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

### First Semester B.Sc. Internal Examination

Subject: Physics                                 Course: **USO1CPHY02**

Date: **09 -10-2017, Monday**     Time: **1:30 to 2:30 pm**        **Total Marks:25**

---

**Q.1**    **Answer the following questions with the correct choice. (Each of 1 Mark.)**    (3)

(1) In a network, the point where three or more circuit elements are connected is known as .......... point.

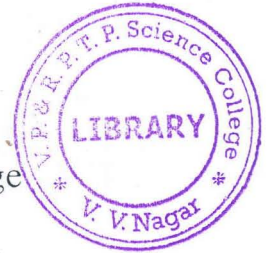     (a) junction        (b) node        (c) branch      (d) mesh.

(2) Which of these bridges is used to determine capacitance?

     (a) Kelvin bridge     (b) Schering bridge    (c) Wien bridge   (d) Hay bridge

(3) The resolving power of the prism depends

     (a) only on base thickness (t)         (b) only on refractive index ($\mu$)

     (c) only on wavelength of light ($\lambda$)      (d) on product of (t) and (d$\mu$/d$\lambda$)

**Q.2**    **Answer any TWO. (Each of 2 Mark.)**                      (4)

(1) With a suitable network define: (i) node point and (ii) branch.

(2) Draw the circuit of ac bridge and state expressions for its balancing conditions.

(3) There are total 15,000 lines (i.e. N) ruled on a plane transmission grating. Determine its resolving power in the third order (i.e. n = 2).

**Q.3**   With a suitable diagram and example, explain mesh current analysis method for two mesh network.      (6)

<div align="center">OR</div>

**Q.3**   With a suitable diagram explain node pair i.e. nodal method for analysis of a three node-pair network.      (6)

**Q.4**   With necessary diagram explain construction and working of Hay bridge. Mention its features.      (6)

<div align="center">OR</div>

**Q.4**   What is a Schering bridge? With necessary diagram explain its working and discuss its features.      (6)

**Q.5**   Explain construction and working of a Michelson interferometer.      (6)

<div align="center">OR</div>

**Q.5**   Define resolving power of a prism and derive expression for it.      (6)

<div align="center">-------------xxx------------</div>