UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)

Academic Year 2012/2013 –2nd Year Examination – Semester 4

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

21st July, 2013
(ONE HOUR)

<u>Important Instructions :</u>

- The duration of the paper is **1 (one) hour.**

- The medium of instruction and questions is English.

- The paper has **25 questions** and **7 pages**.

- All questions are of the MCQ (Multiple Choice Questions) type.

- All questions should be answered.

- Each question will have 5 (five) choices with **<u>one or more</u>** 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.)

01) Select the correct statement(s) regarding the Quality of Service (QoS) expected by the below mentioned types of traffic.

> (a) Web browsing is very sensitive to jitter.
> (b) Telepresence applications are sensitive to latency and jitter.
> (c) Email requires a very high bandwidth.
> (d) Out of order delivery is an Issue in video and audio streaming applications.
> (e) QoS can be implemented using only application layer protocols.

02) What is the frequency spectrum allocated for the VHF band?

> (a) 3MHz- 30MHz
> (b) 30MHz-300MHz
> (c) 300MHz- 3GHz
> (d) 3GHz-30GHz
> (e) 30GHz-300GHz

03) Which layer refers to UDP /TCP packet operations on the OSI 7 layer model?

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

04) Identify the address range of the network 192.168.16.0/21 represented in CIDR notation

> (a) 192.168.16.0-192.168.16.255
> (b) 192.168.16.1-192.168.16.254
> (c) 192.168.16.0-192.168.24.255
> (d) 192.168.16.0-192.168.31.255
> (e) 192.168.16.1-192.168.32.255

05) An example/examples for Simplex systems is/are

> (a) Two way radio (walkie-talkie).
> (b) FM Radio.
> (c) Cell phones.
> (d) Satellite television.
> (e) Telephone.

06) Mark the correct statement/s regarding impairments related to transmission of a signal over a medium.

> (a) Attenuation – loss of signal power as it travels over a distance in the media.
> (b) Jitter - delay difference experience by individual packets traveling in the medium.
> (c) Delay distortion– the relative delay of a signal due to the resistance in the medial
> (d) Interference- the distortion that happens due to external frequencies.
> (e) Noise – unwanted energy from sources other than the transmitter but added to source.

07) Consider the following statements regarding UTP cable standards.
    i. Cat 5e is made of standard 24 AWG conductors.
    ii. Cat 5 and CAT 5e can operate at 100MHz frequency.
    iii. Maximum length of Cat 5 is 100 meters whereas Cat 5e can go to lengths exceeding 100meters.

Which of the above is/are true?

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

08) Which of the following can be considered true regarding IPV6?

> (a) IPv6 does not include support for network layer security.
> (b) The minimum routable subnet size in a IPv6 network is a /64 address.
> (c) NAT is a standard feature available in IPv6.
> (d) An explicit "traffic class" field to identify and classify traffic is available in IPv6.
> (e) IPV6 address is normally written in hexadecimal.

09) Consider the following statements about RSVP which is used as a key protocol to enforce Quality of Service.
    i. RSVP is receiver oriented.
    ii. RSVP cannot be used for streaming applications.
    iii. RSVP is designed to work only with TCP/IP.

Which of the above is/are true?

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

10) Which of the following aspect/s is/are needed to be considered in selecting a proper network solution for a given scenario?

> (a) Reliability
> (b) performance
> (c) Expandability
> (d) Connecting medium
> (e) Layout

11) Consider the following statements on wireless security technologies.
   i. An encrypted tunnel from device to access point/controller may prevent a man in the middle attack.
   ii. MAC ID filtering can prevent unauthorised user device access.
   iii. Disabling SSID Broadcast cannot provide security against unauthorised access.
      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

12) Select the correct network address and broadcast address respectively for the following IP address 192.168.0.24/25

   (a) 192.168.0.0, 192.168.0.127
   (b) 192.168.0.127, 192.168.0.0
   (c) 192.168.0.1, 192.168.0.126
   (d) 192.168.0.0, 192.168.0.255
   (e) 192.168.0.1, 192.168.0.254

13) Consider the following statements about sub netting on a network.
   i. Subnets will help control the broadcast traffic.
   ii. The external router configuration complexities can be reduced by implementing a proper subnet structure.
   iii. Subnetting will increase the number of usable IP addresses in the network.

   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

14) Which of the following statement/s is/are true regarding routing algorithm development goals?

   (a) Robustness and stability
   (b) Standardization
   (c) Rapid convergence
   (d) Open Source
   (e) Optimality

15) Consider the following statements about UDP and TCP.
    i. UDP rearranges data packets in sequence order.
    ii. UDP is an unreliable and connectionless protocol.
    iii. TCP is a stream oriented protocol.

Which of the above statements is/are true?

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

16) Which of the following statement/s about layer 2 and layer 3 VPN is/are true?

(a) Layer 2 VPNs can carry traffic for many different protocols.
(b) Layer 3 VPNs are more flexible to implement than layer 3 VPN.
(c) Layer 3 VPNs can carry traffic that belongs to IP protocol only.
(d) Layer 2 VPN utilizes IPSec and SSL encryptions.
(e) Layer 3 VPN implementation requires sophisticated hardware.

17) Consider the following statements about EDGE and GPRS wireless networks.
    i.   GPRS can provide data rates of up to 2 Mbps.
    ii. EDGE can provide data rates of up to 500 kbit/s.
    iii. GPRS is a best-effort packet switched service.

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

18) Which of the following statement/s is/are correct regarding the TCP header field?

(a) The Sequence number is a 64 bit long field.
(b) A port number identifies the endpoint of a connection.
(c) SYN: Synchronize sequence numbers sent in the first packet when initiating a connection.
(d) A host uses the AckNo field to send acknowledgements.
(e) FIN bit is used to determine that the Sender has finished sending data.

19) Consider the following statements regarding DHCP messages.
   i. A DISCOVER message is transmitted by the DHCP server to identify a Client.
   ii. A REQUEST message is sent as an acknowledgement to OFFER message from the server to get a new IP or to renew an IP address.
   iii. A RELEASED message is sent by the DHCP server providing an IP for a DHCP Client.

   Which of the above statements is/are true?

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

20) Which of the statements below is/are true regarding ICMP messages?

   (a) The ICMP packet has a 128 bit header.
   (b) One byte header field is used to identify the message type.
   (c) ICMP messages are encapsulated as IP datagrams.
   (d) An ICMP query message is sent by a host to a router or another host.
   (e) ICMP error message reports error conditions.

21) Identify the correct statements regarding the Message/Mail Transfer Agent (MTA).

   (a) MTA can communicate with another MTA, a mail submission agent (MSA) or a mail user agent (MUA)
   (b) MTA uses the Simple Mail Transfer Protocol (SMTP) to communicate with others.
   (c) Managing mail storage is a critical function provided by MTA.
   (d) MTA uses only IMAP and POP3 to communicate with clients.
   (e) MTA adds a Received trace header field to the top of the header of the message.

22) Consider the following statements regarding DNS.
   i. The DNS namespace is a tree of "domains".
   ii. A Resource Record (RR) is the basic data element and contains data associated with domain names.
   iii. A zone is an area of the DNS database which is visible only to users in the specific domain.

   Which of the above statements is/are true?

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

23) Select the correct statements regarding USB and Fire wire technologies.

(a) USB 2.0 allows data transfer rates of 1Gbps up to a 50 m distance.
(b) USB 3.0 port can be used for communication with USB 2.0 devices.
(c) IEEE1394 -1995(fire wire 400) can provide a faster data rate than USB 3.0.
(d) USB 3.0 can transfer data 10 times faster than USB 2.0.
(e) USB 3.0 uses 9 pins connector to transfer data at high speed.

24) Consider the following statements about last mile connectivity technology options.

i.   XDSL technology can provide high bandwidth links using copper for distances exceeding 8KM.
ii. FTH (fiber to home) can provide link speeds of 10 to 100Mbps.
iii. WiMAX technology can provide link speeds of up to 10Gbps.

Which of the above statements is/are true?

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

25) Identify the connection oriented protocols.

(a) SNMP
(b) SSH
(c) POP3
(d) ICMP
(e) IMAP

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