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

Programme Name : BCA   **Semester : IV**
Course Name   : Routing & Switching Essentials   **Time   : 03 hrs**
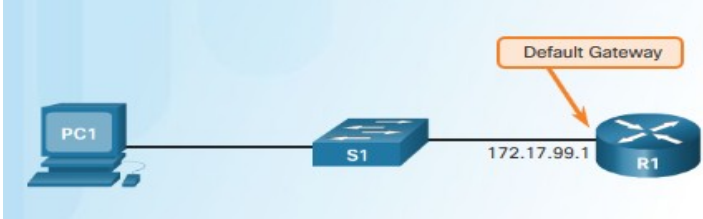**Course Code   : CSBC 2008**   **Max. Marks : 100**
Nos. of page(s) : 3
Instructions: Attempt each question with suitable diagrammatic representation of concepts.

SECTION A

| S. No.		Marks	CO

Q 1	Perform following configuration on switch shown in given figure:
	  1. Create a vlan
	  2. Assign ip address 172.17.99.11/24 to vlan interface
	  3. Assign ip address to router
	  4. Configure default gateway
	
	Fig (1)
		4	CO1

Q 2	Compare & contrast distance vector routing with link state routing.	4	CO2
Q 3	Justify the reason to use static routing.	4	CO2
Q 4	Show, what happens if a routing table has two or more paths with identical metrics to the same destination network.	4	CO3
Q 5	State different private IPv4 addresses defined in RFC 1918.	4	CO3
	SECTION B		
Q 6	Illustrate the concept of OSPF in dynamic routing.	10	CO3
Q 7	Elaborate different types of router memory?	10	CO1
Q 8	Configure the network along with default static route and a floating static route as shown in following figure:	10	CO2

Configuring a Floating Static Route to R3
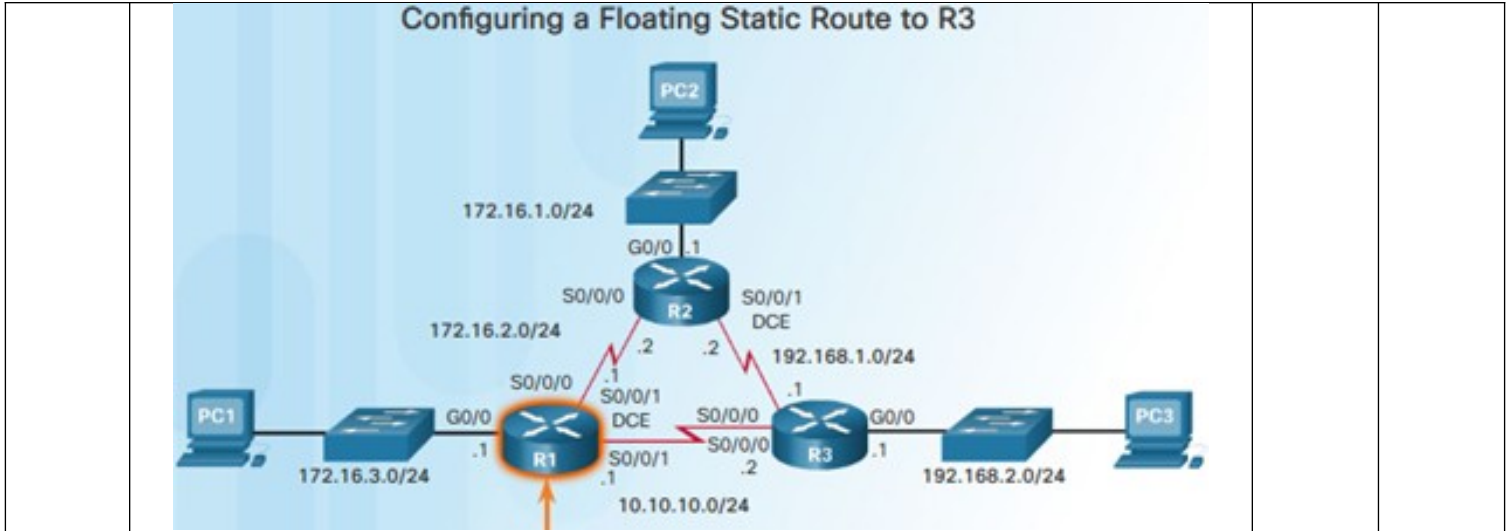
Fig (2)

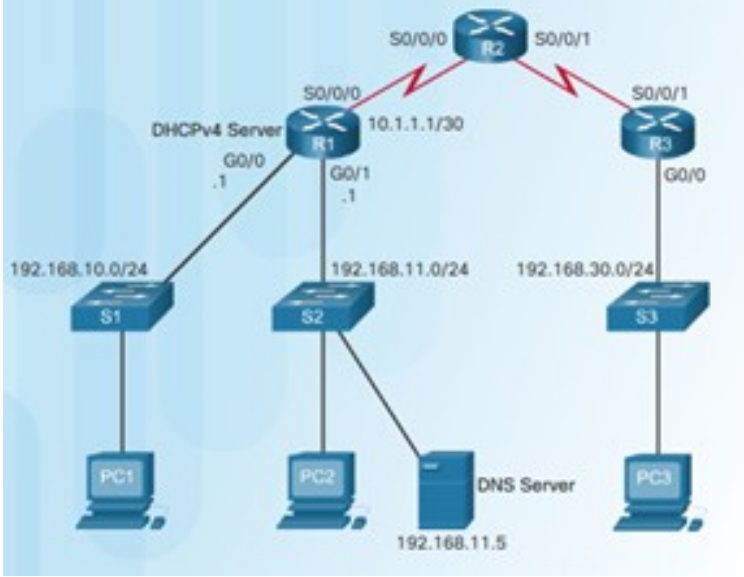| Q 9	Explain different fields in DHCPv4 header format.		
	OR		
	Perform DHCPv4 configuration on R1 as a DHCPv4 server on following network:-		
		10	CO3
	Fig (3)		

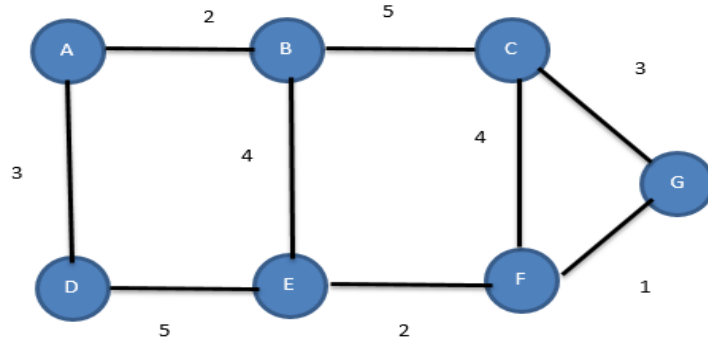| SECTION-C			
Q 10	Define distance vector routing. Explain Bellman ford algorithm. Find least cost tree for each node for the graph given below.	20	CO2

Fig (4)

OR

Explain link state routing and dijkstra's algorithm.
Use Dijkstra's algorithm to find the shortest path tree and forwarding table for node A.
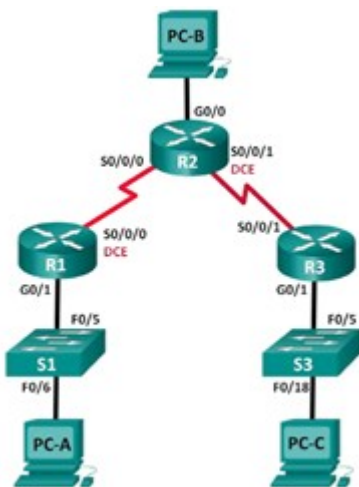Note: Use network given in Fig (4).

Q 11	Compare static routing with dynamic routing & configure the following:
	    a. the network for dynamic routing using RIPv2
	    b. a passive interface.		

Addressing Table

Device	Interface	IP Address	Subnet Mask	Default Gateway
R1	G0/1	172.30.10.1	255.255.255.0	N/A
	S0/0/0 (DCE)	10.1.1.1	255.255.255.252	N/A
R2	G0/0	209.165.201.1	255.255.255.0	N/A
	S0/0/0	10.1.1.2	255.255.255.252	N/A
	S0/0/1 (DCE)	10.2.2.2	255.255.255.252	N/A
R3	G0/1	172.30.30.1	255.255.255.0	N/A
	S0/0/1	10.2.2.1	255.255.255.252	N/A
S1	N/A	VLAN 1	N/A	N/A
S3	N/A	VLAN 1	N/A	N/A
PC-A	NIC	172.30.10.3	255.255.255.0	172.30.10.1
PC-B	NIC	209.165.201.2	255.255.255.0	209.165.201.1
PC-C	NIC	172.30.30.3	255.255.255.0	172.30.30.1

Fig (5)

20   CO3

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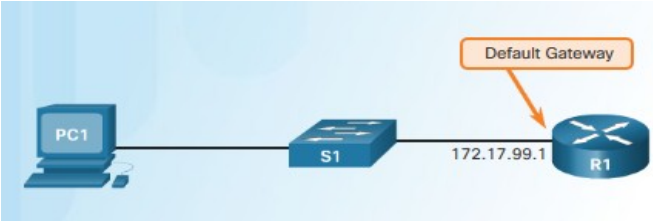**Course Code**   **: CSBC 2008**   **Max. Marks : 100**
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**Instructions: Attempt each question with suitable diagrammatic representation of concepts.**

SECTION A

S. No.		Marks	CO

Q 1	Configure the switch given in fig (1):
	   a. Configure the switch hostname to be 'HeadOffice'
	   b. Configure the encrypted privileged EXEC password to 'class'
	   c. Set all line passwords to 'cisco' and require a login, starting with the console. Set vty lines 0 through 15.
	
	Fig (1)
		4	CO1

Q 2	Explain the scenario where static route can be used.	4	CO2
Q 3	Compare static routing with dynamic routing.	4	CO2
Q 4	State the benefits of using VLANs?	4	CO1,CO2
Q 5	Define the term intra & inter domain routing with protocols.	4	CO3
	SECTION B		
Q 6	Illustrate the concept of AVL.	10	CO3
Q 7	Configure VLANs and Assign VLANs to Ports for the following network:-	10	CO1,CO2
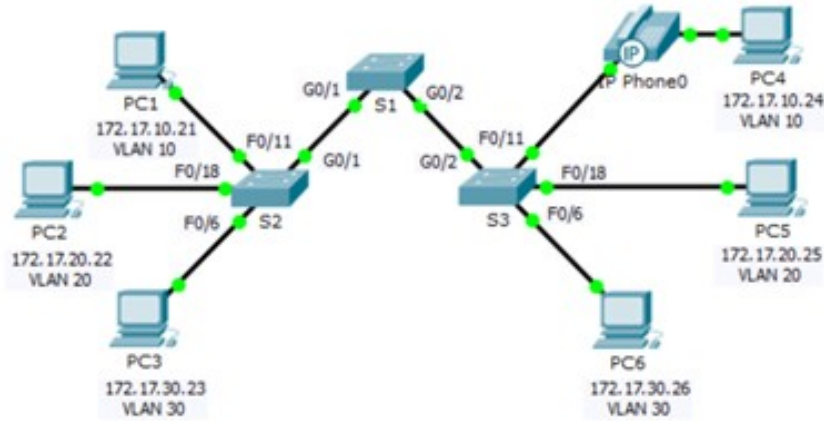
Addressing Table

Device	Interface	IP Address	Subnet Mask	VLAN
PC1	NIC	172.17.10.21	255.255.255.0	10
PC2	NIC	172.17.20.22	255.255.255.0	20
PC3	NIC	172.17.30.23	255.255.255.0	30
PC4	NIC	172.17.10.24	255.255.255.0	10
PC5	NIC	172.17.20.25	255.255.255.0	20
PC6	NIC	172.17.30.26	255.255.255.0	30

Fig (2)

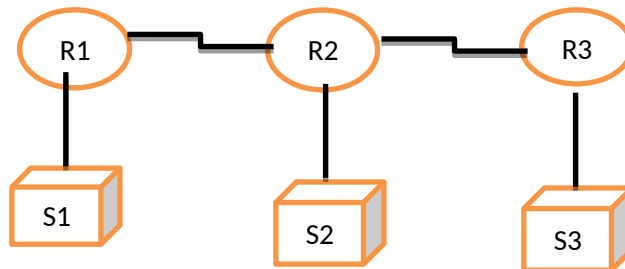|			
Q 8	Configure the network given in fig (3) and assign IP addresses. Establish dynamic routing environment for each router using RIP. OR Configure the network given in fig (3) and assign IP addresses. Also, establish static routing environment for each router and default routes.	10	CO2

Fig (3)

Device	IP address	Interface
R1	192.168.2.1/24	S0/0/0
R2	192.168.2.2/24	S0/0/0
R2	192.168.4.1/24	S0/0/1
R3	192.168.4.2/24	S0/0/0
R1	192.168.1.1/24	G0/0
R2	192.168.3.1/24	G0/0
R3	192.168.5.1/24	G0/0
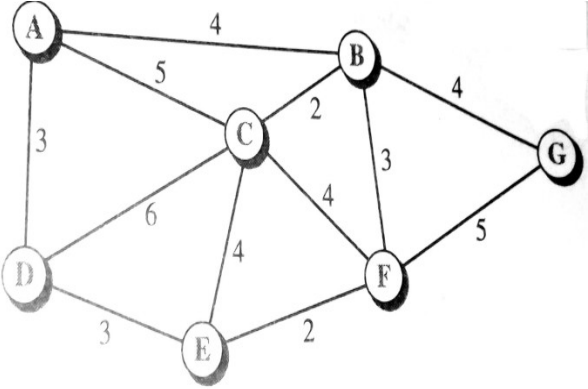
S1	192.168.1.2/24	G0/0	
S2	192.168.3.2/24	G0/0	
S3	192.168.5.2/24	G0/0	

Q 9	State the purpose of dynamic routing protocols. Explain OSPF in detail.	10	CO3

<div align="center">SECTION-C</div>

Q 10	Define distance vector routing. Explain Bellman ford algorithm. Find least cost tree for each node in given graph. Fig (4) OR Explain link state routing and dijkstra's algorithm. Use Dijkstra's algorithm to find the shortest path tree and forwarding table for node A. Note: Use network given in fig (4).	20	CO2
Q 11	Explain the DHCPv4 operations for assigning IPv4 address to requesting client. Also elaborate different fields in DHCPv4 header format.	20	CO3