Sample Question Paper

'I' – Scheme

22606

Programme Name : Civil Engineering

Programme Code : CE/ CR/ CS

Semester : Sixth

Course Title : Earthquake Resistant Buildings (ERB)

Marks : 70 **Duration :** 3 Hours

Instructions:

1. All questions are compulsory
2. Illustrate your answers with neat sketches wherever necessary
3. Figures to the right indicate full marks
4. Assume suitable data if necessary
5. Preferably, write the answers in sequential order

Q 1. Attempt any FIVE **(10 Marks)**

a) Define focus and epicenter.

b) State any two types of seismic waves.

c) Define seismic mass and seismic weight.

d) List any four types of earthquakes with respect to magnitudes.

e) Define center of mass and center of stiffness.

f) State any two causes of damages in brick masonry due to earthquake.

g) State any two characteristics of post-earthquake handling techniques of buildings.

Q 2. Attempt any THREE **(12 Marks)**

a) Differentiate between magnitude and intensity of earthquake with minimum four points.

b) Identify any four measures to enhance earthquake resistance of a given building.

c) Explain any four effects of tsunami.

d) Explain any four tectonic plates with the help of sketches.

Q 3. Attempt any THREE **(12 Marks)**

a) Explain the step by step procedure for calculating design seismic base shear.

b) Illustrate any two failure patterns in brick masonry and explain any one.

c) State any four provisions of IS:1893 regarding earthquake resistant structures.

d) Compare Koyna and Killari earthquakes with any two characteristics for each.

Q 4. Attempt any THREE **(12 Marks)**

a) State any four principles for design of earthquake resistant building.

b) State any four assumptions in design of earthquake resistant structures.

c) Draw typical sketches of column and beam provided with ductile detailing.

d) Suggest action plan required to handle the probable earthquake in Nagpur area with minimum four points.

e) List any four provisions for ductile detailing as per IS:13920.

Q 5. Attempt any TWO **(12 Marks)**

a) Identify any six effects of earthquake.

b) Identify any three probable characteristics of ground shaking and ground failures when Earthquake magnitude is 6 on Richter's scale.

c) Suggest any six criterions to be considered in selecting site for earthquake resistant buildings against stability of slopes .

Q 6. Attempt any TWO **(12 Marks)**

a) Identify any six probable damages to RCC buildings due to earthquake.

b) Draw sketches of any three damages in stone masonry structures due to earthquake.

c) Suggest any six precautions to be taken with respect to design and construction in the earthquake.

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Sample Test Paper -I

'I' - Scheme

Programme Name : Civil Engineering

Programme Code : CE/CS/CR

Course Name : Earthquake Resistant Buildings (ERB)

Semester : Sixth

Marks : 20

22606

Duration : 1 Hour

Sample Question Paper Profile for CO Attainment is shown below.

Note: Que. 1 – Answer any 4 out of 6 questions.

Que. 2 – Answer any 3 out of 5 questions.

Instructions:

1. All questions are compulsory
2. Illustrate your answers with neat sketches wherever necessary
3. Figures to the right indicate full marks
4. Assume suitable data if necessary
5. Preferably, write the answers in sequential order

Q 1. Attempt any four . **(8 Marks)**

a) Define earthquake .
b) Define Focus and Epicenter.
c) Explain magnitude and intensity of earthquake.
d) Classify seismic waves.
e) State Seismic zones of India
f) Differentiate between Centre of mass and Centre of stiffness..

Q 2. Attempt any three. **(12Marks)**

a) Enlist different causes of earthquake.
b) List different tectonic plates responsible for earthquake..
c) State any four effects of tsunami.
d) State planning and design aspects of building for earthquake resistant.
e) A building is to be constructed along slope of hilly area. What precautions will have to be exercised during its planning?.

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Sample Test Paper -II

'I' - Scheme

Programme Name : Civil Engineering

Programme Code : CE/CS/CR

Course Name : Earthquake Resistant Buildings (ERB)

Semester : Sixth

Marks : 20

22606

Duration : 1 Hour

Sample Question Paper Profile for CO Attainment is shown below.

Note: Que. 1 – Answer any 4 out of 6 questions.

Que. 2 – Answer any 3 out of 5 questions.

Instructions:

1. All questions are compulsory.
2. Illustrate your answers with neat sketches wherever necessary.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.

Q 1. Attempt any four. **(08 Marks)**

a) Compare ductile and brittle performance of buildings

b) State advantages and limitations of using stone masonry construction as compared to brick masonry.

c) Write any two requirements specified by IS: 13920 to prevent brittle failure of RCC beams and columns.

d) Draw neat sketch of strengthening of beam-column joint.

e) State any four damages that can be occurred in masonry building due to earthquake.

f) Suggest the action plan required for building to resist the major earthquake shocks.

Q 2. Attempt any three **(12 Marks)**

a) List the causes of damages to stone masonry due to earthquake. .

b) Identify the gaps in the design and construction of the given buildings by comparing damages before and after earthquake.

c) List any four provisions of IS: 1893 regarding earthquake resistant buildings.

d) State the step by step procedure to calculate the base shear of a building frame.

e) State any four salient points with respect to Killari earthquake.