Shri Vile Parle Kelavani Mandal's
SHRI BHAGUBHAI MAFATLAL POLYTECHNIC
AUTONOMOUS SEMESTER EXAMINATION NOV/DEC.2013

SEAT NO _____

ALLOWED : 03 HOURS

SEMESTER : FIFTH

MARKS : 100

COURSE : COMPUTER ENGINEERING

NETWORK & SECURITY

CODE : CSE-25

Instructions :

1) Answer to the two sections must be written in separate answer books
2) Attempt Any Three questions each from Section-I & Section-II including Q.1 & Q.6 which are compulsory.
3) Use of Mathematical and Steam tables and pocket calculator (non-programmable) is permissible
4) Illustrate your answers with neat sketches, wherever necessary
5) Take g=980 cm/sec.Sec when required, unless otherwise stated.
6) Figures to the right indicate full marks
7) Assume suitable additional data, if necessary
8) The student should read the name and code of the subject and confirm that the question paper received is as per subject registered

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SECTION-I

Attempt Any Six   (18)

Q.1
(a) What are the design issues of network layer?
(b) Compare TCP/IP with OSI reference model.
(c) Define `channel` and describe any one transmission media.
(d) How are directory services useful in computer network ?
(e) What is the purpose of sequence number in TCP packet ?
(f) What is the role of Data link layer in OST model.
(g) Give the importance of session layer of OSI model.

Q.2 (a) Describe the various types of HDLC frames and the different transmission modes in HDLC.   (08)

(b) What are the three major multiplexing techniques? Explain TDM with neat diagram.   (06)

(c) What is the purpose of guard band in multiplexing ?   (02)

Q.3 (a) What is local loop ? Explain WLL   (08)

(b) State the importance of directory service in networks. Explain NDS. (08)

Q.4 (a) List the different types of switches used in switching. Explain batcher banyan switch.   (08)

(b) Differentiate between CSMA/CD and CSMA/CA   (04)

(c) What are the features of NDS ?   (04)

Q.5 (a) Draw and explain the TCP frame format. (08)

(b) List the various techniques of error detection and correction. Explain (08)
CRC with proper example.

SECTION-II

Q.6 (a) What is the purpose of using firewall ? Explain the architecture of (08)
firewall with the help of a neat diagram.

(b) Differentiate between front door and back door threats. Illustrate with (10)
examples.

Q.7 (a) What is a proxy server? Write down the steps to install a proxy server in (08)
a Novell based operating systems.

(b) What is meant by disaster recovery ? What are the techniques for the (08)
management of a network disaster ?

Q.8 (a) How can internal security to a network or a computer be ensured ? (08)
Write down the syntax
　　(i)　　　To create a user "ABC"
　　(ii)　　To give the read, write and modify rights of a
　　　　　　document to user ABC

(b) Write down the steps to install a printer across the network. (08)

Q.9 (a) Explain the steps taken to maintain the account security in a network. (08)

(b) Explain the need and architecture of VPN technology. (08)

Q.10 (a) Write down the steps to upgrade an existing network ? What additional (08)
hardware and software requirements may be required for the help
upgradation.

(b) Define following terms : (08)
　　(i)　　　Hackers
　　(ii)　　Crackers
　　(iii)　DMZ
　　(iv)　VPN client

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SECTION-I

Q.1 (a) A multimode step index fiber with a core diameter of 85 μm and a relative index difference of 1.29 % is operating at a wavelength of 1250 nm. If the core refractive index $n_1 =1.43$. Calculate (04)

   (i) Normalized frequency for the fiber   (ii) Numbers of the modes

 (b) What are the advantages of optical fiber cable ? (04)

 (c) What is meant by hetro junction? Why double hetro junctions are used in formation of LED.? (04)

 (d) Define the terms Modal dispersion ? How it is affect the bandwidth. explain with net diagrams ? (04)

 (e) Differentiate between tight buffer and loose buffer. (02)

Q.2 (a) Define following terms : (i) Acceptance angle   (iii) Group velocity (04)
                (iii) Numerical aperture   (iv) Critical angle

 (b) What are the consideration for selection at material for fiber fabrication? (04)

 (c) Drive expression for Numerical Aperture with neat diagrams also derive other equations for NA. (06)

 (d) What do you meant by duty specifications of the fiber cable? (02)

Q.3 (a) What is absorption and emission of radiation ? What do you meant by population inversion ? (04)

 (b) What are the breakout and ribbon cable ? Draw neat diagrams. (04)

 (c) Compare Light Emitting diode and Light Amplification by stimulated emission of Radiations ? (04)

 (d) Draw and explain modified chemical vapor deposition method. (04)

Q.4 (a) What is direct and indirect band gap energies ? (04)
   (b) Draw the Edge emitter LED structure. (04)
   (c) Compare storter, langer, larger wavelength ranges depending on (04)
     attenuation, dispersion, distance, Data rates.
   (d) Define: (i) Modes   (ii) Cut off wavelength (04)
       (iii) Total internal reflection   (iv) Lasering efficiency

Q.5 (a) What are the differences between graded index and multimode fibers ? (04)
   (b) A 12 km optical link with multimode index fiber at core refractive index (04)
     1.43921 and relative refractive index of 2.1 %. Calculate delay
     difference and maximum bit rate and B.W. – length product.
   (c) Draw index profiles of graded index and single mode step index fiber (04)
     with standard diamentions. Also write their equations?
   (d) What are the bending losses ? How can be eliminated ? Explain with (04)
     diagrams.

SECTION-II

Q.6 (a) What are the uses of repeaters and regenerators in fibre optic (18)
     communication ?
   (b) With the neat diagram, explain the working principle and function of
     receiver in optical communication.
   (c) Differentiate between attenuation and dispersion.

Q.7 (a) What are the various types of connectors used in optical communication? (08)
   (b) What are the various types of Light sources in optical fibre. (08)

Q.8 (a) Describe bit error rate. How is it useful in optical measurement? (08)
   (b) What is a splicing? What are the various types of splicing ? Explain each (08)
     one in brief?

Q.9 (a) Discuss optical multiplexing by using WDM. (08)
   (b) Explain the working of OTDR meter with suitable diagram. (08)

Q.10 (a) Write short note on the following (08)
     (i) Optical amplifier
     (ii) Photo detectors
   (b) Give the importance of optical fiber analysis and its parameters. (08)

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ME ALLOWED : 03 HO
AXIMUM MARKS : 10
BJECT : DIGITAL F

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(02) Attempt Any Th
(03) Use of Mathema
(04) Illustrate your a
(05) Take g=980 cm
(06) Figures to the r
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Q.2 (a) D
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Q.3 (a)
   (b)
   (c)

Q.4 (a)

   (b)
   (c)