



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
