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Following Paper ID and Roll No. to be filled in your Answer Book.

PAPER ID : 23169 Roll No. | | | | | | | | | | |

B. Tech. Examination 2021-22

(Even Semester)

EARTHQUAKE RESISTANT DESIGN

Time : Three Hours] *[Maximum Marks : 60*

Note :– (i) Attempt all questions.

(ii) Assume any missing data suitably.

SECTION – A

1. Attempt all parts of the following : 8×1=8

(a) What is seismology.

(b) How the magnitude of earthquake is measured?

(c) Define liquefaction.

(d) Name various seismic bands.

(e) How will you define Richter scale?

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(f) What is focus and epicenter of an earthquake?

(g) How does the human activities induce earthquake?

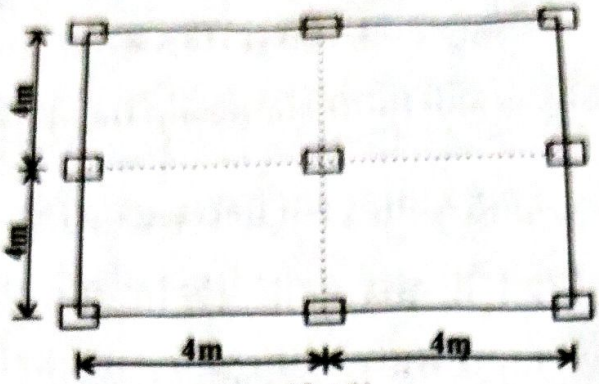
(h) Explain Rayleigh waves.

SECTION – B

2. Attempt any two parts of the following : 2×6=12

(a) Write short note on seismic tectonics of India. What are the modifications of earthquake due to nature of soil?

(b) The plan and elevations of a three storied RCC school building shown in figure. The building is located in seismic zone V, the type of soil encountered is medium stiff and it is proposed to design the building with a special moment resisting frame. The intensity of dead load is 10 kN/m^2 and the floor load of 2.75 kN/m^2 and floor to floor height is 3500 mm. Determine the design seismic loads on structure by seismic analysis :



PLAN

(c) What is a non-structure? How does it affect the overall behaviour of a building?

(d) What are the requirement of ductility in ERD?

SECTION – C

Note :– Attempt all questions. Attempt any two parts from each questions. 5×8=40

3. (a) Describe the internal structure of earth with diagram.

(b) What are seismic waves? Write its classification.

(c) Distinguish between body waves and surface waves.

4. (a) Write a short note on D'Alembert's principle.

(b) Define degree of freedom and derive an expressions for free vibrations of undumped systems having single degree of freedom.

(c) What are the characteristics of ground motion? Write the various effect of site on earth quake.

5. (a) Explain the following terms :

(i) Storey drift

(ii) Soft storey

(b) What is the static and dynamic analysis of structure?

(c) State the assumptions made in the analysis of earthquake resistant design of buildings.

6. (a) Explain the following :

(i) Response spectrum method

(ii) Time history method

(b) What is the difference between magnitude and intensity?

(c) What are the important issues in modeling of structure?

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