18265

Brainw... ...rsity
398, Ramkrish... ...Road, Barasat
Kolkata, West Bengal-700125

BRAINWARE UNIVERSITY

Term End Examination 2025-2026
Programme – M.Sc.(ANCS)-2025
Course Name – Computer Networks
Course Code - MNC10400
(Semester I)

Full Marks : 60 **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A
(Multiple Choice Type Question) 1 x 15=15

1. *Choose the correct alternative from the following :*

(i) Select the network model from the following options where we require no centralized server.

a) ClientServer b) Peer-to-Peer
c) Workgroup d) Hierarchical

(ii) Select the physical topology that requires a central hub or switch.

a) Bus Topology b) Star Topology
c) Ring Topology d) Mesh Topology

(iii) Identify the main advantage of using a VPN.

a) Highspeed connectivity b) Secure data transmission
c) Low cost d) Simple configuration

(iv) Identify a key disadvantage of a bus topology.

a) Requires more cable than other topologies b) Complex to install
c) A break in the bus can disable the entire network d) Data collisions are frequent

(v) Select the two OSI layer functions combined by the TCP/IP model's Network Access Layer.

a) Physical and Data Link b) Network and Transport
c) Transport and Application d) Session and Presentation

(vi) Select the protocol using port 443 for secure communication.

a) HTTP b) HTTPS
c) FTP d) SSH

(vii) State the purpose of the de-encapsulation process in the OSI model.

a) To remove headers and trailers from data b) To add necessary headers and trailers to data
c) To convert data into a different format d) To manage sessions between applications

(viii) Give an example of the range for Class B private addresses in IPv4.

a) 10.0.0.0 to 10.255.255.255
b) 172.16.0.0 to 172.31.255.255
c) 192.168.0.0 to 192.168.255.255
d) 169.254.0.0 to 169.254.255.255

(ix) Choose the OSI layer responsible for managing sessions between applications.

a) Transport Layer
b) Network Layer
c) Session Layer
d) Presentation Layer

(x) Describe the role of an ABR (Area Border Router) in OSPF.

a) Connects OSPF areas and summarizes routes
b) Connects end devices to the network
c) Aggregates traffic from access layer devices
d) Provides fast packet switching

(xi) Identify the key difference between RIPv1 and RIPv2.

a) RIPv1 uses multicast for routing updates, RIPv2 uses broadcast
b) RIPv2 supports authentication for secure routing updates
c) RIPv1 supports VLSM, RIPv2 does not
d) RIPv1 is classless, RIPv2 is classful

(xii) Select the component that stores the startup configuration file on a router.

a) ROM
b) CPU
c) RAM
d) NVRAM (Non-volatile Random-Access Memory)

(xiii) Choose the component of a router that stores the Cisco IOS image by default.

a) Flash Memory
b) CPU
c) RAM
d) ROM

(xiv) Describe the purpose of a wireless router.

a) To connect devices via physical cables
b) To extend the range of a wireless network
c) To combine routing and wireless access point functions
d) To manage network bandwidth

(xv) Choose the wireless standard designed for short-range communication in personal area networks.

a) IEEE 802.11n
b) IEEE 802.11ac
c) Bluetooth
d) WiMAX

Group-B

(Short Answer Type Questions) 3 x 5=15

2. What are the advantages and disadvantages of a mesh topology? (3)
3. Describe the structure of an IPv4 address. (3)
4. Determine the broadcast address of the subnetwork to which this IP, 192.168.192.10/29, belongs. (3)
5. Compare and contrast between RIPv1 and RIPv2. (3)
6. Justify the statement- OSPF is better than RIP in the context of route selection. (3)

OR

Evaluate the importance of the Bridge ID in root bridge election. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Describe the general components required for a network and their functions. (5)
8. Explain the types of twisted pair cables and their applications in networking. (5)
9. Analyze the process of Encapsulation and decapsulation in network communication. (5)
10. Summarize the functions of the internal components of a router. (5)
11. Describe the functions of individual layer of CISCO Three Layer Hierarchical Model. (5)
12. Differentiate between Physical Layer and the Data Link Layer of the OSI model. (5)

OR

Explain the differences between TCP and UDP. (5)