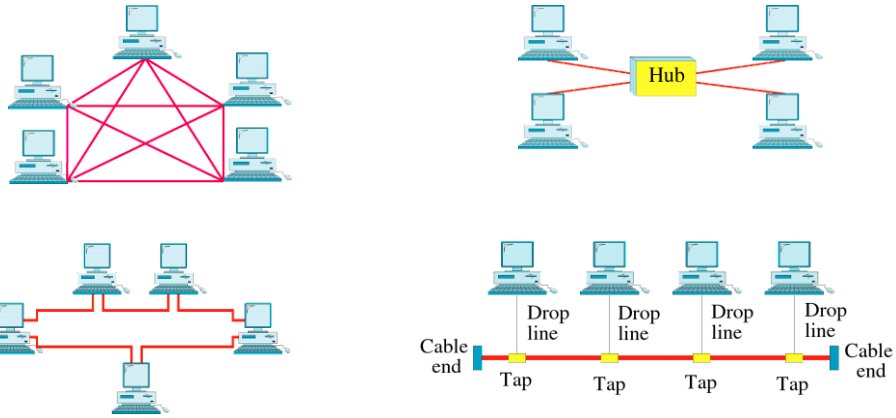
Subject :	**SEHH2238 : Computer Networking**
Lab/Tutorial :	**Session 1 : Basic (Solution)**

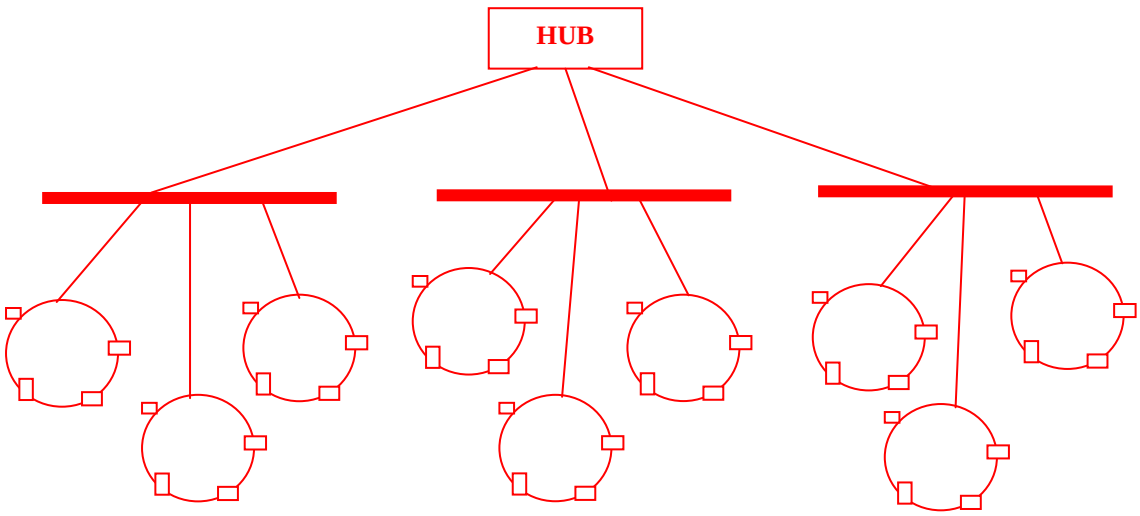
1) Topology

1) For *n* devices in a network, what is the number of cable links required for:

No. of devices		*Mesh*	*Ring*	*Bus*	*Star*
9	***Total No. of Cables***	**36**	**9**	**10**	**9**
	No. of Ports per device	**8**	**2**	**1**	**1 (9 for Hub)**
N	***Total No. of Cables***	**N(N-1)/2**	**N**	**N+1 (backbone)**	**N**
	No. of Ports per device	**N-1**	**2**	**1**	**1 (N for hub)**



2) Draw a hybrid topology with a star backbone connecting three bus backbones. Each bus backbone connects three ring networks.



2) Transmission Mode / Data Flow

1) Communication between a computer and a keyboard involves __*simplex*__ transmission.

2) A television broadcast is an example of __*simplex*__ transmission.

3) The _____ is the physical path over which a message travels.
   A) Protocol *B) Medium* C) Signal D) All the above

4) The information to be communicated in a data communications system is the _____.
   A) Medium B) Protocol *C) Message* D) Transmission

5) Network performance is good when throughput is _____ and delay is _____.
   A) high, high *B) high, low* C) low, high D) low, low

6) _____ is the protocol suite for the current Internet.
   A) TCP/IP B) OSI C) UNIX D) LAN

7) In TCP/IP protocol suite, _____ layer provides reliable end-to-end connection.
   A) application *B) transport* C) network D) data link

Additional Questions

1) A color image uses 16 bits to represent a pixel. What is the maximum number of different colors that can be represented? What is the maximum number of characters that can be represented by Unicode?

   Each pixel has 16 bits.
   No. of possibilities $= 2^{16} = 65536$
   Max.no. of colors = 65536

   As Unicode is also 16 bits, the max. no. of characters can be represented is also 65536.

2) A pixel can have 1000 colours. How many bits are required to represent this pixel?

   No. of bits $=$ *"Smallest integer* $\geq \log_2 1000$*"*
   $= \lceil \log_2 1000 \rceil$
   $= \lceil 9.97 \rceil$
   $= 10$