

V.P. & R.P.T.P. SCIENCE COLLEGE  
VALLABH VIDYANAGAR



Second Semester B.Sc. Internal Examination

Subject: Physics

Course: USO2CPHY02

Title: Electronics, Nuclear and Modern Physics

Date: 11-03-2017, Saturday Time: 1:30pm to 2:30pm

Total Marks:25

**Q.-1 Multiple Choice Questions (Each of One Mark) (3)**

- 1 The bridge rectifier circuit uses ..... diodes.  
(a) 2 (b) 4 (c) 1 (d) 3
- 2 In a PNP transistor, base is made up of ..... material.  
(a) P type (b) N type (c) metal (d) insulator.
- 3 The nuclear radius is proportional to ..... power of mass number A.  
(a)  $1/2$  (b)  $2/3$  (c)  $1/3$  (d) 3

**Q-2 Answer any Two questions in short (Each of two Mark) (4)**

- 1 Draw the circuit of a Half Wave Rectifier and label its components.
- 2 What are LEDs? State their applications.
- 3 State any two types of nuclear transformation decay processes with suitable example.

**Q-3 What is a rectifier? Explain construction and working of a centre-tap rectifier circuit. (6)**

**OR**

**Q-3 What is a filter circuit? Why it is required? Explain action of choke input LC filter circuit. (6)**

**Q-4 What is a zener diode? Draw its circuit symbol. Discuss its application in voltage regulator circuit. (6)**

**OR**

**Q-4 Draw the necessary circuit to determine characteristics of a PNP transistor in CE mode and explain its output characteristics. (6)**

**Q-5 With proper illustration explain binding energy and binding energy per nucleon. Draw the curve for mass number against binding energy per nucleon and state any two features of it. (6)**

**OR**

**Q-5 Discuss Liquid Drop Model of a nucleus. (6)**