**DV162\_9\_PAS On Introduction to IP**

**Possible Answer Sheet**

1. What is Internet Protocol (IP)?  
Ans: Internet Protocol (IP) is a fundamental communication protocol that provides the foundation for transmitting the data packets across networks.

2. What is the meaning of Encapsulation?  
Ans: The process of adding the headers and trailers to the data packets as they pass through the network. These adding of headers and trailers to data packets make sure to reach their intended destination.

3. What does TCP stand for?  
Ans: Transmission Control Protocol

4. How does TCP (Transmission Control Protocol) work?  
Ans: First TCP Establishes a connection between sender and receiver. Then TCP facilitates the transmission of data between sender and receiver. TCP ensures that all data is transmitted correctly, correct order and efficiently even in the presence of network errors.

5. What does UDP stand for?  
Ans: User Datagram Protocol

6. How does UDP (User Datagram Protocol) work?  
Ans: UDP allows applications to send data packets (datagrams), to a destination without establishing a connection beforehand. UDP protocol is faster and more lightweight than TCP since there is no need for acknowledgement and retransmission mechanisms.

7. What is OSI Layer 4?  
Ans: OSI Layer-4 is Transport Layer.

8. What does OSI Layer 4 - Transport Layer do?  
Ans: Transport Layer is responsible for providing end-to-end communication between the source and destination. Transport Layer Breaks Data into Datagrams before transmission and reassembles them in original data at the receiving end. This layer fixes the retransmission, and acknowledgment mechanisms to handle packet loss, errors, and congestion on the network. Transport Layer may establish the connection or terminate the connection between sender and receiver as it depends on TCP or UDP protocols.   
Also fix the Flow control of the data to prevent congestion and overload.  
Transport Layer assigns identifiers, such as port numbers, to different applications or services running on the source and destination using multiplexing and demultiplexing techniques.

9. What is Multiplexing?  
Ans: The technique in which we transmit multiple signals or Data using a single source or medium is called Multiplexing.

10. What is a port?  
Ans: The Port is a communication end-point used to identify specific service or application running on a server or on a network device.

11. What is a Port Number?  
Ans: A port number is a numerical identifier that is used to distinguish between different communication endpoints or services running on a computer or networked device.

12. What does IPv4 Socket consist of?  
Ans: IPv4 consist of two main components  
 1. IP Address 2. Port Number

13. What are Non-Ephemeral Ports?  
Ans:Non-temporary ports that tend to be the same every time we access the device are called Non-Ephemeral Ports. Port 80 and Port 443 are commonly associated with http and https respectively.  
Ports 0-1023 are commonly Non-Ephemeral.

14. What are Ephemeral Ports?  
Ans: Temporary Ports that mostly tend to be changed every time we access the device are called Ephemeral Ports. Port 1024-Port 65535 are Ephemeral Ports.

15. What is Data Transport Analogy?  
Ans: The data transport analogy is a conceptual framework used to explain the flow of data through a network by drawing parallels with physical transportation systems. In which Truck is IP, Boxes are of TCP/UDP, Inside Boxes are Application Information etc.

16. What is Network Topology?  
Ans: Network Topology refers to the arrangement of interconnected devices in networks. It defines how devices are connected to each other and how data flows between them.