



UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)

Academic Year 2010/2011 – 2nd Year Examination – Semester 4

IT4504: Data Communication and Networks
Part 1: Multiple Choice Question Paper

7th August, 2011
(ONE HOUR)

Important Instructions :

- The duration of the paper is **1 (one) hour**.
- The medium of instruction and questions is English.
- The paper has **25 questions** and **6 pages**.
- All questions are of the MCQ (Multiple Choice Questions) type.
- All questions should be answered.
- Each question will have 5 (five) choices with **one or more** correct answers.
- All questions will carry equal marks.
- There will be a penalty for incorrect responses to discourage guessing.
- The mark given for a question will vary from 0 to +1 (*All the correct choices are marked & no incorrect choices are marked*).
- Answers should be marked on the special answer sheet provided.
- Note that questions appear on both sides of the paper.
If a page is not printed, please inform the supervisor immediately.
- Mark the correct choices on the question paper first and then transfer them to the given answer sheet which will be machine marked. **Please completely read and follow the instructions given on the other side of the answer sheet before you shade your correct choices.**

In each of the questions, identify the correct statement(s) from among the statements given.
(Some questions contain preceding text which provides the context in which the said statements should be considered.)

1) Select the correct statement regarding USB interfaces.

- (a) USB 1.0- 1.5 standard allows devices to transfer data up to 15Mbits/s.
- (b) USB 2.0 allows data transfer rates of 480Mbit/s up to a 5 m distance**
- (c) USB 3.0 is supposed to achieve 400 MB/s or higher data transfer rate.**
- (d) Standard A and B type USB 1.x/2.0 use 4 pins to transfer data.
- (e) Mini /micro type USB 1.x/2.0 interface has 5 pins but use only one pair to transfer data.**

2) Consider the following statements with regard to digital multiplexing. Select ones which are true.

- (a) Statistical TDM is efficient if there is a continuous stream of data originating from the source to the Destination
- (b) Synchronous TDM is good for continuous rate digital sources.**
- (c) Statistical TDM allocates time slots based on demand.**
- (d) Errors are detected and handled by individual channel systems in the TDM.**
- (e) Fixed position time slots are pre-assigned to sources in Synchronous TDM.**

3) Select the correct statement(s) regarding Quality of Service expected by the bellow mentioned types of traffic.

- (a) Email is very sensitive to jitter.
- (b) Videoconferencing is sensitive to jitter..**
- (c) Email requires a very high bandwidth
- (d) IP telephony (VoIP) applications are sensitive to latency.**
- (e) Jitter can disrupt a file transfer.

4) Consider the following statements about typical network topologies.

- I. Star topologies are widely used as it is easy to do troubleshooting in a star topology than in any other topology (eg:ring, bus).
- II. The bandwidth or the network throughput in a star topology depends only on the end device interface capabilities.
- III. The complex networking and operational protocol in a ring topology makes it relatively difficult to manage.

Which of the above statements is/are true?

- (a) (i) only
- (b) (i) and (ii) only
- (c) (iii) only
- (d) (i) and (iii) only**
- (e) All

5) What is the standard frequency spectrum allocated for the UHF band?

- (a) 3MHz- 30MHz
- (b) 30MHz-300MHz
- (c) 300MHz- 3GHz**

- (d) 3GHz-30GHz
- (e) 30GHz-300GHz

- 6) Consider the following definitions about three types of impairments related to transmission of signals in a medium. Which is/are true?
- i. Attenuation – loss of signal power as it propagation over a distance in the media.
 - ii. Delay distortion– is the relative delay of individual signal components caused by the media on the propagated signal
 - iii. Noise – unwanted energy from sources other than the transmitter. This includes thermal, cross talk, impulse or other types of noise, added to the information signal

- (a) (i) only.
- (b) (i) and (ii) only
- (c) (iii) only
- (d) (i) and (iii) only
- (e) **All.**

- 7) Identify Forward Error Control based data transmission mechanism\ s from the list

- (a) Stop-and-wait ARQ
- (b) Selective Repeat ARQ
- (c) **block codes**
- (d) Go-Back-N ARQ
- (e) **convolutional codes**

- 8) Which layer refers to router operations on the OSI 7 layer model?

- (a) Layer 2
- (b) **Layer 3**
- (c) Layer 4
- (d) Layer 6
- (e) Layer 7

- 9) Select the correct statement(s).

- (a) **Category 6 UTP cables support 1Gbps data rates using only 2 pairs of copper cables**
- (b) Coaxial cables have a higher bandwidth than single mode fiber.
- (c) Category 5 UTP cables have a higher bandwidth than that of Category 5e UTP cables.
- (d) Fiber optic cables have a lower bandwidth than that of category 6 STP cables.
- (e) **Category 6 UTP cables have higher number of twists than category 3 or 5 UTP cables**

- 10) What is the logical topology of an Ethernet LAN connected through an unmanaged Switch ?

- (a) **Star**
- (b) Mesh
- (c) Ring
- (d) Grid

(e) Bus

11) Consider the following statements about the RSVP which is used as a key Quality of Service protocol.

- I. RSVP is receiver oriented.
- II. RSVP cannot be used for multicasting applications.
- III. RSVP is a IP layer protocol.

Which of the following is/are true?

- (a) (i) only
- (b) (i) and (ii) only.
- (c) (iii) only.
- (d) (i) and (iii) only**
- (e) (ii) only

12) What is the operational frequency range of a CAT 5e cable ?

- (a) 1-10MHz
- (b) 1-100 MHz**
- (c) 1-200 MHz
- (d) 1-250 MHz
- (e) 1-650 MHz

13) Which layer/s of the OSI 7 layer model refers to the Internet protocol layer of TCP/IP networking model?

- (a) Transport Layer
- (b) Network Layer**
- (c) Physical Layer
- (d) Transport layer
- (e) Session Layer.

14) Identify the network in CIDR notation, which has the IP address range 10.10.16.0 – 10.10.31.255.

- (a) 10.10.16.0/21**
- (b) 10.10.16.0/22
- (c) 10.10.16.0/20
- (d) 10.10.16.255/22
- (e) 10.10.16.0/24

15) What is the specified wire diameter for cat 5e in AWG?

- (a) 23
- (b) 24**
- (c) 26.

- (d) 22.
- (e) None of the above.

- 16) Consider the following statements about PAN topologies as defined by IEEE 803.15.4.
- I. There can be only one PAN controller in a mesh network
 - II. Reduced functional devices can only be connected to the PAN controller in the PAN Star topology.
 - III. Fully functional devices in the cluster tree topology can communicate with the Reduced functional devices or with PAN controller.

Which of the above statements is/are true?

- (a) (i) only
- (b) (i) and (ii) only
- (c) (iii) only
- (d) (ii) and (iii) only
- (e) (i) and (iii) only**

- 17) Which layer on the ISO model corresponds to the SIP and H.323 protocols used for video and audio conferencing ?

- (a) Presentation
- (b) Session**
- (c) Data Link
- (d) Network
- (e) Transport

- 18) Consider the following statements about ISO cable standard and class classifications :
- I. Category 5e refers as class D
 - II. Class EA refers for Category 7
 - III. There is no class definition for Category 7A

Which of the above statements is/are true?

- (a) (i) only**
- (b) (i) and (ii) only.
- (c) (iii) only.
- (d) (i) and (iii) only.
- (e) (ii) and (iii) only.

- 19) Select the correct statement(s) about wireless user access technologies

- (a) General Packet Radio Service (GPRS) is a 3G wireless technology
- (b) WiMAX Release 1 which is based on IEEE 802.16e technology can support a bandwidth of above 100Mbps
- (c) WiMAX is based on IEEE 802.16 international standard**
- (d) GPRS provides better speeds and smaller latency than EDGE technology
- (e) High-Speed Downlink Packet Access (HSDPA) provides downlink data speeds above 40Mbps

- 20) Which of the following can be considered true regarding IPV6 and IPV4?

- (a) A 256 bit address space of IPV6 as opposed to a 32 bit address space of IPV4**

- (b) **IPV6 supports network layer security**
- (c) Broadcasting is a standard feature available in both IPV6 and IPV4
- (d) **An explicit “traffic class” field to identify and classify traffic in IPV6**
- (e) **IPV6 address are normally written in hexadecimal as opposed to decimal notation in IPV4**

- 21) Consider the following statements on wireless security technologies
- I. If you are connected to a wireless hotspot and no encryption is used, you can be an easy target for a man in the middle attack.
 - II. Unauthorized access to a wireless network can be avoided by using MAC ID filtering
 - III. The IEEE 802.15 defines the standard for wireless security.

Which of the above statements is/are true?

- (a) (i) only
- (b) **(i) and (ii) only**
- (c) (iii) only
- (d) (i) and (iii) only
- (e) (ii) and (iii) only

- 22) Which of the following characterizes a virtual circuit (VC) model?

- (a) **The Packet header contains end-point identifiers to identify a particular flow**
- (b) **VC is established before the first data packet is sent.**
- (c) If used for data, the VC could guarantee delivery with acknowledgements
- (d) Order of packets delivers is not guaranteed on a VC model.
- (e) VC model doesn't support QoS and cannot be used for any delay sensitive applications

- 23) Select the correct statement(s) about VLAN.

- (a) **A trunk carries traffic for multiple VLANs.**
- (b) Hosts in different VLAN (Implemented using IP based VLAN) can communicate by using a Layer 2 device
- (c) 802.1Q: IEEE standard defines encapsulation of packet in an additional 64-byte header
- (d) Implementing VLAN in a large network will decrease its performance and security
- (e) **Frame tagging functions at Layer 2 lower the processing and administrative overhead in VLAN setup**

- 24) Which of the following characterizes the datagram mode of packet delivery?

- (a) **Frame header contains the next hop node address, rewritten at each hop.**
- (b) The header contains lesser address information providing more room for data
- (c) Packets belonging to an end-to-end connection will flow through a fixed path
- (d) It's a connection-oriented model.
- (e) Asynchronous Transfer mode (ATM) is one of the technologies used in the datagram mode.

- 25) Select the correct statements on IEEE standards regarding wireless LAN and PAN networks.

- (a) **802.11 a/b/g/n -refers to LAN and MAN standards in wireless networks**
- (b) 802.11.5- Mesh Topology Capability in Wireless Personal Area Networks (WPANs)
- (c) **802.11k -Radio Resource Measurement of Wireless LANs**

- (d) 802.11.4- Specifications for Low Rate Wireless Personal Area Networks (LR-WPANs).
- (e) 802.11n refers to mobile wireless network
