

JK LAKSHMIPAT UNIVERSITY, JAIPUR

INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination December 2021

BCA, Semester III

Roll No.....

CS1124: Computer Networks and Networks
Administration

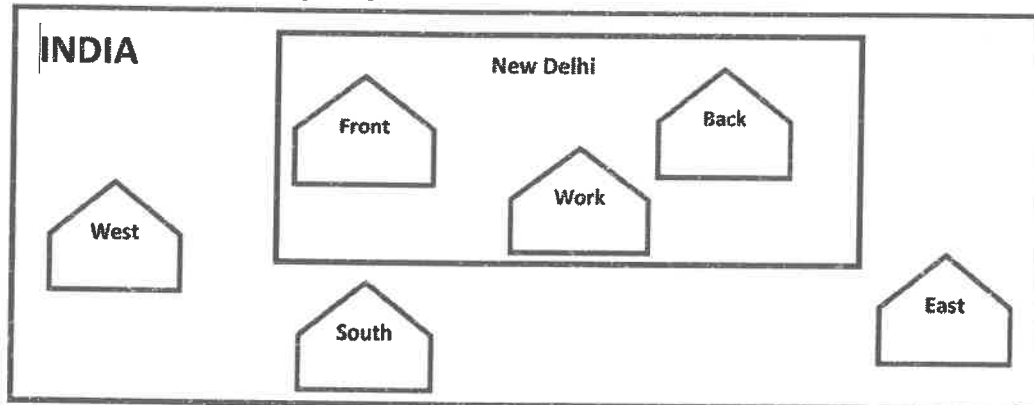
Time: 03 hours

Max. Marks: 25

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

- Q.1A Bhartiya Connectivity Association" is planning to spread their office in four major cities in India to provide regional IT infrastructure support in the field of Education & Culture. The company has planned to setup their head office in New Delhi in three location and have named their New Delhi office has "Front Office", "Back Office" and "Work Office". The company has three more regional offices as "South Office", "East Office" and "West Office" located in other major cities of India. A rough layout of the same is as follows:



Approximate distance between these office as per network survey team is as follows:

Place From	Place To	Distance
Back Office	Front Office	10 KM
Back Office	Work Office	70 Meter
Back Office	East Office	1291 KM
Back Office	West Office	790 KM
Back Office	South Office	1952 KM

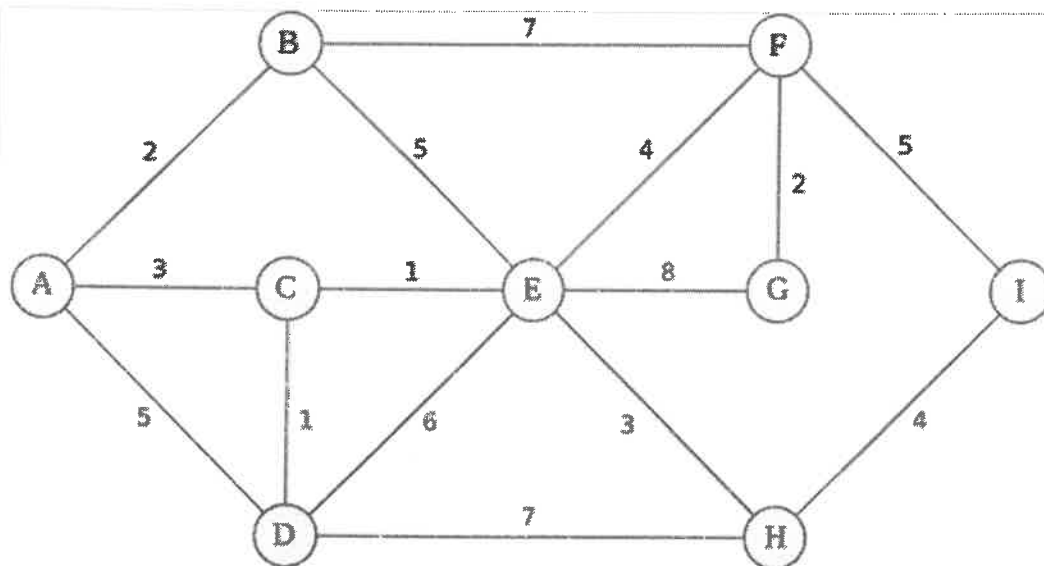
In continuation of the above, the company experts have planned to install the following number of computers in each of their offices:

Back Office	100
Front Office	20
Work Office	50
East Office	50
West Office	50
South Office	50

- (i) Design and Draw the Topology for the whole organization.
- (ii) Suggest network type (out of LAN, MAN, WAN) for connecting each of the following set of their offices:
 - A. Back Office and Work Office
 - B. Back Office and South Office
- (ii) Which device you will suggest being produced by the company for connecting all the computers with in each of their offices out of the following devices?
 - A. Switch/Hub
 - B. Modem
 - C. Router
 - D. Multi-Layer Switch
 - E. Telephone
- (iii) Which of the following communication medium, you will suggest being procured by the company for connecting their local office units in New Delhi for very effective and fast communication?
 - A. Telephone Cable
 - B. Optical Fiber
 - C. Ethernet Cable
- (iv) Suggest a cable/wiring layout for connecting the company's local office located in New Delhi. Also suggest an effective method/technology for connecting the company's regional office- "East Office", "West Office" and "South Office" with offices located in New Delhi.

Q.1B Apply Routing Information Protocol (RIP) V2 to find the Routing table of all the nodes and elaborate routing table formation on each node.

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- Q.2A The following is a dump of a TCP header in hexadecimal format.
- 00CD0018 00000EF1 00000D5D 502200D1 01BF0010
- What is the source port number?
 - What is the destination port number?
 - What is the sequence number?
 - What is the acknowledgment number?
 - What is the length of header?
 - What is the type of segment?
 - What is the window size?

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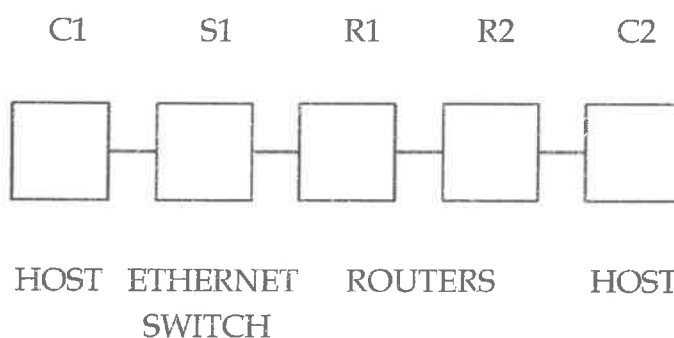
OR

- Q.2B Determine the Network ID, First Valid Host, Last Valid Host, and Broadcast ID of the following network address/mask pairs:
- 192.168.1.134/25
 - 160.150.140.130/18

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- Q.3 Discuss the flow of information at the correct layers in a connection from C1 to C2.

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- Q.4 Consider sending a 2400-byte datagram into a link that has an MTU of 700 bytes. Suppose the original datagram is stamped with the identification number 422.

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How many fragments are generated? What are the values in the various fields in the IP datagram(s) generated related to fragmentation?

Q.5 A router has the following (CIDR) entries in its routing table:

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Address/mask	Next hop
135.46.56.0/22	Interface 0
135.46.60.0/22	Interface 1
192.53.40.0/23	Router 1
default	Router 2

For each of the following IP addresses, what does the router do if a packet with that address arrives?

(A) 135.46.63.10

(B) 135.46.57.14

(C) 135.46.52.2

(D) 192.53.40.7

(E) 192.53.56.7