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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT  
TEST -3 EXAMINATION, December 2018

B.Tech. (ECE) 7<sup>th</sup> Semester

Course Code: 18B1WEC732

Course Name: DESIGN OF DEPENDABLE SYSTEMS

Course Credits: 03

MAX. MARKS: 35

MAX. TIME: 2 Hrs

*Note: Attempt all questions. Carrying of mobile phone in examination hall is not permitted.*

Q-1: Find the best-path according to the integrated performance reliability metrics. Draw a topologies on the basis of information given below: [6]

Link (u,v)	Reliability, r(u,v)	Delay, d(u,v)	Capacity, c(u,v)
(0,2)	0.7	0.8	7
(0,4)	0.7	0.5	5
(1,5)	0.7	0.95	4
(2,4)	0.8	1.00	5
(2,7)	0.9	1.5	7
(3,1)	0.8	0.7	3
(3,5)	0.7	0.76	6
(4,6)	0.6	0.8	6
(6,1)	0.9	0.85	5
(6,3)	0.7	0.75	6
(7,6)	0.8	0.9	6

Q-2: (a) Explain threats, attributes and means as the main taxonomy of dependability? [3]

[b] Explain the real threats to dependability. [4]

Q-3: (a) What are integrated and differentiated approaches for enhancing the communication service? [3]

(b) Make a comparison between performability and dependability. Also classify the faults in communication system. [4]

Q-4: (a) How to achieve the dependability in Software-Defined Networking (SDN)? Give a framework. [4]

(b) Briefly describe the importance of three tuple (capacity, delay, reliability) in network design. [4]

Q-5: (a) Draw the curve for reliability  $R(t)$  and prove that the area under the curve is indicating the MTTF? Failure rate is given as  $0.5t+10t^{-1}$ . [3]

(b) What is system approach of network design? Differentiate between the best-effort service and predictable services. [4]