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Register Number:……….……

M.E DEGREE EXAMINATIONS: DEC 2015

(Regulation 2014)

Third Semester

COMMUNICATION SYSTEMS

P14COTE61**:** Communication Protocol Engineering

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. A protocol is a set of rules governing _____ in distributed systems. CO1 [K₁]

    a) Data communication   b) flowchart

    c) Interactions of concurrent processes   d) semantics

2. The entities in the same layer of different machines are called as _____ CO1 [K₁]

    a) Peer entity   b) End entity

    b) Host entity   d) Network entity

3. The number of states in FSM of sender process and data medium channel in ABP are CO2 [K_L]

    a) 2,4   b) 4,2

    c) 3,4   d) 4,3

4. Match list I (Protocol specification languages) with list II (Its description) and select CO2 [K₂] the correct answer using the codes given below.

List I	List II
A. SPIN Tool	i. parallel behaviour
B. Estelle	ii. Platform independent interface
C. UPPAAL	iii. Degree of confidence
D. CPN	iv. distributed and concurrent systems

	A	B	C	D
a)	2	1	3	4
b)	2	4	3	1
c)	3	4	2	1
d)	3	1	2	4

5. Assertion (A): The complexity in eliminating ambiguity and preparing more CO3 [K₄]

structured protocols is reduced.

Reason (R): Protocol verification and validation techniques use formal methods

a) both A and R are individually true and R is the correct explanation of A
b) both A and R are individually true but R is not the correct explanation of A
c) A is true but R is false
d) A is false but R is true.

6. The classification of conformance testing are ____CO3 [K₁]____

a) Mandatory, conditional, prohibitions requirements
b) Mandatory and optional requirements
c) Conditional and optional requirements
d) Mandatory and conditional requirements

7. The test sequence generation methods are based in the generation of _____ CO4 [K₁]

a) Transition sequence
b) Input/output sequence
c) Distinguished sequence
d) All the above

8. In a IEEE802.3 ethernet with 40 stations assuming a poisson arrival with exponential packet length for data, the delay observed ranges between _____ with increase in active data sources. CO4 [K₃]

a) 2000 – 8000 ms
b) 4000 – 5000 ms
c) 3000 – 5000 ms
d) 2000 – 4000 ms

9. Synthesis algorithm consists of CO5 [K₂]

a) Integrate SDL and generate SDL structure
b) Integrate MSC and Construct HMSC slices
c) Integrate SDL and construct SDL structure
d) Integrate HMSC and construct MSC slices

10. Consider the following statements of Protocol Re-synthesis. CO5 [K₂]
1. Re-synthesizing the P_{spec} for modified service specifications.
2. Produce new synthesized PEs.
3. Rules of atomic modification are applied to deal with every modification.
4. Define atomic re-synthesis rules for every modification on service specification
    Which of these statements are correct?

a) 1,2
b) 1,2,4
c) 1,3
d) 1,2,3

PART B (10 x 2 = 20 Marks)

11. Give an example of communication model and Mention the key tasks of CO1 [K_L]

communication.

12.	Differentiate between packet switched and circuit switched networks.	CO1	[K$_L$]
13.	What is a service specification? Give an example.	CO2	[K$_L$]
14.	What are the different types of symbols used in SDL for declaration?	CO2	[K$_L$]
15.	Give liveness properties of a window flow control protocol.	CO3	[K$_L$]
16.	What are fair reachability graphs?	CO3	[K$_L$]
17.	What are the problems to be considered in conformance testing?	CO4	[K$_L$]
18.	What are different types of testing to be carried out for a protocol before implementing it into the systems?	CO4	[K$_L$]
19.	Mention the features that characterize synthesis methods.	CO5	[K$_L$]
20.	What is a basic meta model?	CO5	[K$_L$]

PART C (10 x 5 = 50 Marks)

21.	Design a finite state machine for the message exchange protocol with channel errors.	CO1	[K$_2$]
22.	Describe the various protocol operations of logical link control layer.	CO1	[K$_2$]
23.	Give the FSMs of RSVP specifications at router and host level.	CO2	[K$_2$]
24.	Explain the features of specification languages other than SDL.	CO2	[K$_3$]
25.	Describe the protocol design errors with example.	CO3	[K$_2$]
26.	Compare the U method and D method of test sequence generation.	CO4	[K$_3$]
27.	Describe QoS testing with TTCN and MSC.	CO4	[K$_2$]
28.	Explain how interoperability testing of a bridge which uses CSMA/CS and CSMA/CA protocol is performed.	CO4	[K$_2$]
29.	Explain the protocol synthesis technique by using Global State Transition Graph.	CO5	[K$_3$]
30.	Discuss on the steps of object based design of a protocol.	CO5	[K$_3$]

PART D (2 x 10 = 20 Marks)

31.	Give the system specifications of ABP and provide SDL specifications for all its blocks and processes.	CO2	[K$_3$]
32.	Explain the protocol verification of TCP using appropriate FSM.	CO3	[K$_3$]

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