Unit 5

1. Open Shortest Path First (OSPF) is also called as \_\_\_\_\_\_\_\_\_\_\_\_\_  
   a) Link state protocol  
   b) Error-correction protocol  
   c) Routing information protocol  
   d) All of the mentioned  
   Answer: a  
   Explanation: Each OSPF router monitors the cost of the link to each of its neighbours and then floods the link state information to other routers in the network.
2. The computation of the shortest path in OSPF is usually done by \_\_\_\_\_\_\_\_\_\_\_\_  
   a) Bellman-ford algorithm  
   b) Routing information protocol  
   c) Dijkstra’s algorithm  
   d) Distance vector routing  
   Answer: c  
   Explanation: Shortest path in OSPF is usually computed by Dijkstra’s algorithm. It was proposed by Edsger W. Dijkstra in the year 1956. This algorithm computes the shortest path between nodes.
3. Which of the following is false with respect to the features of OSPF?  
   a) Support for fixed-length sunbathing by including the subnet mask in the routing message  
   b) More flexible link cost than can range from 1 to 65535  
   c) Use of designated router  
   d) Distribution of traffic over multiple paths that have equal cost to the destination  
   Answer: a  
   Explanation: Support for variable-length sunbathing by including the subnet mask in the routing message.
4. In OSPF, which protocol is used to discover neighbour routers automatically?  
   a) Link state protocol  
   b) Error-correction protocol  
   c) Routing information protocol  
   d) Hello protocol  
   Answer: d  
   Explanation: Hello protocol is used to discover neighbour routers automatically. It makes sure that the communication between neighbors are bidirectional.
5. Which of the following is not a type of OSPF packet?  
   a) Hello  
   b) Link-state request  
   c) Link-state response  
   d) Link-state ACK  
   Answer: c  
   Explanation: Five types of OSPF packets are: Hello, Database description, Link-state request, Link-state update, Link-state ACK.
6. Correct order of the operations of OSPF.  
   1 – Hello packets  
   2 – Propagation of link-state information and building of routing tables  
   3 – Establishing adjacencies and synchronisation database  
   a) 1-2-3  
   b) 1-3-2  
   c) 3-2-1  
   d) 2-1-3  
   Answer: b  
   Explanation: OSPF first implements a hello protocol. Then it later on tries to establish synchronisation with database. Later on building of routing tables is done.
7. In OSPF header, which field is used to detect errors in the packet?  
   a) Type  
   b) Area ID  
   c) Authentication type  
   d) Checksum  
   Answer: d  
   Explanation: Checksum field is used to detect errors. It makes sure that the data portions that are being sent are all in integrity. It can detect duplicated bits.
8. In OSPF database descriptor packet, if more database descriptor packet flows, ‘M’ field is set to \_\_\_\_\_\_\_\_\_\_\_\_  
   a) 1  
   b) 0  
   c) more  
   d) none  
   Answer: a  
   Explanation: M bit is set to 1.
9. In OSPF database descriptor packet, which field is used to indicate that the router is master?  
   a) M  
   b) MS  
   c) I  
   d) Options  
   Answer: b  
   Explanation: M bit is set to 1. These packets are exchanged when an adjacency is being initialized. Master sends these packets called polls to slave, and then slave sends back acknowledgments.
10. In OSPF database descriptor packet, which field is used to detect a missing packet?  
    a) LSA header  
    b) MS  
    c) Database descriptor sequence number  
    d) Options  
    Answer: c  
    Explanation: Sequence number field is used to detect a missing packet. LSA is abbreviation for link state advertisement. LSA is the main communication means for OSPF.
11. An OSPF router receives an LSA, the router checks its sequence number, and this  
    number matches the sequence number of the LSA that the receiving router already has.  
    What does the receiving router do with the LSA?  
    a) Ignores the LSA  
    b) Adds it to the database  
    c) Sends newer LSU update to source router  
    d) Floods the LSA to the other routers  
    Answer: a  
    Explanation: An OSPF router receives an LSA, the router checks its sequence number, and this number matches the sequence number of the LSA that the receiving router already has Ignores the LSA.
12. An OSPF router receives an LSA. The router checks its sequence number and finds that  
    this number is higher than the sequence number it already has. Which two tasks does  
    the router perform with the LSA?  
    a) Ignores the LSA  
    b) Adds it to the database  
    c) Sends newer LSU update to source router  
    d) Floods the LSA to the other routers  
    Answer: b  
    Explanation: An OSPF router receives an LSA. The router checks its sequence number and finds that this number is higher than the sequence number Adds it to the database, Floods the LSA to the other routers.
13. An OSPF router receives an LSA. The router checks its sequence number and finds that  
    this number is lower than the sequence number it already has. What does the router do  
    with the LSA?  
    a) ignores the LSA  
    b) adds it to the database  
    c) sends newer LSU update to source router  
    d) floods the LSA to the other routers  
    Answer: c  
    Explanation: An OSPF router receives an LSA. The router checks its sequence number and finds that this number is lower than the sequence number sends newer LSU update to source router.
14. E ach LSA has its own age timer. By default, how long does an LSA wait before requiring an update?  
    a) 30 seconds  
    b) 1 minute  
    c) 30 minutes  
    d) 1 hour  
    Answer: c  
    Explanation: Each LSA has its own age timer. By default, 30 minutes does an LSA wait before requiring an update.
15. Distance vector protocols use the concept of split horizon, but link-state routing protocols, such as OSPF, do not.  
    a) True  
    b) False  
    Answer: b  
    Explanation: Distance vector protocols use the concept of split horizon, but link-state routing protocols, such as OSPF, do not use this.
16. The outcome of Dijkstra’s calculation is used to populate the \_\_\_\_\_\_\_\_\_\_  
    a) Topology table  
    b) Routing table  
    c) Neighbor table  
    d) Adjacency table  
    Answer: b  
    Explanation: The outcome of Dijkstra’s calculation is used to populate the Routing table.
17. What is the IP protocol number for OSPF packets?  
    a) 89  
    b) 86  
    c) 20  
    d) 76  
    Answer: a
18. Which packet is NOT an OSPF packet type?  
    a) LSU  
    b) LSR  
    c) DBD  
    d) Query  
    Answer: d  
    Explanation: Query packet is NOT an OSPF packet type.
19. Which multicast address does the OSPF Hello protocol use?  
    a) 224.0.0.5  
    b) 224.0.0.6  
    c) 224.0.0.7  
    d) 224.0.0.8  
    Answer: a  
    Explanation: 224.0.0.5 is the multicast address does the OSPF Hello protocol use.
20. The Hello protocol sends periodic updates to ensure that a neighbor relationship is maintained between adjacent routers.  
    a) True  
    b) False  
    Answer: a  
    Explanation: The Hello protocol sends periodic updates to ensure that a neighbor relationship is maintained between adjacent routers.
21. DBD packets are involved during which two states?  
    a) Exstart  
    b) Loading  
    c) Exchange  
    d) Two-way  
    Answer: a  
    Explanation: DBD packets are involved during which two states Exstart, Exchange.
22. At which interval does OSPF refresh LSAs?  
    a) 10 seconds  
    b) 30 seconds  
    c) 30 minutes  
    d) 1 hour
23. EIGRP is a routing Protocol design by Cisco. (Yes/No)?  
    a) Yes  
    b) No  
    Answer: a  
    Explanation: EIGRP is a routing Protocol design by Cisco.
24. EIGRP metric is \_\_\_\_\_\_\_\_  
    a) K-values  
    b) Bandwidth only  
    c) Hop Count  
    d) Delay only  
    Answer: a  
    Explanation: EIGRP metric is K-values.
25. EIGRP can support \_\_\_\_\_\_\_\_\_\_\_\_  
    a) VLSM/subnetting  
    b) Auto summary  
    c) Unequal cast load balancing  
    d) All od the above  
    Answer: d  
    Explanation: VLSM/subnetting, Auto summary, Unequal cast load balancing.
26. EIGRP send the hello message after every \_\_\_\_\_\_\_\_\_\_\_ seconds  
    a) 5 seconds (LAN), 60 seconds (WAN)  
    b) 5 seconds (LAN), 5 seconds (WAN)  
    c) 15s  
    d) 180s  
    Answer: a  
    Explanation: EIGRP send the hello message after every5 seconds (LAN), 60 seconds (WAN).
27. Administrative distance for internal EIGRP is \_\_\_\_\_\_  
    a) 90  
    b) 170  
    c) 110  
    d) 91  
    Answer: a  
    Explanation: Administrative distance for internal EIGRP is 90.
28. The EIGRP metric values include:  
    a) Delay  
    b) Bandwidth  
    c) MTU  
    d) All of the above  
    Answer: d  
    Explanation: The EIGRP metric values are Delay, Bandwidth, and MTU.
29. For default gateway you will use which of following command on Cisco router?  
    a) IP default network  
    b) IP default gateway  
    c) IP default route  
    d) Default network  
    Answer: a  
    Explanation: IP default network command used in default gateway in Cisco router.
30. Administrative distance for external EIGRP route is \_\_\_\_\_\_\_  
    a) 90  
    b) 170  
    c) 110  
    d) 100  
    Answer: b  
    Explanation: Administrative distance for external EIGRP route is 170.
31. EIGRP uses the \_\_\_\_\_\_\_\_\_\_\_\_ algorithm for finding shortest path.  
    a) SPF  
    b) DUAL  
    c) Linkstat  
    d) Dikstraalgo  
    Answer: b  
    Explanation: EIGRP uses the DUAL algorithm for finding shortest path.
32. In EIGRP best path is known as the successor, where as backup path is known as \_\_\_\_\_\_\_\_\_\_  
    a) Feasible successor  
    b) Back-up route  
    c) Default route  
    d) There is no backup route in EIGRP  
    Answer: a  
    Explanation: Feasible successor is the backup path.
33. Which protocol should you select if the network diameter is more than 17 hops?  
    a) RIPv1  
    b) RIPv2  
    c) EIGRP  
    d) Both RIPv1 and RIPv2  
    Answer: a  
    Explanation: RIP v1 has network diameter is more than 17 hopes.
34. How often does a RIPv1 router broadcast its routing table by default?  
    a) Every 30 seconds  
    b) Every 60 seconds  
    c) Every 90 seconds  
    d) RIPv1 does not broadcast periodically  
    Answer: a  
    Explanation: Every 30 seconds RIPv1 router broadcast its routing table by default.
35. Which command displays RIP routing updates?  
    a) Show IP route  
    b) Debug IP rip  
    c) Show protocols  
    d) Debug IP route  
    Answer: b  
    Explanation: The debug IP rip command is used to show the Internet Protocol (IP) Routing Information Protocol (RIP) updates being sent and received on the router.
36. Two connected routers are configured with RIP routing. What will be the result when a router receives a routing update that contains a higher-cost path to a network already in its routing table?  
    a) The updated information will be added to the existing routing table Debug IP rip  
    b) The update will be ignored and no further action will occur Debug IP route  
    c) The updated information will replace the existing routing table entry  
    d) The existing routing table entry will be deleted from the routing table and all routers will exchange routing updates to reach convergence  
    Answer: b  
    Explanation: When a routing update is received by a router, the router first checks the administrative distance (AD) and always chooses the route with the lowest AD. However, if two routes are received and they both have the same AD, then the router will choose the one route with the lowest metrics, or in RIP’s case, hop count.
37. You type debug IP rip on your router console and see that 172.16.10.0 is being advertised to you with a metric of 16. What does this mean?  
    a) The route is 16 hops away Debug IP rip  
    b) The route has a delay of 16 microseconds Debug IP route  
    c) The route is inaccessible  
    d) The route is queued at 16 messages a second  
    Answer: c  
    Explanation: You cannot have 16 hops on a RIP network by default. If you receive a route advertised with a metric of 16, this means it is inaccessible.
38. Default administrative distance of Static Route  
    a) 0  
    b) 90  
    c) 100  
    d) 1  
    Answer: d  
    Explanation: 1 is the default administrative distance of Static Route.
39. Which protocol gives a full route table update every 30 seconds?  
    a) IEGRP  
    b) RIP  
    c) both IEGRP and RIP  
    d) none of the mentioned  
    Answer: b  
    Explanation: RIP gives a full route table update every 30 seconds.
40. Default administrative distance of RIP  
    a) 0  
    b) 90  
    c) 120  
    d) 130  
    Answer: c  
    Explanation: Default administrative distance of RIP is 120.
41. Which statement is true regarding classless routing protocol?  
    a) The use of discontinuous networks is not allowed  
    b) Use of variable length subnet masks is permitted  
    c) RIPv1 is a classless routing protocol  
    d) IGRP supports classes routing within the same autonomous system  
    Answer: b  
    Explanation: Use of variable length subnet masks is permittedis true regarding classless routing protocol.
42. Where we should use default routing  
    a) On stub networks- which have only one exit path out of the network  
    b) Which have more than one exit path out of the network  
    c) Minimum five exit paths out of the network  
    d) None of the mentioned  
    Answer: a  
    Explanation: On stub networks- which have only one exit path out of the networkuse default routing.
43. Which statement is true regarding classless routing protocols?  
    a) The use of discontinuous networks is not allowed  
    b) The use of variable length subnet masks is permitted  
    c) RIPv1 is a classless routing protocol  
    d) RIPv2 supports classless routing  
    Answer: b  
    Explanation: Classful routing means that all hosts in the internetwork use the same mask. Classless routing means that you can use Variable Length Subnet Masks (VLSMs) and can also support discontinuous networking.
44. What is route poisoning?  
    a) It sends back the protocol received from a router as a poison pill, which stops the regular updates. The use of variable length subnet masks is permitted  
    b) It is information received from a router that can’t be sent back to the originating router.RIPv2 supports classless routing  
    c) It prevents regular update messages from reinstating a route that has just come up  
    d) It describes when a router sets the metric for a downed link to infinity  
    Answer: d  
    Explanation: When a network goes down, the distance-vector routing protocol initiates route poisoning by advertising the network with a metric of 16, or unreachable.
45. Which of the following is true regarding RIPv2?  
    a) It has a lower administrative distance than RIPv1  
    b) It converges faster than RIPv1  
    c) It has the same timers as RIPv1  
    d) It is harder to configure than RIPv1  
    Answer: c  
    Explanation: RIPv2 is pretty much just like RIPv1. It has the same administrative distance and timers and is configured just like RIPv1.
46. Which of the situations might not require require multiple routing protocols in a network?  
    a) When a new Layer 2-only switch is added to the network  
    b) When you are migrating from one routing protocol to another  
    c) When you are using routers from multiple vendors  
    d) When there are host-based routers from multiple vendors  
    Answer: a  
    Explanation: One routing protocol to another, routers from multiple vendors,host-based routers from multiple vendors.
47. Which two routing protocols can be redistributed into OSPF by a Cisco router?  
    a) IP EIGRP and AppleTalk EIGRP  
    b) AppleTalk EIGRP and RIPv2  
    c) RIPv2 and IP EIGRP  
    d) IPX RIP & AppleTalk EIGRP  
    Answer: c  
    Explanation: IP EIGRP, RIPv2. These can be redistributed into OSPF by a Cisco router.
48. Which is a reason for avoiding doing route redistribution on two routers between the same two routing domains?  
    a) Higher cost of two routers  
    b) Routing feedback  
    c) Cisco IOS incompatibility  
    d) Not possible to use two routers  
    Answer: b  
    Explanation: Routing feedback is a reason for avoiding doing route redistribution on two routers between the same two routing domains.
49. What does administrative distance rank?  
    a) Metrics  
    b) Sources of routing information  
    c) Router reliability  
    d) Best paths  
    Answer: b  
    Explanation: Sources of routing information is the administrative distance rank.
50. Which protocol maintains neighbor adjacencies?  
    a) RIPv2 and EIGRP  
    b) IGRP and EIGRP  
    c) RIPv2  
    d) EIGRP  
    Answer: c  
    Explanation: RIP V2 maintains neighbor adjacencies.

**PART-B (12 Marks)**

1.Discuss about the distance vector routing protocol with the necessary routing tables.

2.Explain about the Enhanced Interior Gateway protocol with its features, types of packets and routing tables used.

3.Describe about the High-Level Data Link Control protocol with the frame structure

4.Explain about the path vector routing protocol in detail.

5.Explain Bellman ford algorithm with an example

6.Explain the OSPF with necessary algorithm

7.Explain the three forwarding methods.

8.Explain the entities of IP routing table and explain Intra and Inter-domain Routing

9.Give the characteristics of BGP protocol and list the difference between RIP ver1 and RIP ver 2