



### SECTION-B

2. Derive an expression for the electric quadrupole moment of a nucleus.
3. Write a short note on Geiger Nuttall law and discuss its importance.
4. State the advantages and disadvantages of a G.M. counter. G.M. counter cannot detect neutrons. Why?
5. How is the life time determined for muon?
6. Discuss the conservation laws which govern the elementary particle reactions and decay.

### SECTION-C

7. What are magic number nuclei? How does the shell model explain the existence of magic numbers 2, 8, 20 and 28 only?
8. Show that the law of conservation of energy and momentum are not obeyed in beta decay. Show how neutrino hypothesis explains this discrepancy.
9. Discuss the principle, construction and operation of a scintillation radiation counter. Briefly explain why a scintillation counter is superior to a G.M. counter.

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