**SRM Institute of Science and Technology**
**College of Engineering and Technology**
**School of Computing**

Mode of Exam
**OFFLINE**

## DEPARTMENT OF COMPUTING TECHNOLOGIES

SRM Nagar, Kattankulathur – 603203, Chengalpattu District, Tamilnadu

**Academic Year: 2022-2023 (ODD)**

**SET 2**

**ANSWER KEY**

**Test: CLAT-3** **Date: 19-11-2022**
**Course Code & Title:** 18CSE453T & Network Routing Algorithms **Duration:** 2 Hour
**Year & Sem:** III &V **Max. Marks:** 50

**Course Articulation Matrix:** ***(to be placed)***

| S.NO | CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | CO1 | 3 | 2 | - | - | 1 | - | - | - | - | 2 | - | 3 | | - | - |
| 2 | C02 | 3 | 3 | 2 | 2 | 1 | - | - | - | - | - | 1 | 3 | - | - | - |
| 3 | CO3 | 3 | 3 | 1 | 2 | 2 | - | - | - | 2 | - | 1 | 3 | - | - | - |
| 4 | CO4 | 3 | 3 | 3 | 3 | 3 | 1 | - | 2 | 2 | - | - | 3 | - | - | - |
| 5 | CO5 | 3 | 3 | 3 | 3 | 2 | - | - | - | 2 | - | - | 3 | - | - | - |
| 6 | CO6 | 3 | 3 | 3 | 2 | 2 | 1 | - | - | - | - | - | 3 | - | - | - |

**Part - A**
**( 20x 1 = 20 Marks)**

**Instructions: Answer All 20**

| Q. No | Question | Marks | BL | CO | PO | PI Code |
|---|---|---|---|---|---|---|
| **1** | A protocol on one router communicates with the same protocol running on neighbor routers?<br>A. In default and static routing.<br>B. In default routing.<br>C. In Static routing.<br>D. In dynamic routing<br>Answer : D | 1 | 2 | 4 | 1 | 1.6.1 |
| **2** | Which routing protocol has a maximum network diameter (hop count) of 15?<br>A. RIPv1<br>B. RIPv2<br>C. EIGRP<br>D. RIPv1 and RIPv2<br>Answer : D | 1 | 2 | 4 | 2 | 2.6.3 |
| **3** | What are the two routing protocols that a Cisco router is capable of redistributing into OSPF?<br>A. IP EIGRP and AppleTalk EIGRP<br>B. AppleTalk EIGRP and RIPv2<br>C. RIPv2 and IP EIGRP<br>D. IPX RIP & AppleTalk EIGRP<br>Answer :C | 1 | 1 | 4 | 1 | 1.6.1 |
| **4** | Flooding is used to send packets to all the router in the Multicast Routing Protocol, but it creates _____<br>A. Holes<br>B. Loops<br>C. Links<br>D. Gaps<br>Answer :B | 1 | 1 | 4 | 1 | 1.6.1 |
| **5** | Which of the following are the benefits provided by EIGRP?<br>i) Faster convergence<br>ii) partial routing updates<br>iii) High bandwidth utilization<br>iv) Route summarization<br>A. i, iii and iv only<br>B. i, ii and iii only<br>C. ii, iii and iv only<br>D. i, ii and iv only<br>Answer : D | 1 | 2 | 4 | 2 | 2.6.3 |
| **6** | What is the correct order of the operations of OSPF?<br>i )Hello packets<br>ii)Propagation of link-state information and building of routing tables<br>iii) Establishing adjacencies and synchronization of database<br>A. i-ii-iii<br>B. i-iii-ii<br>C. iii-ii-i<br>D. ii-i-iii<br>Answer: B | 1 | 2 | 4 | 2 | 2.6.3 |
| **7** | EIGRP includes a _____for neighbour discovery and recovery.<br>A. Hello Protocol<br>B. IGRP Protocol<br>C. RIP Protocol<br>D. BGP Protocol<br>Answer: A | 1 | 1 | 4 | 1 | 1.6.1 |
| **8** | Which network type will OSPF establish router adjacencies but not perform the DR/BDR election process?<br>A. Point-to-point<br>B. Backbone area 0<br>C. Broadcast multi-access<br>D. Non-broadcast multi-access<br>Answer : A | 1 | 1 | 4 | 1 | 1.6.1 |
| **9** | A network administrator needs to configure a router with a distance-vector protocol that allows classless routing. Which of the following satisfies those requirements?<br>A. IGRP<br>B. RIPv1<br>C. EIGRP<br>D. IS-IS<br>Answer: C | 1 | 2 | 4 | 2 | 2.6.3 |
| **10** | If routers in a single area are configured with the same priority value, what value does a router use for the OSPF Router ID in the absence of a loopback interface?<br>A. The lowest IP address of any physical interface<br>B. The highest IP address of any physical interface<br>C. The lowest IP address of any logical interface<br>D. The highest IP address of any logical interface<br>Answer: B | 1 | 2 | 4 | 2 | 2.6.3 |
| **11** | From the below list find out Design goal of routing protocols in ad hoc networks.<br>i. must be scalable<br>ii. must be fully distributed, no central coordination<br>iii. must be adaptive to topology changes caused by movement of nodes<br>iv. route computation and maintenance must involve a minimum number of nodes;<br>A. i<br>B. i, ii<br>C. i,ii,iii<br>D. I,ii,iii,iv<br>Answer : D | 1 | 2 | 5 | 2 | 2.6.3 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **12** | Which of the following network is using ISM band ?<br>A. Cellular network<br>B. Adhoc wireless network<br>C. Fixed line network<br>D. Bluetooth network<br>Answer: B | 1 | 1 | 5 | 1 | 1.6.1 |
| **13** | Which is not a reactive routing information update protocol?<br>A. DSR<br>B. AODV<br>C. DSDV<br>D. FORP<br>Answer: C | 1 | 1 | 5 | 1 | 1.6.1 |
| **14** | What is the advantage of DSR has over DSDV due to its on-demand nature?.<br>A. New link is generated<br>B. Routing adapts to load<br>C. Sequence number is updated<br>D. No New link is generated<br>Answer: B | 1 | 1 | 5 | 1 | 1.6.1 |
| **15** | The regions in hierarchical routing are grouped into ___<br>A. Clusters<br>B. Zones<br>C. Blocks<br>D. Cells<br>Answer: A | 1 | 1 | 5 | 1 | 1.6.1 |
| **16** | Which of the following is a not Topology information protocol?<br>A. CGSR<br>B. FSR<br>C. HSR<br>D. PAR<br>Answer: D | 1 | 1 | 5 | 1 | 1.6.1 |
| **17** | How many cluster head elected in Cluster head gateway switch routing protocol?<br>A. 1<br>B. 2<br>C. 3<br>D. 4<br>Answer: A | 1 | 1 | 5 | 1 | 1.6.1 |
| **18** | Which is not a type of Adhoc Wireless Routing Protocol Based on routing information?<br>A. Proactive Routing Protocol<br>B. Hybrid Routing Protocol<br>C. Power Aware Routing Protocol<br>D. Reactive Routing Protocol<br>Answer: C | 1 | 2 | 5 | 2 | 2.6.3 |
| **19** | PLMN has been developed to provide _____ services for wireless subscribers<br>A. Voice<br>B. Video<br>C. Voice & Video<br>D. Image<br>Answer :A | 1 | 1 | 6 | 1 | 1.6.1 |
| **20** | From the below options select the protocol it is free from loops, deadlock, and packet duplicates<br>A. Associativity Based Routing<br>B. Dynamic Source Routing Protocol<br>C. Ad hoc on-demand distance vector routing protocol<br>D. Dynamic source routing protocol<br>Answer : A | 1 | 1 | 6 | 1 | 1.6.1 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | CO1 | 3 | 2 | - | - | 1 | - | - | - | - | 2 | - | 3 | | - | - |
| 2 | CO2 | 3 | 3 | 2 | 2 | 1 | - | - | - | - | - | 1 | 3 | - | - | - |
| 3 | CO3 | 3 | 3 | 1 | 2 | 2 | - | - | - | 2 | - | 1 | 3 | - | - | - |
| 4 | CO4 | 3 | 3 | 3 | 3 | 3 | 1 | - | 2 | 2 | - | - | 3 | - | - | - |
| 5 | CO5 | 3 | 3 | 3 | 3 | 2 | - | - | - | 2 | - | - | 3 | - | - | - |
| 6 | CO6 | 3 | 3 | 3 | 2 | 2 | 1 | - | - | - | - | - | 3 | - | - | - |

**Part – B**
**( 2x5 = 10 Marks)**

**21** Compare Open Shortest Path First and Integrated IS-IS(intermediate systems)routing protocol .

similarities: 2 Marks
different: 3 Marks

SIMILARITIES

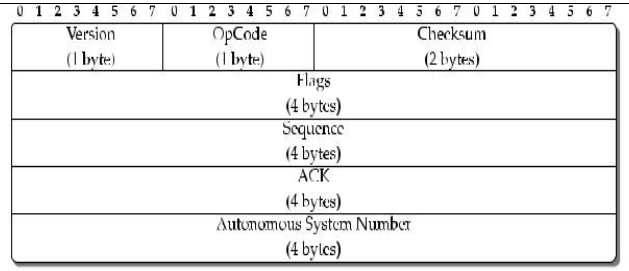
- There are several similarities between IS-IS and OSPF:
- Both protocols provide network hierarchy through two-level areas.
- Both protocols use Hello packets to initially form adjacencies and then continue to maintainthem.
- Both protocols have the ability to do address summarization between areas.
- Both protocols maintain a link state database, and shortest path computation performed using Dijkstra's algorithm.
- Both protocols have the provision to elect a designated router for representing a broadcastnetwork.

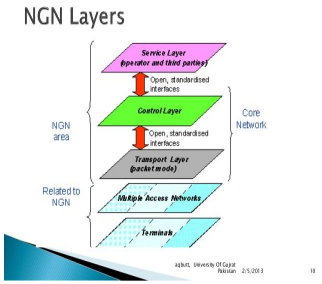
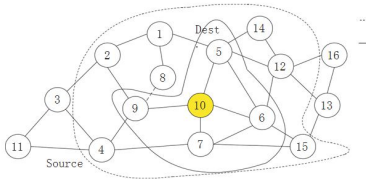
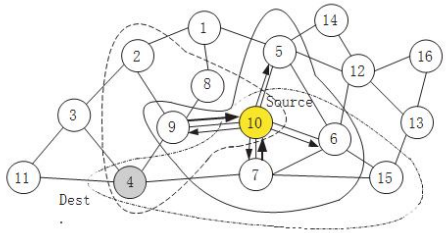
Differences

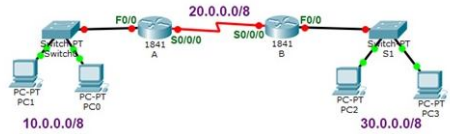
- With OSPF, an area border router can sit on the boundary between the backbone area and a low-level area with some interfaces in the area while other interfaces are in the other
- area. In IS-IS, routers are entirely within one or the other area—the area borders are on links, not on routers.
- While OSPF packets are encapsulated in IP datagrams, IS-IS packets are directly encapsulated in link layer frames.
- The OSPF dimension-less link metric value is in the range 1 to 65,535, while IS-IS allows
- the metric value to be in the range 0 to 63 (narrow metric), which has been extended to the range 0 to 16,777,215 (wide metric).
- IS-IS being run directly over layer 2 is relatively safer than OSPF from spoofs or attacks.
- IS-IS keepalives can be used for MTU detection since they are MTU-sized TLVs that are explicitly checksummed and need to be verified as such.
- IS-IS allows overload declaration through an overload bit by a router to other routers.
- This is used, for example, by other routers to not consider an overloaded router in path computation.

(OR)

**22** Draw and explain EIGRP packet format.




| | | |
|---|---|---|
| **23** | Draw and Explain Next generation network architecture<br>Diagram: 3 Marks<br>Explanation : 2 Marks<br><br>  <br> | |
| | (OR) | |
| **24** | Apply Zone routing protocol in node 10 and find the best path.<br>  <br><br>Answer:<br>  <br> | |
| | **Part – C**<br>**( 2x10 = 20 Marks)** | |
| **25** | Create routing table for each router in the below router network. | |




**Routing table of router A**

| Source | Network | Next-Hop-IP | Out Int. | Metric |
|---|---|---|---|---|
| Conn. | 10.0.0.0/8 | N/a | F0/0 | 0 |
| Conn. | 20.0.0.0/8 | N/a | S0/0/0 | 0 |

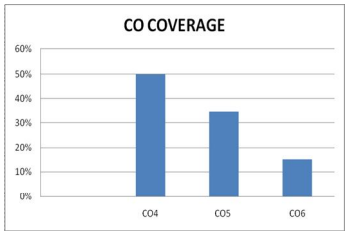
**Routing table of router B**

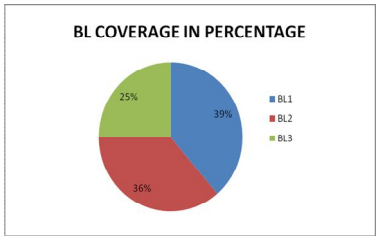
| Source | Network | Next-Hop-IP | Out Int. | Metric |
|---|---|---|---|---|
| Conn. | 30.0.0.0/8 | N/a | F0/0 | 0 |
| Conn. | 20.0.0.0/8 | N/a | S0/0/0 | 0 |

| | | |
|---|---|---|
| | (OR) | |
| **26** | Which routing protocol used Link state routing algorithm? Explain all protocol with diagram.<br>• OSPF (5 Marks)<br>• IS-IS (5 Marks) | |
| **27** | Explain the following Reactive routing protocols with example<br>i. Cluster head gateway routing protocol<br>ii. source-tree adaptive routing protocol<br>• CGCR(5 Marks)<br>• STAR(5 Marks) | |
| | (OR) | |
| **28** | Explain about Link-Based Routing Protocols in adhoc network with example.<br>Explanation :5 Marks<br>Example: 5 Marks | |

***Performance Indicators are available separately for Computer Science and Engineering in AICTE examination reforms policy.**

**Course Outcome (CO) and Bloom's level (BL) Coverage in Questions**




**Approved by the Audit Professor/Course Coordinator**