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**FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA**  
**SCHOOL OF ENVIRONMENTAL TECHNOLOGY**  
**DEPARTMENT OF ARCHITECTURE**

**FIRST SEMESTER EXAMINATION, 2017/2018 ACADEMIC SESSION**

- LEVEL: 500 Level  
COURSE CODE: ARC 513  
COURSE TITLE: Construction Technology V  
TIME ALLOWED: Three (3) Hours  
INSTRUCTION: (a) Answer any five (5) questions  
(b) All questions carry equal marks  
© All sketches and illustrations must be in pencil and neatly drawn.

The choice of the type of roof for building should be made after paying due consideration to the climate conditions as well as the availability of selected materials at the location. There are five (5) principles that should guide the planning and design of roofs and roof covering in a tropical climate like Nigeria. Enumerate them and support your enumeration with an illustrated example.

Discuss the principle of Folded Plates. There are two (2) methods of protecting folds against flattening and buckling. Enumerate them and support your enumeration with illustrated examples (12) mark

Choose Any One Type of Shell Structure that has a span ranging from 30 – 40 meters and compute the thickness and ratio between (t:l). Also state the name of the structure and its location (12 marks).

Classify pitched roofs and discuss three (3) types and their coverings that are common in Nigeria (12 marks).

Frames are representative of cost-effective and efficient constructional technological solution for the roofing of buildings and other structures whether they are in concrete, steel type (12 marks)

6. Trusses consist of an assembly of rigid but elastic members jointed in the form of triangles to act as a beam. Neatly illustrate trusses for:

- (a) Span of 12 meters (40 feet)
- (b) Span of 18 meters (60 feet) (12 marks)

7. In plane structural system, floors slabs are the very important stiffening elements joining vertical assembly as walls into one entity. Neatly sketch any type of floor referring to masonry walls system (12 marks).

8. Elucidate on the essential constructional technological and structural features of big blocks and panel structures. Discuss three of their advantages and disadvantages respectively (12 marks).