries a central load of 75 kN
excluding self-weight. It also carries live load of 4 kN/m^2 The section of beam
is 350 x 850 mm. The beam is proposed to be reinforced by 4 No of 25 mm
diameter bars of grade Fe 415 &concrete M 20 with clear cover of 30 mm.Check
the adequacy of steel provided. If not, redesign steel reinforcement. Calculate
surface crack width for moderate conditions and for all situations of crack
formation.   15

OR

a) A continuous beam PQR of each span 8 m, carries a UDL of 55 kN/mincluding
Self-weight. It also carries live load of 4 kN/m^2 The section of beam is 400 x 800
mm. The beam is proposed to be reinforced by 4 No of 32 mm diameter bars of
grade Fe 415 & concrete M 20 with effective cover of 40 mm.Calculate surface
crack width for severe environmental conditions and for all situations of crack
formation.   15

Q 2 Derive the equation for moment in slab by virtual work method using yield line
theory.   10

UT 1202

Unit Test 1, 2018
F. Y. M. Tech Civil- Structure, Semester I
Course: Theory of Elasticity and Plasticity, Course Code: CES2031

Date & Day: 09-02-2018, Friday   Maximum Marks: 25
Time: 11.45am to 12.45pm
Instructions: *1. All questions are compulsory.*
2. Figures to the right indicate full marks.
3. Use of non-programmable calculator is allowed.
4. Assume suitable data if necessary and mention it clearly.
5. Draw neat sketches wherever required.

1 a Given the two-dimensional state of stress $\sigma_x = -4p$, $\sigma_y = p$, $\tau_{xy} = 4p$, determine the stress **04** components $\sigma_{x'}$, $\sigma_{y'}$ and $\tau_{x'y'}$ if the angle between the x and x' axes is 30^0. Show that the given and prime systems satisfy the conditions of invariance.

b Compute the stress invariants, principal stresses, maximum shear stress, octahedral shear stress, **12** hydrostatic stress and deviatoric stresses for following state of stress at a point. Also calculate direction of principal plane on which maximum principal stress is acting.

$$\sigma_{ij} = \begin{bmatrix} 15 & -30 & -45 \\ -30 & 30 & 45 \\ -45 & 45 & -15 \end{bmatrix}$$

2 a At a point in a continuum, the deformations are given as: $u_x=3x^2z$, $u_y=4y^3z$, $u_z=-x^3-y^4$. Determine **03** the strain components.

b The strains are specified as under for a plane strain condition. $\varepsilon_x = 3x^2y$, $\varepsilon_y = 4y^2x$, $\varepsilon_z = y^2$, $\gamma_{xy} = $ **03** $2(yx + x^3)$. State whether they are compatible.

c A strain field is compatible for the following strain components, $\varepsilon_x = C_1z(x^2+y^2)$, $\varepsilon_y = x^2z$ and $\gamma_{xy} = $ **03** $2C_2xyz$, where C_1 and C_2 are constants. Determine C_1 and C_2.

K. E. Society's Rajarambapu Institute of Technology, Sakharale
(An Autonomous Institute)
F. Y. M. Tech Civil Engineering Sem.- II
Unit Test 1   Feb.- 2018
Code No. & Name of Course : CES2081: PRE STRESSED CONCRETE STRUCTURES
(Program Elective III/IV)

Day & Date : Sat., 10/02/2018   Max. Marks : 25
Time   : 11.45 – 12.45 pm
Instructions :   All questions are compulsory
                             Figures to the right indicate full marks
                             Assume suitable data if necessary

Q.1. a) Explain advantages of pre-stressed concrete structures over RCC.   5
                             OR
          Explain any one system of pre-stressing with neat sketch.

Q.2 a) A pre-stressed concrete beam 250mm wide and 375 mm deep is pre-stressed by   10
         concentrically placed tendon. The span of the beam is 8m, and the beam has to support
         an imposed load of 4.25kN/m. Find the pre-stressing force necessary so that tension is
         just avoided at the soffit of the mid-section. If however, the tendon is provided at an
         eccentricity of 65mm, find the pre-stressing force necessary so that tension is just
         avoided at the soffit of the mid-section. Concrete weights 24 kN/m^3.

      b) A pre-tensioned beam 250 mm wide and 360mm deep is pre-stressed by 10wires of   10
          8mm diameter initially stressed to 1000 N/mm^2. The centroid of the steel wires is
          located at 105 mm from the soffit. Determine the maximum stress in concrete
          immediately after transfer allowing elastic shortening of concrete only at the level of
          the centroid of steel.

K. E. Society's

Rajarambapu Institute of Technology, Rajaramnagar

(An Autonomous Institute)

First Year M. Tech. Civil- Structural Engineering SEMESTER – II

CES- 2121: Earthquake Resistant Design of Structures

Day and Date: Fri, 09/02/ 2018

Time: 3.45 – 4.45 pm

Max. Marks- 25

Instructions :

1. Solve all two questions
2. Figures to the right indicates full marks
3. Use of non programmable calculator is allowed
4. IS 1893 2016 is permitted.

1. A) Explain different types of seismic waves with the help of neat sketches. Which of the waves are detrimental to structures? (L3)   C1   06

   B) List recent earthquakes in world (L1). Explain in detail any one recent earthquake in India with various parameters.   (L3)   C1   06

OR

   B) List the different methods used for measurement of magnitude of earthquake (L1)? Explain one method in detail. (L3)   C1   06

2. A) Explain design philosophy of earthquake resistant structures and discuss factors to be considered before and during planning, execution of work and during service life of structure. (L3)   C5   05

   B) Evaluate lateral loads developed due to earthquake for RCC well built 3 storied structures located in Patan Dist. Satara as per revised code. The dead load including self weight of slab, beam, column and wall is 15 kN/m2 and 12kN/m2 for all floors except terrace floor and terrace floor.   The live load is 3kN/m2 for all floors.   The sizes of beams and columns are 230x300mm and   300x 450 mm for all floors respectively. The type of soil is medium clay. The number of spans in x direction is 4nos with spacing of 4.50m. The number of spans in y direction is 3nos with spacing of 4.75m.   Type of concrete and steel are M20 and Fe500.

   Assume suitable data if required. Use equivalent static method or Dynamic method. (L4) C2 08

K.E.Society's
Rajarambapu Institute of Technology, Rajaramnagar
(An Autonomous Institute, affiliated to SUK)
Unit Test-01
First Year M. Tech. Civil Construction Management
SEMESTER- II
Project Formulation & Appraisal (CCME12)

Enroll No

Q.P.Code

UT 1182

Day & Date : Thursday, 08/02/2018

Time : 03.45 pm to 04.45 pm

Max Marks- 25

Instructions: 1) All questions are compulsory

2) Figures to the right indicate marks

3) Assume suitable data whenever necessary.

Q.1 a) Discuss the factors to be considered for identification of new project idea. 09

Q.2 Solve any **TWO**

a) Discuss in detail key steps and their inter-relationship in the market and demand analysis of project idea. 08

b) Discuss the points to be considered for technical analysis of the project 08

c) Discuss classification of projects with suitable example. 08

Enroll No		Q.P. Code
		UT 1235

Day & Date: Friday, 9/2/2018
Time   : 2.30pm to 3.45pm   Max Marks- 25

Instructions: 1.Figures to right indicates full marks.
                    2. Mention your assumptions clearly, if any.

Q.1	**(a)**	Write a detailed note on need and scope for highway projects in India.	**8M**
	(b)	Explain the objectives and need of feasibility study of highway projects.	**7M**
		OR	
	(C)	Explain the components which can be assessed through traffic surveys.	**7M**
Q.2	**(a)**	Explain the steps involved in the process of highway project development in detail.	**10M**
		OR	
	(b)	Write a detailed note on importance of traffic surveys for highway project development.	**10M**

K.E.Society's
Rajarambapu Institute of Technology, Rajaramnagar.
(An Autonomous Institute)
Unit Test 1- February - 2018
First Year M. Tech. Civil Construction Management SEMESTER – I
Project Economics and Financial Management (CCM2012)

Day and Date: Thu., 08/02/2018

Time: 11.45 – 12.45 pm   Max Marks- 25

Instructions:

1) All questions are compulsory.

2) Assume suitable data where ever necessary.

Q.1 Attempt any two

(a) What are the advantages and disadvantages of the following forms of business organizations?
1. Sole Proprietorship 2. Partnership 3. Co operative society 4. Company.   (8) CO1

(b) Describe briefly varies financial intermediaries and its advantages.   (8) CO1

(c) Explain the various asset accounts and liability accounts found on company's balance sheet.
                                                                                      (8) CO1

Q. 2 Attempt the following.

(a) Discuss the important liquidity ratios and turnover ratios.   (5) CO1

(b) Illustrate the advantages and disadvantages of equity shares.   (4) CO2

Rajarambapu Institute of Technology, Rajaramnagar

(An autonomous Institute)

First year M. Tech. Civil, Construction Management Semester I

Resource Management Subject Code: CCM2032

Day & Date: Friday/09/02/2018

Time: 11.45 – 12.45 pm

Max Marks: 25

Instructions:

    i.   All questions are compulsory.

    ii.   Figures to the right indicate marks.

    iii. Use of non-programmable calculators allowed

    iv. Assume suitable data wherever necessary

Q. 1   *ANSWER ANY FIVE*

    a) Define HRM and bring out scope of HRM.   05

    b) Describe HRM process in brief.   05

    c) Explain importance of HRM with Examples.   05

    d) Describe the factors affecting HR Planning.   05

    e) List demand forecasting techniques and explain Ratio trend analysis with example.   05

    f) Explain Job and Job Analysis.   05

    g) Describe the trends influencing HRM.   05