

BE SEM - VIII 'EXTC (Rev)

WN/EXTC/VIII/REV

16-12-2016

Sub - WN

QP Code : 629702

(3 Hours)

[Total Marks : 100

- N.B.: (1) Question No.1 is compulsory
(2) Attempt any four questions from remaining Q. Nos. 2 to 7.
(3) Draw neat sketches wherever required.
(4) Assume suitable data if required.

1. (a) Define roles of two new network entities in GPRS
(b) Discuss the role of LTE systems
(c) What is CDMA?
(d) Draw wireless sensor network layered architecture.



2. (a) Discuss QoS attributes used in UMTS.

- (b) Compare all versions of IEEE802.11 WLAN.

3. (a) Discuss WAP architecture

- (b) Explain Bluetooth protocol stack?

4. (a) Explain evolution of IS-95 in details

- (b) How power control is used in CDMA and WCDMA?

5. (a) What is IEEE 802.11b (Wi-Fi)? Discuss exponential backoff algorithm used in WLAN

- (b) Explain role of GPRS in GSM

6. (a) What is UWB? Explain it in details.

- (b) What is ZigBee technology? Discuss briefly

7. Write short notes on:

(a) RFID

(b) Link budget analysis

(c) HSDPA

BE VIII CBSE EXT IRVC 16/12/16

Sub :- I & VC

QP Code : 717903

(3 Hours)

[Total Marks : 80

- N.B. : (1) Question No. 1 is compulsory.
(2) Attempt any three questions out of remaining.
(3) Figures to the right indicate full marks.



1. Solve following :

- (a) Explain the techniques to improve QoS in multimedia.
(b) What is pseudo header? Why it is used in UDP.
(c) What is Remote Login? Explain working principle of NVT.
(d) What is socket address? Explain with example.

2. (a) Which protocol is responsible to report error messages? Explain in brief. 10
(b) What is role of H.323 protocol in VOIP.

3. (a) Explain need of digitizing audio and video in Internet communication. 10
Explain video compression (MPEG) in detail.
(b) Explain the resource record format of DNS. 10

4. (a) What is 3 way handshaking? Explain connection establishment using TCP. 10
(b) How the IP address is allocated dynamically? Explain state transition diagram of DHCP. 10

5. (a) Explain the working principle of POP3 and JMAP4 for mail delivery? 10
(b) What are the different special addresses in classful addressing? Explain in detail. 10

6. Write a short note on (any three) 20

- (a) TFTP
(b) UDP multiplexing/demultiplexing
(c) RTP
(d) Address depletion

Sub - SCN

(3 Hours)

[Total Marks : 80]

- N.B. 1) Question No.1 is compulsory.
2) Attempt any three from remaining.
3) Assume suitable data if necessary.



1. (a) Briefly describe the following:
(i) Why does a satellite in highly inclined elliptical orbit spend most of its orbital period over higher latitude regions?
(ii) Why is it preferable for a remote sensing satellite to be in Sun synchronized orbits? 05
- (b) Explain:
(1) Lobe switching (2) mono pulse tracking (3) step tracking (4) intelligent tracking. 05
- (c) Why the control system in satellite waits for an execute command after receiving the command to be executed? 05
- (d) Differentiate between window and frame organization. 10
2. (a) Explain:
1) Why a spin stabilized satellite uses relatively large number of solar cells as compared to three axis stabilized satellite for the same power requirement?
2) Why arc storage batteries used along with solar arrays? 10
- (b) What is the antenna noise temperature? What are the major factors that decides the antenna noise temperature? What is the antenna gain to noise temperature (G/T) ratio? What is the significance of Earth stations antenna gain to noise temperature ratio? 10
3. (a) Explain thermal sub-system. What are the methods of thermal control in satellite? 10
- (b) What are the different types of lasers used for satellite communication? Explain photo detector noise model.

(TURN OVER)



4. (a) With the help of a block diagram describe the working of transmit receive earth station used for telephone traffic. 10
- (b) Explain in detail the operation of the Spade system of demand assignment. Explain what is meant by thin route service? Suggest the type of satellite access is most suitable for this service. 10
5. (a) An earth station employs a power amplifier providing an output power of 100W and an antenna of 5m diameter for both transmission and reception. The transmission frequency is 6.25 GHz and receiving frequency is 4.5 GHz. System noise temperature is 140 K. Find EIRP and G/T ratio. 10
- (b) What is limit of visibility of satellite? How it is calculate? 05
- (c) Explain what is meant by earth eclipse of an earth-orbiting satellite? Why it is preferable to operate with a satellite positioned west rather than east, of earth station longitude? 05
6. (a) How the reliability of the earth station is improved? 08
- (b) Draw and explain the satellite network architecture. 08
- (c) Explain Unique word detection. 04

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Q.P. Code : 629602

(3 Hours)

[Total Marks : 100

- N.B. :** (1) Question No.1 is compulsory.
 (2) Attempt any four questions from remaining six questions.
 (3) Assume suitable data wherever necessary, justify the same.
 (4) Figures to the right indicate full marks.

1. Answer the following in brief:

- (a) What are the advantages of optical fiber communication? 20
 (b) Distinguish between spontaneous and stimulated emissions.
 (c) Coherent optical communication is preferred over non-coherent optical communication why?
 (d) Derive expression for the responsivity of an intrinsic photodetector in terms of quantum efficiency and wavelength.

2. (a) Explain the significance of 'V' number. Derive the expression for number of guided modes in graded index fiber. 10
 (b) Explain intramodal and intermodal dispersion. How does dispersion affect the transmission bandwidth of optical fiber. 10

3. (a) A multimode step index fiber has a core diameter $80\mu\text{m}$ and a relative index difference of 1.5%, of $0.85\mu\text{m}$. If the core refractive index is 1.48 Determine:
 (1) The normalised frequency of fiber.
 (2) The number of guided modes in the fiber. 5
 (b) Differentiate between LASER and LED. 5
 (c) Name different fiber fabrication process. Explain any one fiber fabrication process in detail with neat diagram. 10

4. (a) Explain and compare PIN diode with Avalanche photo diode (APD) with the help of suitable electric field diagrams. 10
 (b) Describe the different types of pre amplifiers used in optical receivers. 10

TURN OVER

Q.P. Code :

2

5. (a) Describe the various methods of splicing individual fibers together. Also list the merits and demerits of each method. 10
(b) Explain all aspects of link power budget and rise time budget. 10
6. (a) Draw and explain block diagram of optical receiver alongwith various noise sources with relevant equations. 10
(b) Draw and explain double heterojunction LED. 10
7. Write short notes on any four: 20
(a) Multiplexing of optical signals.
(b) OTDR.
(c) Modal noise.
(d) Linear and nonlinear scattering losses.
(e) Optical fiber connectors.



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- N.B. :**
- 1) Question No 1 is compulsory.
 - 2) Attempt any four questions from question No 2 To 7.
 - 3) Assume suitable Data Wherever necessary and justify the same.
 - 4) Draw neat sketches/diagrams wherever Necessary.

1. Answer the following
(a) Define (i) True anomaly and Mean anomaly
(ii) Satellite velocity and Satellite period. 10
(b) (i) Compare FH- CDMA and DS-CDMA.
(ii) Explain Launching of Geo stationary satellites 10
2. (a) What are look angles? Explain its significance in relation with satellite position. 10
An earth station is located at a latitude of 12° south and longitude of 52° west. Calculate antenna look angles for a satellite at 70° west.
(b) Describe various perturbations of satellite orbits. 10
3. (a) Explain block diagram of Transmit and receive type of earth station, Explain each block in detail. 10
(c) Which type of double reflectors is used in satellite communication Explain in detail. 10
4. (a) What is Earth eclipse of Satellite? Are there any ways of avoiding eclipse during lifetime of satellite. 10
(b) Explain the following: 10
(i) 1 db Compression point
(ii) AM to PM conversion
5. (a) Describe different stabilization Techniques. 10
(b) Explain TT & C system with the help of block diagram. 10
6. (a) What is EIRP? Derive the relation for C/N ratio for satellite link Discuss the importance of G/T ratio. 10
(b) Explain SPADE system and SCPC of FDMA. 20
7. Write short notes on any Four
(a) Single conversion Transponder
(b) Reliability and Bath tub curves
(c) Electrical Power sub system
(d) Sidereal day
(e) Propulsion subsystem



- Note :
- (1) Q1 is compulsory.
 - (2) Solve any three questions from remaining five.
 - (3) Assume suitable data if required.

1.
 - (a) List out Quality of service [Qos] attributes in UMTS. 05
 - (b) Explain 'Hidden Node' and 'exposed node' problem in wireless LANs. 05
 - (c) How is power control implemented in CDMA? 05
 - (d) Draw and explain with neat diagram, the components of Sensor nodes. 05

2.
 - (a) Calculate the down link cell load factor and numbers of voice users per cell for a WCDMA system using the following data. What is the pole capacity of the cell? 10
 - (1) Information Rate (R_i) = 12.2 kbps
 - (2) Chip rate (R_c) = 3.84 Mcps
 - (3) $E_b/N_t = 4$ db
 - (4) Average interference factors due to others cells = 0.5
 - (5) Orthogonality factor = 0.65
 - (6) Interference margin = 3db.
 - (b) What is Localization in wireless sensor network? Explain with examples centralized and distributed schemes in Localization algorithms. 10

3.
 - (a) Give the detailed radio Access Network overview. Explain in detail functions of Node B and RNC also draw UTRAN logical architecture. 10
 - (b) Explain the ZigBee technology. Discuss different Network Topologies that are supported in Zigbee. 10

4.
 - (a) Explain Link budget analysis of requirements of wireless networks. 10
 - (b) Explain Various Bluetooth connection establishment states. Draw a complete flow diagram. 10

5.
 - (a) Give technical requirements of IEEE 802.15.3a Physical layer w.r.t. data rates, power consumption, power management modes, scalability and interference, etc. 10
 - (b) Why Network management design issue is a critical issue in wireless sensor network? Give reasons. 10

6.
 - (a) Write short notes on: 20
 - (a) Wimax
 - (b) Rake Receivers.

