

Sessional Examination  
2021.

Class: Bsc 5th semester (Hons).  
(CBCS)

Sub: Physics (Hons): Paper: PHY-HE-5056,  
(NucL. & Particle physics)

Marks: 20 Time: 1 hour.

Answer the following:— (Answer any five)

- 1 (a) Write the empirical formula for nuclear radius. 1.
- (b) What is the shape of a nucleus? 1.
- (c) Write any one characteristic of nuclear forces. 1.
- (d) Define mass defect. 1.
- (e) Give one aspect of liquid drop model of the nucleus. 1.
- (f) Why  ${}^8_4\text{Be}$  does not exist in nature when it satisfies the requirement that even-even nuclei are most stable? 1.

2 Answer any three questions from the following:—

$3 \times 5 = 15$ .

- (a) Write briefly the nature and properties of nuclear forces.
- (b) Draw a neat diagram between binding energy per nucleon and mass number and explain how this curve is useful to <sup>verify the</sup> energy production through nuclear fission.
- (c) Write some evidences in favour of liquid properties of nucleus.
- (d) Write a note on nuclear shell model.