

Roll No.

Total No. of Pages : 02

Total No. of Questions : 07

B.Sc (CS) (2013 Batch) (Sem.-6)

**PARTICLE PHYSICS**

Subject Code : BCS-604

Paper ID : [72784]

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains SIX questions carrying TEN marks each and students have to attempt any FOUR questions.

**SECTION-A**

**1. Answer briefly :**

- a) Explain the term 'range' of a charged particle.
- b) Explain the process of Bremsstrahlung.
- c) Explain the term pair production.
- d) Can a cyclotron be used to accelerate electrons?
- e) Why is an ionization chamber less sensitive to  $\beta$ -particle?
- f) What are leptons? Name any three leptons.
- g) What do you understand by iso-spin?
- h) What is Gell Mann Nishijima scheme?
- i) Explain the concept of charge conjugation.
- j) What do you mean by colour of a quark? What is its importance?

### SECTION-B

2. Discuss the motion of high energy electrons through a medium. How does a fast electron lose energy on its passage through matter?
3. Define linear absorption coefficient and mass absorption coefficient in relation to interaction of radiation with matter. What is half thickness and radiation length?
4. What is synchrotron? Briefly describe its principle, construction and working of synchrotron.
5. Discuss in detail the construction and working of a G.M. counter. What is dead time and recovery time?
6. State and explain the conservation laws which govern the elementary particle reactions and decay.
7. What are quarks? Outline the basic assumptions and properties of quarks. Give the quark model of (i) mesons (ii) proton and anti-proton (iii) neutron and anti-neutron.

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