NUCLEAR PHYSICS

Time : Three Hours   Maximum : 75 Marks

SECTION-A *(20* Marks)
Answer ALL questions
ALL questions earn' EQUAL marks   (1 0 x 2 = 20)

1   Define binding energy of a nucleus.
2   What is meant by packing fraction?
3   State Geiger nuttal law.
4   Define half life period.
5   Give the advantages of scientilation counter.
6   Write principle of a Wilson cloud chamber.
7   What is the principle used in "Atom bomb"?
8   Define nuclear fusion.
9   Write short note on primary cosmic rays.
10   What is meant by pair production?

SECTION - B (25 Marks!
Answer ALL Questions
ALL Questions Carry EQUAL Marks (5 x 5 = 25)

1 1 a Obtain Weizacker's semi-empirical mass formula.
                          OR
    b Explain the properties of nuclear forces.

12 a Describe the law^r of radio-active disintearation.
                          OR
    b Write a note on neutrino theory of beta - decay.

13 a Explain the working of GM - Counter.
                          OR
    b Deduce the working of electron - synchrotron.

14 a Write a note on radio isotope and its uses.
                          OR
    b Discuss the principle and working of a hydrogen bomb.

15 a Write a note on cosmic ray showers.
                          OR
    b Briefly explain elementary particles.

SECTION - C (30 Marks!
Answer any THREE Questions
ALL Questions Carry EQUAL Marks (3 x 1 0 = 30)

16   Explain liquid drop model. Give its merits and demerits.

17   Describe the range of alpha particles and its experimental method with neat diagram.

18   Explain in detail the working of a bubble chamber with neat diagram. What are its advantages?

19   Describe the principle construction and applications of nuclear reactor.

20   Write a short note on (i) Cosmic rays - Primary & secondary
      (ii) Latitude effect (iii) Altitude effect & east west effect. (3 + 3 + 4)