

**CMR ENGINEERING COLLEGE: : HYDERABAD**  
**UGC AUTONOMOUS**

**IV-B.TECH-I-Semester End Examinations (Supply) - December- 2025**  
**DATA COMMUNICATIONS AND NETWORKS**  
**(ECE)**

**[Time: 3 Hours]**

**[Max. Marks: 70]**

**Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 20 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

**PART-A**

**(20 Marks)**

1. a)	List the OSI Model Layers.	[2M]
b)	Explain the network characteristics.	[2M]
c)	Explain the services provided by the Link Layer.	[2M]
d)	List out the data link layer protocols.	[2M]
e)	Explain the difference between routing and forwarding.	[2M]
f)	Explain the switching.	[2M]
g)	List out the Transport layer protocols.	[2M]
h)	Why did we need to introduce sequence numbers?	[2M]
i)	Define the HTTP protocol.	[2M]
j)	Define SNMP protocol.	[2M]

**PART-B**

**(50 Marks)**

2. With a neat diagram explain the OSI reference model in detail? Explain the functions performed in each layer [10M]

**OR**

3. Explain the IEEE 802.11 Architecture [10M]

4. Explain the HDLC protocol [10M]

**OR**

5. Explain the ALOHA protocol [10M]

6. Explain about forwarding and Addressing in the Internet ? [10M]

**OR**

7. Define Routing and Explain the architecture of router with a neat diagram. Give some examples of routing algorithms. [10M]

8. Discuss transport-layer Multiplexing and Demultiplexing process. [10M]

**OR**

9. a. Compare UDP and TCP protocol [5M]  
b. Explain the basic principle of reliable data transfer [5M]

10. What is an Electronic mail? Explain the two scenarios of architecture of E-Mail [10M]

**OR**

11. What is the use of DNS? Explain how it works? [10M]

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