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CSE 343 /CSEN 6184

جامعة حفر الباطن
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Homework #2 –Term (241) **Due: Monday 18th November 2024 [12:00]**

Requirements: **Total:** 50 Marks

(1) You are to submit a **Handwritten assignment** before the deadline.

(2) You must show the steps towards the solution.

IP Address Calculations

1. Given the IP address 133.15.6.45/27. Find the following: [10 Marks]

Show your steps. The marks to be given for each step completed is shown below.

A. Number of addresses. [1 Marks]

Host bits = 32 - 27 = 5

Total address = 2^5 = 32

B. Network Address: [4 Marks]

Convert to binary

133.15.6.45

= 10000101.00001111.00000110.00101101

subnet mask /27 = 10000101.00001111.00000110.00100000

Convert back to decimal

133.15.6.32

B. Network Address: [4 Marks]

1- Convert to binary 133.15.6.60

10000101.00001111.00000110.00111100

2- 128 subnet

10000101.00001111.00000110.00110000

3. Convert back 133.15.6.48

C. First Address: [1 Marks]

133.15.6.48+1 = 133.15.6.49

D. Last Address and E. Broadcast Address: [4 Marks]

D. Last Address

= 133.15.6.63-1

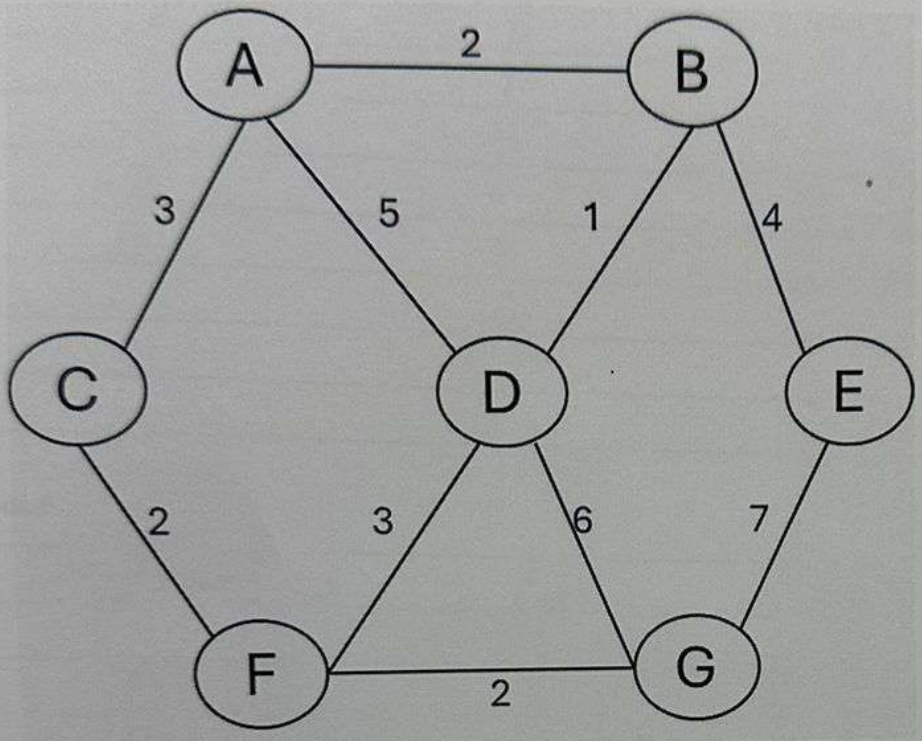
=133.15.6.62

E. Broadcast Address

133.15.6.63

Routing Protocols

3. Using the link state (LS) algorithm routing, compute the least-cost path from **A, B,** and **E** to all the possible destinations in the network shown below. Show the table summary of the algorithm's computation of the paths.



Node A

Destination	Cost	Path
B	2	A → B
C	3	A → C
D	3	A → B → D
E	6	A → B → E
F	5	A → C → F
G	9	A → B → D → G

C. First Address: [1 Marks]

133.15.6.32+1=133.15.6.33

D. Last Address and E. Broadcast Addresses: [4 Marks]

Broadcast address = 133.15.6.63

Last address = 133.15.6.63-1

=133.15.6.62 ← Last address

E. Broadcast Address

is the highest address: 133.15.6.63

2. Given the IP address 133.15.6.60/28. Find the following: [10 Marks]

A. Number of addresses in the network:

B. Network Address:

C. First Address:

D. Last Address:

E. Broadcast Address.

Show your steps. The marks to be given for each step completed is shown below.

A. Number of addresses. [1 Marks]

128 subnet are 32-28 = 4

total address = 2^4 = 16

Node B

Destination	Cost	Path
A	2	B → A
C	5	B → A → C
D	1	B → D
E	4	B → E
F	6	B → D → F
G	7	B → D → G

Node E

Destination	Cos	Path
A	6	E → B → A
B	4	E → B
C	9	E → B → A → C
D	5	E → B → D
F	8	E → B → D → F
G	7	E → G