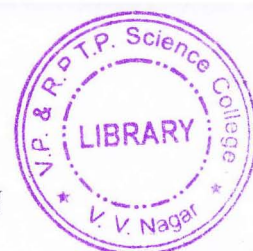


**V.P. & R.P.T.P. SCIENCE COLLEGE**  
**VALLABH VIDYANAGAR**  
**2<sup>nd</sup> SEMESTER B. Sc. INTERNAL EXAMINATION**



Subject: **Physics** Title: **Electronics, Nuclear & Modern Physics** Course: **USO2CPHY02**

Date: **17-03-2015** Tuesday Time: **12: 30 pm to 01:30 pm**

Marks: **25**

**Q.1 Answer the following MCQs with the correct option. Each of 1 Mark (3)**

- (1) Which rectifier uses four diodes?  
(a) half-wave (b) centre-tap (c) bridge (d) All of these.
- (2) To obtain variable capacitance, ..... diode is used.  
(a) power (b) varactor (c) zener (d) LED
- (3) The average or dc value of the rectified output voltage ( $V_{dc}$ ) of a Half-wave rectifier is nearly equal to.....  
(a)  $V_m/\pi$  (b)  $V_m/2\pi$  (c)  $2V_m/\pi$  (d)  $V_m/2$

**Q.2 Answer any TWO of the following questions in short. Each of 2 Mark. (4)**

- (1) What is a rectifier circuit? Why we need it?
- (2) Define ripple factor and rectification efficiency of a rectifier.
- (3) What are power diodes? State their characteristics and applications.
- (4) For a transistor having  $\alpha_{dc}$  equal to 0.98, determine the collector current ( $I_C$ ) if the emitter current ( $I_E$ ) is of 10 mA.

**Q.3 (a) What is a half wave rectifier? Explain its construction, working and PIV. (5)**

**(b) Explain working of a series inductor filter with necessary diagram. (4)**

**OR**

**Q.3 (a) Explain construction and working of a full wave bridge rectifier and state its PIV. Determine values of ripple factor and rectification efficiency of a full wave rectifier. (9)**

**Q.4 (a) State features of a zener diode and explain its use as a voltage regulator. (5)**

**(b) Write a note on light emitting diodes (LEDs). (4)**

**OR**

**Q.4 (a) Draw the circuit to determine static characteristics of PNP transistor in CE mode. Discuss its input and output characteristics and their importance. (9)**

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