

**M.E. ELECTRONICS AND TELE-COMMUNICATION ENGINEERING FIRST YEAR SECOND
SEMESTER – 2025
SOFTWARE DEFINED NETWORKING**

Time: Three Hours

Full Marks: 100

Answer any five questions

All the sub-parts of a question should be written together

1. a) Discuss the limitations of traditional switch architecture and how SDN addresses them.
b) Explain the separation of the control plane and data plane in SDN. 10 * 2 = 20
 2. a) Describe the three main planes in SDN: Data, Control, and Management.
b) Differentiate between Northbound and Southbound APIs with examples. 10 * 2 = 20
 3. a) Explain the OpenFlow switch model and the role of the flow table.
b) Illustrate the secure communication mechanism between controller and switch. 10 * 2 = 20
 4. a) Discuss how OpenFlow supports multiple flow tables and group tables.
b) Write a brief note on per-flow meters and their application in enforcing QoS. 10 * 2 = 20
 5. a) What are the responsibilities of an SDN controller?
b) Briefly discuss controller-switch interaction using an example flow setup. 10 * 2 = 20
 6. a) Compare SDN via APIs and SDN via hypervisor-based overlays.
b) What is Network Functions Virtualization (NFV), and how is it related to SDN? 10 * 2 = 20
 7. Short Notes (answer any four): 5 * 4 = 20
 - a) Packet matching and action in OpenFlow
 - b) Control plane vs Management plane
 - c) Deep Packet Inspection limitations in OpenFlow
 - d) REST API in SDN
 - e) OpenDaylight as a controller platform
 - f) Stateful flow awareness
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