

No of printed pages: 01

Seat No.:



A Charutar Vidya Mandal's Institution
V.P. & R.P.T.P. SCIENCE COLLEGE
(AUTONOMOUS) (Grant-in-Aid)
Affiliated to Sardar Patel University
VALLABH VIDYANAGAR-388120



Bachelor of Science (Semester II) Internal Examination - 2025
US02MIPHY01: Network Analysis, AC Bridges and Basic Electronics

Date: 05-03-2025, Wednesday

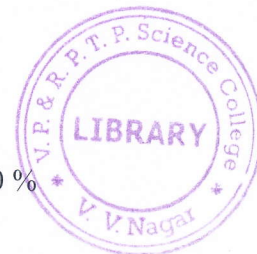
Time: 12:45 pm to 01:45 pm

Total marks : 20

Note: Figures to the right indicate marks of the question.

Q-1 Write the most appropriate answer from the following multiple-choice questions. [06]

- 1 A point in a network where three circuit components are jointed together is called as _____.
(a) Node (b) Junction
(c) Branch (d) Tree
- 2 The number of independent mesh equations required to analyze a network using mesh current method is equal to _____.
(a) $j - 1$ (b) $j + 1$ (c) $b - (j - 1)$ (d) $b + (j - 1)$
- 3 Wein bridge is used to determine the unknown _____.
(a) Self-Inductance (b) Capacitance
(c) Resistance (d) Frequency
- 4 The rectification efficiency of a half - wave rectifier is _____.
(a) 20 % (b) 40.6 % (c) 81.2 % (d) 100 %
- 5 The circuit which smooths out the pulsating dc is called as _____.
(a) Rectifier (b) Filter
(c) Transformer (d) Capacitor
- 6 The average value of the rectified output voltage of a full-wave rectifier is approximately _____.
(a) V_m (b) $2 V_m$
(c) $\frac{V_m}{\pi}$ (d) $\frac{2 V_m}{\pi}$



Q-2 Explain the nodal method of network analysis for a one-node-pair network. [07]

OR

Q-2 Explain the construction and working of a Schering bridge. Derive an expression for the capacitance of the capacitor using the bridge. [07]

Q-3 Explain the construction and working of a half-wave rectifier. [07]

OR

Q-3 Write short notes on (i) Signal Diode and (ii) Varactor Diode. [07]