Ans:- QUESTION NO: 1

PART-(a) P(1)

In telecommunication, a protocole data unit (PDU) is a single unit of information transmitted among peer entities of a computer network. A PDU is composed of protocol-specific control information and user data. In the layered architectures of communication protocol stacks, each layer implements protocols tailored to the specific type or mode of data exchang. For example the transmission control protocol TCP implements a connections oriented transfer mode and the

Scanned with CamScanner

PDU of this protocol is called a Segment, while the user Datagram protocol (UDP) uses datagrams as protocol data units for Connectionless communication. A layer lower in the internet protocol suite, at the internet layer. the PDU is called a packet irrespective of its payload type.

The feature of Services of a a network are implemented in distint "layers". For example. physical layer, organizing the ones and zeros into chunks of data.

Scanned with CamScanner

and getting them safely to the right place on the wire is done by the data network layer and delievery of the data to the right software application at the distination is done by the Transport layer. Between the layer (and b/w the application and the top-most layer) The layer pass service data unit across the interface. The higher layer understand the structure of data in the (SDU) but The lower layer at the interface does not. The lower layer treats the SDU as payloads. under taking to get it the same interface at the distination.

In order to this, the protocol lower layer will add to the SDU certain data it needs to perform its functions which is called encapsolation For example. it might add a port number to identify the application a network address to help with routing, accode to identify the type of data in the packet and error-checking information. All this additional information plus the original Service data unit from the higher layer constitutes to the protocols data unit layer. The SDU and metadata added by

then the maximum size of that layer's PDU (known as the maximum transmision unit: MTU) when this is the case the SDU must be split into muliples payloads of size suitable for a transmission or processing by the lower layer, a process known as IP fragmentation. The significance of this is that the CPU is the structured information that is passed to a matching protocal layer further along on the data's journey trail allows the layer to deliver its intended function or service. The matching

Scanned with CamScanner

Layer or 'peer' decodes the data to extract the original Service data unit decide if it is error free and where to send it next, etc. Unless we have already arrived at the lowest (physical) layer, the CPU is passed to the peer using Services of the next Lower layer in the protocol 'Stack' when the CPU passes over the interform the layer that constructed it to the layer that merely delivers it (and therfor does not understand its internal structure) it become a Service data unit to that layer.

Scanned with CamScanner

P(7)

The addition of addressing and control information to an (SDU) to form a (PDU) and the passing of that PDU to the next lower layer as an SDU repeats until the lowest layer is reached and data passes over the some medium as a physical signal.

Scanned with CamScanner

QUESTION NO:- 1 P(1)

PART (B) :-

ANSWER:-

THE ADVANTAGES ARE :-

* The Single layer to study as all the functionalities is provided at this layers.
* Hiegher Bandwidht as number of dayer is reduced.
* it reflects the real life -seperation of application from The TCP-downward Section of the OSI model

DISADVANTAGES :-

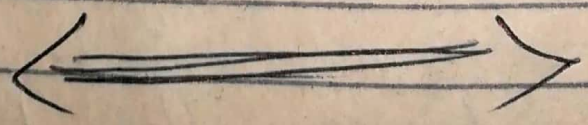
* Can make reasoning about the architecture of network System less effective.

Scanned with CamScanner

P(2)

* There will be Security issues as the network Security and application Security will open at a Single point which may expose our network open to our threats.

* it makes troubleshooting hard as multiples errors may reside at a Single



Scanned with CamScanner

TALHA HAMEED 14526

QUESTION NO 2:-

PART (a)

ANSWER:-

OSI MODEL:- The open System interconnection (OSI) model defines a networking framwork to implement protocls in Seven layers. Thre are really nothing to the OSI Model. In fact, it's not even tangible. The OSI model doesn't perform any function in the networking process. it is a Conceptual framwork So Can better understand the Complex

Scanned with CamScanner

are happening.

The Seven (7) Layer of OSI :-

In the OSI Model Control is passed from one layer to next, starting at the application layer (layer 7) in one station, and proceeding to the bottom layer, over the channel to the next station and back up the hierarchy. The OSI model takes the task of inter-networking and devides that up into what is referred to as a Verticle stack that Consist of following 7 layers.

Scanned with CamScanner

APPLICATION (LAYER-7):-

OSI model, layer 7, support and end user processes, communication partners are identified, quality of Services is identified, user authentication and privacy are Considered and my Constrails on data Syntax are identified. Every thing at this layer is application-Specific. This layer provide application Services for the file transfer email, and other network-Software Services. Telnet and FTP are application that exist entirely in the application level. Tiered applications architecture are part of the layer

PRESENTATION (LAYER - 6):-

This layer provides independence from different in data representation e.g (encryption) by translating from application to network format. and vice versa. The presentation layer work to transform data into the form that the Application layer can accept. This layer format and encrypt data to be send across a network providing freedom from Compatibility problem it is some time called Syntax layer

Scanned with CamScanner

SESSION (LAYER 5):-

This layer establisheel, / manage, are terminales connection between application. The Session layer set up, cordinales, and terminales Conversation, exchanges, and ~~at~~ dialogues between the application at each end. it deal with session and connection coodination.

TRASPORT (LAYER 4) :-

OSI model, layer 4, provides transparent transfer of data between and system, or host, and is responsible for end-to-end error recovery and

Scanned with CamScanner

flow control, it ensures complete data transfer.

NETWORK (LAYER 3):-

Layer 3 provides switching & routing technologies creating logical path, known as Virtual circuits for transmitting data from node to node. Routing and forwarding are functions of this layer as well as addressing, internetworking, error handling, congestion control and packet sequence

DATA LINK (LAYER - 2) :-

At OSI model, layer 2, data packets, are encoded and decoded into bits. it furnishes transmission protocols knowledge and management and handles errors in the physical layers. flow control and frame Synchronization. the data link layer is devided into two sub layer: The media Access Control (MAC) Layer and the logical link Control (LLC) layer. The MAC Sub layer Control how a Computer on the network gains access to the data and permision to transmit it. The LLC layer Control frame Synchronization flow Controll.

Scanned with CamScanner

PHYSICAL (LAYER-1) :-

OSI model, layer 1 conveys the bit stream electrical impulse light or radio signal through the network at the electrical and mechanical level. It provide the hardware means of sending and receiving data on a carrier, including, cables, cards, and physical aspects. Fast Ethernet, RS 232, and ATM are protocols with physical layer components.

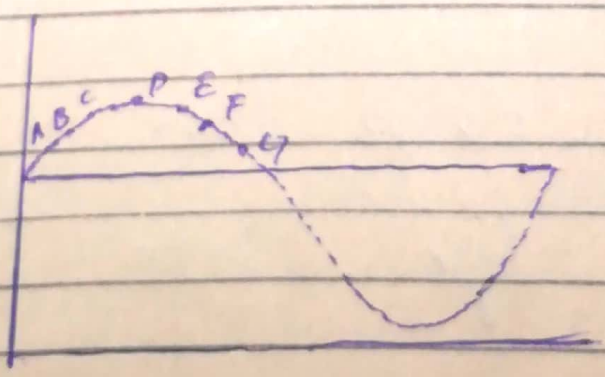
Scanned with CamScanner

QUE NO:- 2

Part (b)

ANSWER:-

Phase is a specific location in a sine wave. So in the scenario we cannot plot phase of a sine wave in a time-phase plot as the wave is constantly changing



As we can see that all the points are in different position thus we cannot explicity plot the phase in time phase plot.

Scanned with CamScanner

Q NO:- 3

PART B

Ans:-

a) $N = 10,000$
$k = 16$
$n = 1000$

first we have $N/n = 10000/1000 = 10$

Cross bars, each of size is 16x16 in the second stage we have 4 cross bars of size 16x16 in third stage we have 16 Cross bar bars each of size 16x16

Scanned with CamScanner

b) Total number of points:-

$= 10(10 \times 16) + 16(10 \times 10) + 10(16 \times 10)$

$= 1600 + 1600 + 1600$

$= 4800$

c) Only 16 Simultenious connection are possible for each crossbars at the 1st stage this mean that the total number of connection is

$16 \times 10 = 160$

d) If we use a cross bars (1000 x 1000) all input lines can have a connection at the same time which mean 1000 Simultanious connections.

e) The blocking factor is

$160/1000 = 16\%$.

Scanned with CamScanner

QUE NO:- 3

Part (a)

(a) * For 10 kbps channel:-

The duration of 1 bit

$$\Rightarrow \frac{1}{10kbps} = 1ms$$

* For 100 kbps channel:-

The duration of 1 bit

$$\Rightarrow 1/100kbps = 100ms$$

* For 1mbps channel:-

The duration of 1 bit

$$\Rightarrow 1/1mbps = 1\mu s$$

* For 10 mbps channel:-

The duration of 1 bit =

$$= 1/10mbps = 10\mu s$$

Scanned with CamScanner

(b) Rate of link:-

$= 11 \cdot 11 \text{ Mbps}$

(c) The duration of each slot is the inverse of data rate

$= 1 / 11 \cdot 11 \text{ Mbps} = 0 \cdot 09 \text{ µs}$

(d) Duration of frame is always same as duration of unit before multiplexing.

Scanned with CamScanner