ECE PARIS
ÉCOLE D'INGÉNIEURS

Prénom : ..Lisa.....
NOM : .....GRIERE.....
Promotion :
Groupe : .....

ING 4
Réseaux informatiques 1
Devoir surveillé

Int.

12 décembre 2017
15:30 - 17:00
Durée : 01:30

Sujet proposé par :	KOBEISSY Nassim
Calculatrice autorisée :	NON
Documents autorisés :	NON
Ordinateur autorisé :	NON

Les étudiants devront répondre sur la grille de réponse jointe au sujet. Il est impératif de noter le n° étudiant, en haut, à droite de celle-ci.

RAPPEL :

- NOM et Prénom de l'élève doivent être portés sur toutes les copies rendues.
- Les copies doivent être numérotées.
- Tous les appareils électroniques (téléphones portables, PDA, ordinateurs, montre connectée, etc.) doivent être éteints et rangés.
- **Toute erreur constatée sur le sujet doit être signalée sur la copie. Le correcteur en tiendra compte lors de la correction du devoir.**
- Il est interdit de communiquer.
- Toute fraude, ou tentative de fraude, qu'elle soit passive ou active, fera l'objet d'un rapport de la part du surveillant et sera sanctionnée par la note zéro, assortie d'une convocation devant le Conseil de discipline. Aucune contestation ne sera possible. Tous les documents et supports utilisés frauduleusement, devront être remis au surveillant.
- Les élèves ne sont pas autorisés à quitter la salle où se déroule l'épreuve moins de 45 minutes après le début de l'épreuve. Au-delà de ces 45 premières minutes, toute sortie est définitive (sauf dans le cas d'une épreuve durant plus de deux heures).

ING 4 - SI
Computer Networks
2017/2018

Documents (course notes, personal notes…) are NOT allowed
Calculators are not allowed

Duration: 90 minutes.
Total points = 40 points

Multiple choice questions:

Choose one and only one answer for each question
A correct answer = **1 point**
A wrong/incomplete answer = **-0.5 point.**
No response = **0 point**

01. In the OSI model as the data packet moves from the upper to the lower layers, headers are
A) Added
B) Removed
C) Rearranged
D) Modified

02. Two devices are in network if
A) a process in one device is able to exchange information with a process in another device
B) a process is running on both devices
C) PIDs (process IDs) of the processes running of different devices are same
D) none of the mentioned

03. Which of the following is the decimal and hexadecimal equivalents of the binary number 10011101?
A) 155, 0x9B
B) 157, 0x9D
C) 159, 0x9F
D) 185, 0xB9

04. The number of layers in TCP/IP and OSI reference models respectively is :
A) 5 , 7
B) 7 , 4
C) 4 , 7
D) None of the mentioned

05. According to OSI reference model, Routers operate at layer _____. LAN switches operate at layer _____. Ethernet hubs operate at layer _____.
A) 2, 3, 1
B) 3, 2, 1
C) 3, 3, 2

06. This layer is present in the OSI model, and absent in the TCP/IP one.
A) Application layer
B) Presentation layer
C) Session layer
D) Both (B) and (C)

07. One of the TCP/IP model layers is the Network access Layer. In the OSI model, it is equivalent to:
A) Network layer
B) Data Link layer

C) Physical layer
D) None of the mentioned

08. In OSI model, when data is sent from device A to device B, the 5th layer to receive data at B is
A) Application layer
B) Transport layer
C) Link layer
D) Session layer

09. In Internet protocol stack (TCP/IP model), when data is sent from device A to device B, the 3th layer to receive data at B is
A) Application layer
B) Transport layer
C) Link layer
D) Session layer

10. In OSI model, which layer provides the services to end user?
A) Application layer
B) Session layer
C) Presentation layer
D) None of the mentioned

11. Transmission data rate is decided by
A) Network layer
B) Physical layer
C) Data link layer
D) Transport layer

12. The physical layer concerns with
A) bit-by-bit delivery
B) process to process delivery
C) application to application delivery
D) none of the mentioned

13. The data link layer takes the packets from _____ and encapsulates them into frames
A) network layer
B) physical layer
C) transport layer
D) application layer

14. Ethernet frame contains
A) MAC addresses
B) IP addresses
C) both (A) and (B)
D) none of the mentioned

15. The maximum size of payload (useful data) field in Ethernet frame is
A) 1000 bytes
B) 1200 bytes
C) 1300 bytes
D) 1500 bytes

16. MAC address is
A) 24 bits
B) 36 bits
C) 42 bits
D) 48 bits

17. Which one of the following is the multiple access protocol for channel access control?
A) CSMA/CD

B) CSMA/CA
C) Both (A) and (B)
D) None of the mentioned

18. CSMA/CD, which of the following statements is true?
1. In a CSMA/CD collision domain, multiple stations can successfully transmit data simultaneously.
2. In a CSMA/CD collision domain, stations must wait until the media is not in use before transmitting.
3. You can improve the CSMA/CD network by adding more hubs.
4. After a collision, the station that detected the collision has first priority to resend the lost data.
5. After a collision, all stations run a random backoff algorithm. When the backoff delay period has expired, all stations have equal priority to transmit data.

A) 1 and 3
B) 2 and 4
C) 1, 3 and 4
D) 2 and 5

19. The network layer concerns with
A) bits
B) frames
C) packets
D) none of the mentioned

20. If the TTL (time to live) field of the IP packet has value 10, how many routers (max) can process this packet?
A) 9
B) 10
C) 11
D) 1

21. Which of these is not applicable for IP protocol?
A) is connectionless
B) offers reliable service
C) offers unreliable service
D) none of the mentioned

22. Which of the followings is not a valid IP address:
A) 123.56.12.134
B) 321.33.9.12
C) 0101,0010,1101,1000,0010,0010,0011,1101

23. How many subnets can be configured with the network address 12.8.112.0/22 knowing that each network shall support 23 hosts?
A) 8 subnets
B) 16 subnets
C) 32 subnets
D) 64 subnets

24. What is the subnet address of the host 221.49.13.41/27?
A) 221.49.13.0
B) 221.49.13.16
C) 221.49.13.32
D) 221.49.13.36

25. What is the maximum number of IP addresses that can be assigned to hosts on a local subnet that uses the 255.255.255.224 subnet mask?
A) 14
B) 15
C) 16
D) 30

26. Knowing that class A IP address starts with the bit 0, class B with the bits 10, class C with 110, and class D with 1110, to which class does the IP address 192.125.17.30 belong?
A) Class A
B) Class B
C) Class C
D) Class D

27. Knowing that class A IP address starts with the bit 0, class B with the bits 10, class C with 110, and class D with 1110, to which class does the IP address 138.47.34.18 belong?
A) Class A
B) Class B
C) Class C
D) Class D

28. Which class of IP address has the most host addresses available by default?
A) Classe A
B) Classe B
C) Classe C
D) A and B

X 29. NAT (Network address translation) is
A) Translating an IP address into a MAC address
B) Translating a private IP address into another IP address
C) Translating a MAC address into an IP address
D) None of the above

30. Transport layer protocols deals with
A) process to process communication
B) node to node communication
C) none of the mentioned

31. Transport layer aggregates data from different applications into a single stream before passing it to
A) network layer
B) data link layer
C) application layer
D) physical layer

32. Which one of the following is a transport layer protocol used in internet?
A) TCP
B) UDP
C) Both (A) and (B)
D) None of the mentioned

33. Which transport protocol is suitable for multimedia applications?
A) TCP
B) UDP
C) both (A) and (B)
D) None of the mentioned

34. Which transport protocol is suitable for file transfer
A) TCP
B) UDP
C) both (A) and (B)
D) None of the mentioned

35. Transmission control protocol - TCP - is
A) connection oriented protocol
B) uses a three way handshake to establish a connection
C) both (A) and (B)
D) None of the mentioned

36. TCP slow start mechanism consists of
A) Multiplying congestion window size by 2 at each successfully received ACK
B) Increasing congestion window size by 1 MSS (Maximum Segment Size) at each successfully received ACK
C) None of the above
D) Both A) and B)

37. After a time out
A) TCP Reno decrease the congestion window to 1 MSS
B) TCP Tahoe decrease the congestion window to half
C) TCP retransmits at a higher speed to compensate the loss
D) TCP stops retransmission for the network to resolve congestion

38. In TCP segment header, sequence number and acknowledgment number field refers to
A) Byte number
B) Buffer number
C) Segment number
D) Acknowledgment

39. In TCP, sending and receiving data is done as
A) Stream of bytes
B) Sequence of characters
C) Lines of data
D) Packets

40. Size of source and destination port address of TCP header respectively are
A) 16-bits and 32-bits
→B) 16-bits and 16-bits
C) 32-bits and 16-bits
D) 32-bits and 32-bits