USN ☐☐☐☐☐☐☐☐☐☐ 12SCS253

Second Semester M.Tech. Degree Examination, June/July 2013

Protocols Engineering

Time: 3 hrs. Max. Marks:100

Note: *Answer any FIVE full questions.*

1 a. Define communication protocol. With the help of FSM and state transition table, discuss the simple message exchange protocol. (FSM – Finite State Machine) **(08 Marks)**
   b. Explain the additional properties of FSM. **(04 Marks)**
   c. What is meant by protocol engineering? Explain the phases of protocol engineering. **(08 Marks)**

2 a. What are CRC codes? Generate a CRC code for a given message $x^9 + x^8 + x^6 + x^4 + x^2 + 1$ and generator polynomial is $x^4 + x^2 + 1$. **(05 Marks)**
   b. Explain the use of sequence numbers and negative acknowledgement in flow control. **(08 Marks)**
   c. What are different sliding window protocols? Explain the design of selective repeat ARQ protocol. **(07 Marks)**

3 a. What are the different classes of IP? Explain the IP address subnetting. **(06 Marks)**
   b. Explain the following protocols:
   i) BGP   ii) ICMP   iii) RSVP
   iv) RTP   v) IMAP   vi) RTSP **(06 Marks)**
   c. Explain with a neat figure data transfer across OSI layers. **(08 Marks)**

4 a. With a neat figure of FSM, explain the sender and receiver entity specifications. **(08 Marks)**
   b. Give the FSM of RSVP specifications at router and host level. **(08 Marks)**
   c. Describe the characteristics of multimedia systems. **(04 Marks)**

5 a. Give the SDL description of sliding window protocol. **(08 Marks)**
   b. Give the SDL description of network topology used in OSPF. **(06 Marks)**
   c. Explain in brief the various protocol specification languages. **(06 Marks)**

6 a. What is protocol verification? Explain the verification of ABP using finite state machine. **(10 Marks)**
   b. Explain the perturbation technique for protocol validation with an example. What are its advantages and disadvantages? **(10 Marks)**

7 a. Discuss the local conformance test architecture with an example. **(08 Marks)**
   b. What are the different types of test sequence methods? **(07 Marks)**
   c. Explain the SDL based performance testing of TCP. **(05 Marks)**

8 a. What is protocol synthesis? Explain the automatic synthesis algorithm. **(06 Marks)**
   b. Explain the object based approach to protocol implementation. **(07 Marks)**
   c. Explain the automatic code generation from CVOPS. **(07 Marks)**

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