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# The Assam Royal Global University, Guwahati

Royal School of Architecture

B.Arch., 7<sup>th</sup> Semester

Semester End Examination, January 2023

Course Title: Advanced Structures

Course Code: ARC132C704

Time: 3 Hours

Maximum Marks: 50

**Note: Attempt all questions as per instructions given.**

*The figures in the right-hand margin indicate marks.*

*Use of Calculators are allowed*

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## Section – A

1. Attempt **all** questions. (Maximum word limit 50) 2 x 8
- What do you mean by focus and epicenter with reference to earthquake?
  - What do you mean by Pre - tensioning of concrete?
  - Explain the use of domes in architecture.
  - Define Shells in architecture.
  - Write a note on Love waves.
  - What is Flood? Explain.
  - “It is not advisable to select a filled-up soil site for building construction.” Why?
  - Explain the importance of using an appropriate proportion in building forms.

## Section – B

2. Attempt **any one** of the following: 9 x 1
- A prestressed member having  $b \times d$  as  $650 \times 250$  mm. It is prestressed with  $1500 \text{ mm}^2$  of high tensile steel wire with a prestress of  $1100 \text{ N/mm}^2$ . The member has a span of 7.5 m and is also loaded with a UDL of 45 KN/m. The distance of tendons from the neutral axis is 220 mm. Calculate top stress and bottom stress for the member.
  - A prestressed concrete beam 200 mm wide and 300 mm deep is used over an effective span of 7 m to support an imposed load of 3 KN/m. Unit weight of concrete is  $24 \text{ KN/m}^3$ . Find the concentric prestressing force necessary for zero fiber stress at the soffit of the beam when it is fully loaded.
3. Attempt **any two** of the following: 4 x 2
- Mention the advantages and disadvantages of pneumatic structures.
  - Write a note on Landslides and its affects.
  - Explain briefly about the surface waves generated in an earthquake.

4. Attempt **any two** of the following:

**4 x 2**

- a. How earthquake occurs? Explain its causes.
- b. How cyclones are generated? Explain with detailed diagram.
- c. Explain briefly about the earthquake occurrences in the world..

5. Attempt **any two** of the following:

**4.5 x 2**

- a. Write a short note on redundancy.
- b. Elaborate the importance of Scale in building forms.
- c. What do you mean by setbacks in architecture?