Name: **Enrolment No:**	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2019

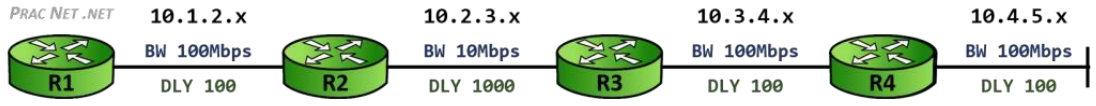
Course: R & S Scaling Network — **Semester:** 5th
Program: B.C.A. — **Time** 03 hrs.
Course Code: CSBC 3004 — **Max. Marks:** 100

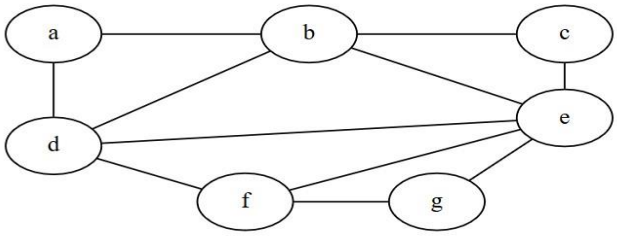
Instructions: There are 3 Sections (A, B and C). **Section A** is having 5 Questions of 4 marks each. **Section B** is having 4 Questions of 10 marks each. **Section C** is having 2 Questions of 20 marks each.

SECTION A

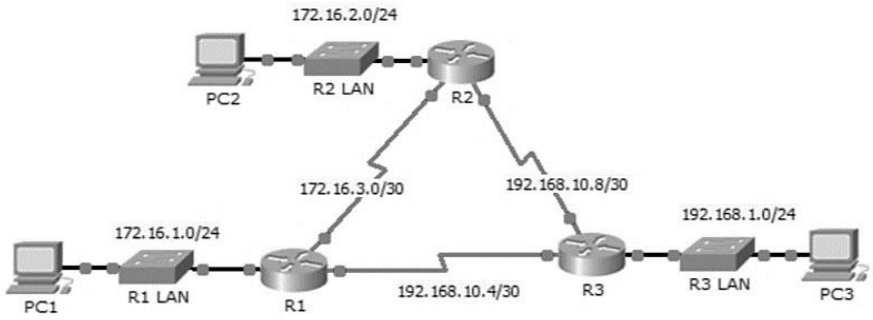
S. No.		Marks	CO
Q 1	Differentiate between Physical and Logical Topologies. For Scaling the network which is more supportive and why.	**4**	**CO1**
Q 2	Describe Autonomous System. What is administrative distance. What is the significance of the administrative in case multiple routing protocol set up in a single router?	**4**	**CO3**
Q 3	Why wireless networks are more vulnerable to the security attacks. Differentiate WEP and WPA in terms of security mechanism.	**4**	**CO2**
Q 4	What is stackable switch and rack server. Describe them as a part of scalable networks.	**4**	**CO1**
Q 5	Explain Route Summarization with example.	**4**	**CO1**

SECTION B

Q 6	Explain DUAL algorithm used in EIGRP. Calculate the path metric between R1 and R4 assuming K1 and K3 are set to 1, and K2, K4 and K5 are set to 0. 	**10**	**CO4**

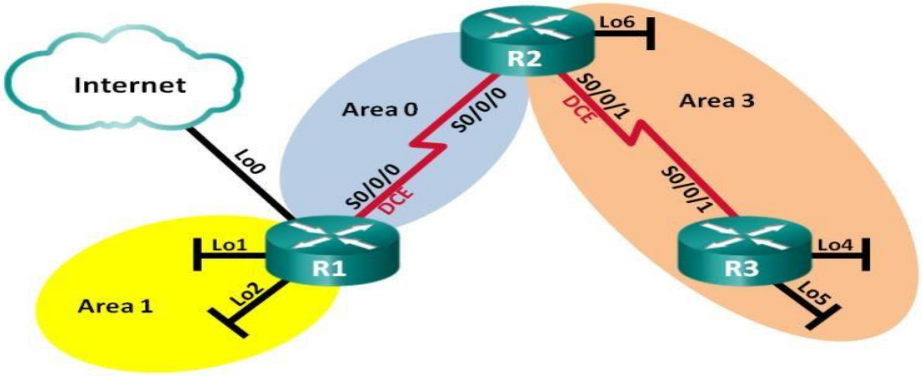
Q 7	Explain the Spanning Tree Protocol. Apply and find the Spanning Tree of the following graph.  	**10**	**CO1**

	What are the advantages and disadvantages of using STP in switches? How can we use redundant link discarded in the spanning tree of a switch?		
Q 8	Provide the IP V4 allocation mechanism in the following scenario. "A micro organization has purchased the pool of IP addresses in range 191.192.193.0/24. The organization is having 3 branch offices B1, B2, B3 with capacity of 100, 50, 30 systems." Provide the IP address range of each branch. Now due to recession the organization is merging two of its branch offices B2 and B3 to B4. It wants to reuse the same pool of IP address. So, provide the new IP address ranges for B1 and B4.	**10**	**CO1**
Q 9	Write short notes on any two of the following. a). OSPF Fine tuning b). EIGRP Trouble shooting c). Router of Switch Configuration for inter VLAN routing d). DUAL Algorithm for EIGRP	**10**	**CO3, CO4**
SECTION-C			

Q 10	Describe EIGRP protocol. Configure EIGRP for the following Scenario. Write down all the configuration command for R1, R2, R3 and PC1, PC2, PC3 and switches S1, S2 and S3 for the given topology. **ogy**  	**20**	**CO4**
Q 11	Differentiate between Single Area OSPF and Multi Area OSPF protocol. Following the snippet of RFC 1247 answer the questions below. *"OSPF routes IP packets based solely on the destination IP address and IP Type of Service found in the IP packet header.* ***IP packets are routed "as is" -- they are not encapsulated in any further protocol headers as they transit the Autonomous System.*** *OSPF is a dynamic routing protocol. It quickly detects topological changes in the AS (such as router interface failures) and calculates new loop-free routes after a period of convergence. This period of convergence is short and involves a minimum of routing traffic."* *All OSPF packet exchanges area authenticated. Different authentication schemes may be used in different areas.*	**20**	**CO3**
	a). Comment on the sentence marked as bold with proper justification. **b).** Briefly Explain the terms underlined in the paragraph. **c).** Describe authentication protocols (MD5, SHA and IPsec) used in OSPF. **d).** Differentiate between Link state Database and Routing Database with example topology.		

OR

Differentiate between the Single area OSPF and multi area OSPF. Explain the process of neighbor discovery. Configure the OSPF protocol for the following configuration.



Device	Interface	IP Address	Subnet Mask
R1	Lo0	209.165.200.225	255.255.255.252
	Lo1	192.168.1.1	255.255.255.0
	Lo2	192.168.2.1	255.255.255.0
	S0/0/0 (DCE)	192.168.12.1	255.255.255.252
R2	Lo6	192.168.6.1	255.255.255.0
	S0/0/0	192.168.12.2	255.255.255.252
	S0/0/1 (DCE)	192.168.23.1	255.255.255.252
R3	Lo4	192.168.4.1	255.255.255.0
	Lo5	192.168.5.1	255.255.255.0
	S0/0/1	192.168.23.2	255.255.255.252

20 **CO3**