6. (*a*) Explain the concept of I-spin and U-spin and discuss the Quark model of the nucleus.

Or

(*b*) What do you mean by Eight fold way ? Explain Discuss Baryon Decouplets.

M.Sc.—Phy-IVS (CC-402)

2018

Time : 3 hours

Full Marks : 80

Answer from **both** the Sections as per direction

The figures in the right-hand margin indicate marks

Candidates are required to answer in their own words as far as practicable

(ELEMENTARY PARTICLE PHYSICS)

SECTION – A

1. Answer any *four* of the following : 4 × 4

(*a*) Give the classification of Mesons.

(*b*) Explain color quantum number.

(*c*) Explain conservation laws in relation to particle reactions.

(*d*) Explain the consequences of CPT theorem.

(*e*) Explain Time reversed in Field theory.

(*f*) Explain SU(2) Symmetrics.

Or

2. Answer *all* questions from the following : 2 × 8

(*a*) Define leption number.

(*b*) What is color quantum number ?

(*c*) Define nuclear forces.

(*d*) What is strange particle ?

(*e*) What do you mean by deacrete symmetry ?

(*f*) Define change conjugation.

(*g*) Define Time reversal.

(*h*) Give concept of V-spin.

SECTION – B

Answer **all** questions : 16 × 4

3. (*a*) Explain the History of elementary particles and discuss the interactions among the leptions and Quarks.

Or

(*b*) Give the classification of Baryons and Mesons and discuss the strangeness quantum number.

4. (*a*) Explain the change independence of nuclear forces and discuss the Test for isospin conservation.

Or

(*b*) Explain the Associated production of strange particles and obtain Gell-Mann Nishijima scheme.

5. (*a*) Define parity and discuss in detail the parity in quantum mechanics and field theories.

Or

(*b*) Explain Test of Time reversal change conjugation and discuss the change conjugation in Field theories.