Due 2 pm, 06 Feb.

1(a) List the seven network layers of the OSI model and briefly (one line each) explain their functions.

(b) What are the “missing” layers in the TCP/IP network model? How are the functions of the two layers handled in the TCP/IP model?

2 (a) Briefly explain the function of the following socket system calls: (7 pts)
   1. bind()
   2. connect()
   3. shutdown()
   4. listen()
   5. recvfrom()
   6. sendto()
   7. accept()

(b) Describe the purpose of the following network related functions: (4 points)
   1. getsockname()
   2. gethostname()
   3. gethostbyname()
   4. htonl()

3. What the achievable bit-rate for a channel with bandwidth of 20,000 Hz, if the SNR is 30 dB?

4. A communication channel employs a QAM-N scheme at a baud rate of 2400 symbols per second. If the bit rate of the channel is 58000 bits per second, what is N (for QAM-N)?