Eighth Semester B.E. Degree Examination, Dec.2017/Jan.2018
Multimedia Communication

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting*
atleast TWO questions from each part.

PART – A

1   a. With the aid of a diagram, explain how voice mail and teleconferencing are supported with reference to speech only interpersonal communication involving both PSTN – ISDN/ PBX networks. **(08 Marks)**
    b. Explain multipoint conferencing modes of operation. **(08 Marks)**
    c. Determine the propagation delay associated with the following communication channels.
      i)   A connection through a private telephone network of 1 km
      ii) A connection through a PSTN of 200km
      iii) A connection over a satellite channel of 50,000 km. Assume the velocity of propagation of a signal in case of : i) 2×10^8 m/s ii) 3×10^8 m/s. **(04 Marks)**

2   a. Explain the principle of operation of PCM speech CODEC with a block diagram. Also explain the compressor and expander characteristics. **(10 Marks)**
    b. Explain with schematic and relevant diagram color image capture using digital camera and scanner. **(07 Marks)**
    c. Assuming the bandwidth of a speech signal is from 50Hz through 10 KHz and that of music signal is from 15Hz through to 20KHz, derive the bit rate that is generated by the digitization procedure in each core assuming Nyquist sampling rate is used with 12 bits per sample for speech signal and 16bits per sample for music signal. Derive the memory required to store 10 min passage of stereophonic music. **(03 Marks)**

3   a. Apply arithmetic coding for encoding the string $CA \in \in S$ given $P_A = 0.2$, $P_B = 0.1$, $P_C = 0.2$, $P_D = 0.05$, $P_E = 0.3$, $P_F = 0.05$, $P_S = 0.1$. Draw the range diagram. **(08 Marks)**
    b. Explain in detail JPEG encoder and bit stream format with neat diagrams. **(12 Marks)**

4   a. Explain with a neat schematic, the LPC signal encoder and decoder. **(08 Marks)**
    b. Explain BFrame encoding procedure. **(06 Marks)**
    c. Explain error tracking scheme with H·263. **(06 Marks)**

PART – B

5   a. With a neat diagram, explain transparent bridge. **(07 Marks)**
    b. Derive the maximum obtainable throughput and the maximum access delay for the following three ring configuration.
      i)   2km ring with 20 stations
      ii) 20km ring with 200 stations
      iii) 100km ring with 500 stations.
      Assume for i) $T_1 = 30$ μs or 3000 bits ii) $T_1 = 300$ μs or 30,000 bit and iii) $T_1 = 1000$ μs or 100000 bits. **(07 Marks)**
    c. Explain with diagram : i) MAC user service primitive for CSMA/CD and token ring ii) LLC/MCA sublayer interaction. **(06 Marks)**

6   a. With the neat diagram explain IP adjunet protocols.   **(05 Marks)**
    b. Explain with diagram IPV4 datagram/Packet format and header fields.   **(07 Marks)**
    c. Assume a message block of 7000 bytes is to be transferred from one host to another host, assume token ring LAN at source end with MTU of 3000 bytes and Ethernet LAN at other end with MTU of 1500 bytes. If identification is 20 B, with a neat diagram illustrate fragmentation and re-assembly.   **(08 Marks)**

7   a. Explain protocol architecture to support classical IP over an ATM LAN.   **(08 Marks)**
    b. Explain with relevant diagram ATM cell format, cell switching principles and routing of ATM cell.   **(12 Marks)**

8   a. Explain with example and diagram all methods for small segment transfer with TCP.
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    b. Explain RTP and RTCP with relevant diagrams.   **(10 Marks)**

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