

Con. 3187-10

*Lib*

*BE (EETC) VIII (4)  
Comp Comm & NW*

(3 Hours)

*25/03/10  
11-2*

AN-3235

[Total Marks : 100

(N. B. : Q.1 is compulsory and attempt any four questions from Q.2 to Q.7)

## *Computer Communication & Networks*

1.
  - (a) What is data transparency ? Explain bit stuffing and destuffing. 05
  - (b) What tasks are performed by the transport layer? 05
  - (c) Explain different network components. 05
  - (d) What is fixed routing? What are the advantages and disadvantages of adaptive routing? 05
2.
  - (a) What is flow control? Explain stop and wait ARQ protocol. 10
  - (b) With suitable sketches explain the working of sliding window flow control mechanism. 10
3.
  - (a) Describe station types, configuration and modes of communication (response modes) supported by HDLC protocol. 10
  - (b) Explain HDLC frame format. 10
4.
  - (a) Explain the meaning of various fields in the TCP header frame format. 10
  - (b) Explain following medium sharing scheduling techniques: - 10
    - (i) Reservation
    - (ii) Polling
    - (iii) Token passing.
5.
  - (a) Compare circuit switching, datagram packet switching and virtual packet switching techniques with the help of timing diagram. 10
  - (b) Explain the meaning of various fields in the IP header frame format. 10
6.
  - (a) How does ATM differ from frame relay? What are the relative advantages and disadvantages of ATM compared to frame relay? 10
  - (b) What is the essential difference between Dijkstra algorithm and Bellman-Ford algorithm. Explain these algorithms in brief. 10
7.
 

Write short note on any two of the following : - 20

  - (a) IEEE Project 802
  - (b) SONET and SDH
  - (c) CSMA/CA procedure.

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Con. 3204-10.

Sub:- Optical Fiber Communication

AN-3250

(3 Hours)

[Total Marks : 100]

N.B. : (1) Question No. 1 is compulsory.

11 Am to 2 Pm

(2) Attempt any four questions out of remaining five questions.

(3) Assumptions made should be clearly stated.

1. (a) Consider a  $\text{Ga}_{1-x}\text{Al}_x\text{As}$  laser with  $x = 0.07$ . Find the value of operating wavelength ( $\lambda$ ). 5
- (b) In a 100-ns pulse,  $6 \times 10^6$  photons at a wavelength of 1300 nm fall on an In GaAs photo detector. On an avg,  $3.9 \times 10^6$  electron-hole ( $e-h$ ) pairs are generated. Find quantum efficiency. 5
- (c) Find the modal birefringence for a single mode optical fiber which has a beat length of 8 cm at 1300 nm. 5
- (d) Explain equilibrium Numerical aperture in detail. 5
2. (a) Explain time Domain measurement of dispersion and hence solve : 10  
Pulse dispersion measurements are taken over a 1.2 km length of partially graded multimode fiber. The 3dB widths of optical input pulses are 300 ps, and the corresponding 3 dB widths for the output pulses are found to be 12.6ns. Assuming pulse shapes and fiber impulse response are Gaussian calculate :  
(i) 3 dB pulse broadening for the fiber as ns  $\text{km}^{-1}$ .  
(ii) the fiber bandwidth-length product.
- (b) Discuss the operation of a silicon RAPD describing how it differs from p-i-n photodiode. Outline the advantages and disadvantages with the use of RAPD as a detector. 10
3. (a) Explain the various lensing schemes for fiber coupling improvement. 10
- (b) Explain the various parameters required to find the performance of digital optical receiver. 10
4. (a) Explain the various factors contributing to the attenuation in optical fibers. 10
- (b) What are the reliability considerations that the designer of optical sources has to consider on OFC. 10
5. (a) Explain OTDR-Meter with a suitable labelled diagram. 10
- (b) Explain the relationship between bit rate and bandwidth in OFC. 10
6. (a) Describe the various methods of splicing individual fibers together. Also list the merits and demerits of each method. 10
- (b) Explain Modified chemical vapour deposition (MCVD) method of fiber fabrication in detail. 10
7. Write short notes on :- 20
  - (a) Dispersion modified single mode fibers
  - (b) Amplifiers used in photodetectors
  - (c) Modal noise
  - (d) WDM.

Con. 3209-10.

S. Communication

AN-3238

(3 Hours)

[ Total Marks : 100

**N.B.** (1) Question No. 1 is **compulsory**.(2) Attempt any **four** questions from Question Nos. 2 to 7.(3) Draw **neat** sketches / diagrams wherever **necessary**.(4) Assume **suitable** data wherever **necessary** and **justify** the same.*Satellite Communication*

1. (a) Give a detail comparison between low, medium and high attitude satellite orbits. **10**  
Also, explain which orbit is best fitted for communication.
- (b) Draw and explain with help of a neat block diagram and double conversion transponders with special reference to their operating frequencies and antenna parameters. **10**
2. (a) Define the following terms :— **10**
  - (i) Prograde and Retrograde Orbit
  - (ii) True and Mean Anomaly
  - (iii) Ascending and Descending node
  - (iv) Subsattelite Point and Zenith
  - (v) Apogee and Perigee.
- (b) The Indian Space Organisation, ISRO wishes to launch a satellite with apogee at synchronus, perigee at 240 Km. What will be required impulse at the apogee in to achieve a circular synchronus orbit at  $0^\circ$  inclination at  $28^\circ$  inclination. **10**
3. (a) Derive expressions for Look angle, coverage angle and satellite range. **10**
- (b) Discuss the interference effects on complete satellite link design. Also suggest factors which will help in minimizing this effects. **10**
4. (a) Discuss factors that govern the design of antenna for satellite communication earth stations. **10**
- (b) Derive the uplink design equation with respect to saturation flux density, input backoff, earth station HPA and uplink Rain fade margin. **10**
5. (a) What do you mean by System Noise Temperature ? How does it affect C/N and G/T ratio ? **10**
- (b) Explain the spin stabilization and 3-axis stabilization methods. Mention their merits and demerits. **10**
6. (a) Explain with neat block diagrams the FH-CDMA and DS-CDMA systems. Also list advantage of CDMA systems. **10**
- (b) Explain in detail TDMA frame structure along with reference and traffic burst structure. **10**
7. (a) With help of suitable block diagram explain the uplink and downlink system for earth station. **10**
- (b) What do you understand by reliability and space qualification ? Explain significance of both tube curve. **10**



(3 Hours)

[ Total Marks : 100

Internet Communication Engg.

- N.B.** (1) Question No. 1 is **compulsory**.  
 (2) Attempt any **four** questions out of remaining **six** questions.  
 (3) Assume **suitable** data wherever **necessary**.

1. (a) Discuss the fields of routing table. 20  
 (b) What is RTCP ? Where it is used ? Explain in brief about the messages in RTCP.  
 (c) Explain in brief about all the connecting devices.  
 (d) How the ESP header provides the security for the packet over internet ?
  2. (a) What is address aggregation ? Where and how it can be used ? Explain the advantages. 8  
 (b) Discuss how instability is created with distance vector routing. How to overcome this problem ? 12
  3. (a) Explain the error reporting messages of ICMP. 10  
 (b) Discuss the option fields of IP in detail. 10
  4. (a) How the error control is carried out in TCP ? 12  
 (b) Explain the header of UDP. Compare UDP with TCP. 8
  5. (a) What is NAT ? Why it is required ? How the routing takes place using NAT table ? 8  
 (b) Explain the resource record format of DNS. 12
  6. (a) Explain the different link state update OSPF packets. 12  
 (b) Discuss the DHCP state machine. 8
  7. Write short notes on :— 20
    - (a) H-323 architecture
    - (b) IPV6 header
    - (c) MBONE
    - (d) Authentication header.
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