

G 1650

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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, MAY 2015

Eighth Semester

Branch : Electronics and Communication Engineering

EC 010 803—LIGHT WAVE COMMUNICATION (EC)

(New Scheme—2010 Admission onwards)

[Regular/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 4 marks.

1. Describe with the aid of simple ray diagrams :
(a) Single-mode fiber ; (b) Multimode step index fiber.
2. Define V number. Write the relationship between V number and number of modes in graded index and step index multimode optical fibers.
3. Write short notes on optical fiber coupler.
4. What is meant by splicing with regard to optical fibers ? Describe the technique of fusion splicing of optical fibers.
5. Compare the performance parameters of LED and LASER diode.
6. Describe the working principle of a PIN diode detector.
7. Briefly explain the principle of operation of a semiconductor laser amplifier.
8. What are the system considerations in point to point links ?
9. What do you mean by wavelength routing networks ?
10. What are the system consideration in point to point links ?

(10 × 4 = 40 marks)

Part B

Answer all questions.

Each question carries 12 marks.

11. (a) Explain what is meant by graded index optical fiber. Give an expression for the possible refractive index profile of GI fiber. Indicate the major advantage of this type of fiber with regard to multimode propagation.

Turn over

- (b) A graded index fiber with a parabolic index profile supports the propagation of 742 guided modes. The fiber has a numerical aperture of 0.3 and a core diameter of 70 μm . Determine the wavelength of the light propagating in the fiber.

(7 + 5 = 12 marks)

Or

12. (a) Derive an expression for critical angle, acceptance angle and numerical aperture (NA) of an optical fiber. Give the significance of NA of an optical fiber.
 (b) A silica optical fiber with a core diameter large enough to be considered by ray theory analysis has a core refractive index of 1.49 and a cladding refractive index of 1.46.
 Determine : (i) the critical angle at the core-cladding interface ; (ii) the NA for the fiber ; (iii) the acceptance angle in air for the fiber.

(7 + 5 = 12 marks)

13. Explain the different dispersion mechanisms present in optical fibers. Bring out the difference between intermodal dispersion and intramodal dispersion with neat sketches.

Or

14. Discuss various kinds of losses that an optical signal might suffer while propagating through the fiber. What is the effect of these losses on light power and pulse shape ?
 15. (a) Explain the construction and working principle of APD with neat diagrams.
 (b) Define the terms quantum efficiency and responsivity of a photo detector.

(7 + 5 = 12 marks)

Or

16. (a) Outline the common LED structures for optical fiber communications, discussing their relative merits and drawbacks. In particular, compare surface emitting (SLED) and edge emitting (ELED) devices.
 (b) Define internal quantum efficiency and external quantum efficiency of a LED.
 17. (a) With the help of neat sketches, explain the gain mechanism and working of Erbium Doped Fiber Amplifiers (EDFAs).
 (b) Compare the performance of EDFAs and semiconductor optical amplifiers.

(7 + 5 = 12 marks)

Or

18. (a) Explain the principle of operation of a MZ optical modulator.
 (b) Explain the different noise mechanisms present in EDFAs.

(7 + 5 = 12 marks)

19. Explain the distinguish features of optical switching and optical wavelength routing. With the aid of block diagrams outline the optical network hierarchy for the public telecommunications network.

Or

20. (a) Write the concept of link power budget. What is the role of system margin in link power budgeting ?
 (b) Write notes on rise time budget and differentiate link power budget and rise time budget.

(8 + 4 = 12 marks)

[5 × 12 = 60 marks]

G 1430

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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, MAY 2015

Eighth Semester

Branch : Electronics and Communication/Applied Electronics and Instrumentation/Electronics and Instrumentation Engineering

ADVANCED MICROPROCESSORS (LAS)

(Old scheme—Prior to 2010 Admissions)

[Supplementary/Mercy chance]

Maximum : 100 Marks

Time : Three Hours

Part A

*Answer all questions.
Each question carries 4 marks.*

1. What are interrupts ? Explain their use.
2. Distinguish logical and physical addresses.
3. Explain direct addressing mode with an example.
4. Explain immediate addressing mode with an example.
5. Discuss the protected mode operation in 8086.
6. Compare 8086 and 80286.
7. Discuss the real operating mode of 80386.
8. What are the advantages of segmentation ?
9. Discuss the cache structure of Pentium.
10. Explain the super scalar architecture of Pentium.

(10 × 4 = 40 marks)

Part B

*Answer all questions.
Each question carries 12 marks.*

11. Draw the block diagram of 8086 and explain its various components.

Or

12. Explain the method of DMA data transfer.
13. Explain the base relative plus index addressing with an example.

Or

14. Describe the direct program memory addressing.

Turn Over

15. Explain the basic components of 80286.

Or

16. Discuss the features of 80286.

17. Describe the interrupts and exception handling in 80386.

Or

18. Explain the protected mode operations in 80386.

19. Describe the components of 80486.

Or

20. Describe the features of Pentium.

(5 × 12 = 60 marks)

- 1. What are interrupts? Explain their use.
- 2. Describe the types of physical addresses.
- 3. Explain direct addressing mode with an example.
- 4. Explain indirect addressing mode with an example.
- 5. Explain the protected mode operation in 80386.
- 6. Describe the 80387 and 80387-2.
- 7. Explain the real operating mode of 80386.
- 8. What are the advantages of segmentation?
- 9. Explain the cache structure of Pentium.
- 10. Explain the super scalar architecture of Pentium.

Part B

Answer all questions. Each question carries 12 marks.

- 11. Draw the block diagram of 8086 and explain its various components.
- 12. Explain the modes of DMA data transfer.
- 13. Explain the base relative plus index addressing with an example.
- 14. Describe the three program memory addressing.

(5 × 12 = 60 marks)

Part C

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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, MAY 2015

Eighth Semester

EC 010 801—WIRELESS COMMUNICATION (EC)

(New Scheme—2010 Admission onwards)

[Regular/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 3 marks.

1. Briefly describe the types of channel assignment strategies.
2. Compare flat fading and frequency selective fading.
3. Give the features of SDMA.
4. Draw the frame structure of GSM.
5. Explain the features of CDMA.

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. What is trunking and grade of service ?
7. What are the fading effects due to Doppler spread ?
8. Write short notes on FHMA.
9. Explain the various GSM handoff procedures.
10. Write the features of PDC and PHS.

(5 × 5 = 25 marks)

Part C

Answer all questions.

Each question carries 12 marks.

11. Briefly explain the various interference present in a cellular system.

Or

12. Describe cell splitting, cell sectoring and microcell zone concept.

Turn over

13. Draw the model of a two-ray ground reflection and explain.

Or

14. Derive the impulse response of a multipath channel.

15. With the aid of necessary diagrams, compare the features of FDMA and TDMA.

Or

16. Explain the various packet radio protocols.

17. Draw the architecture of GSM and explain.

Or

18. Briefly describe the various GSM channel types.

19. With the help of block diagram, explain forward CDMA channel modulation process.

Or

20. Explain reverse CDMA channel modulation process for a single user.

(5 × 12 = 60 marks)

G 1640

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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, MAY 2015

Eighth Semester

Branch : Electronics and Communication Engineering

EC 010 802—COMMUNICATION NETWORKS (EC)

(New Scheme—2010 Admissions)

[Regular/Supplementary]

Maximum : 100 Marks

Time : Three Hours

Part A

Answer all questions.

Each question carries 3 marks.

1. Mention the advantages and disadvantages of Tree topology.
2. What is slotted ALOHA ?
3. Explain the concept of virtual networks.
4. ~~Give an overview of ATM.~~
5. What is IPSEC ?

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. Compare circuit switching and packet switching.
7. What is CSMA/CD ?
8. Draw the packet format of IPV4 and IPV6.
9. Draw and explain the header structure of ATM.
10. Explain how a firewall does its function.

(5 × 5 = 25 marks)

Part C

Answer all questions.

Each question carries 12 marks.

11. With the aid of neat diagrams, explain different network topologies.

Or

12. Describe OSI reference model and TCP/IP model.

Turn over

13. Explain briefly MAC layer and LLC layer.

Or

14. Explain briefly different types of network devices used in lower layers of network model.

15. Explain distance vector routing and link state routing.

Or

16. What is CIDR ? How route aggregation is possible with CIDR ?

17. Discuss the various adaptation layers in ATM.

Or

18. Describe ATM signalling and routing.

19. Explain symmetric and asymmetric key cryptography.

Or

20. Write short notes on :

(a) PGP.

(b) SSL.

(5 × 12 = 60 marks)

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Reg. No.....

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B.TECH. DEGREE EXAMINATION, MAY 2015

Eighth Semester

Branch : Electronics and Communication Engineering

EC 010 804 L 03—SECURE COMMUNICATION [Elective—III] (EC)

(New Scheme—2010 Admission Onwards)

[Regular/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

*Answer all questions.
Each question carries 3 marks.*

1. Evaluate $(4 \times 3 - 1) / 2$ with respect to the finite field $GF(5) = \{0, 1, 2, 3, 4\}$.
2. Bring out the consequences of using a one-time pad in 'depth' (use an example).
3. Explain the double transposition cipher with the help of an example.
4. What information must a public key certificate contain ?
5. Why is it a good idea to hash passwords that are to be stored in a file ? What is a 'salt' and why should 'salt' be used whenever passwords are hashed ?

(5 × 3 = 15 marks)

Part B

*Answer all questions.
Each question carries 5 marks.*

6. Define a *field*. What is a *Galois field* ? Let a, b and c be any three elements in a field. Then prove that for $a \neq 0, a.b = a.c$ implies that $b = c$.
7. Define the terms *Confidentiality, Integrity* and *Availability*.
8. Differentiate between differential and linear crypt analysis.
9. Distinguish between public key and private key cryptography.
10. Give short notes on Honey pot.

(5 × 5 = 25 marks)

Turn over

Part C

Answer all questions.
Each question carries 12 marks.

11. Let $p(x) = 1 + x + x^4$ is a primitive polynomial over $GF(2)$. Then construct the extended field $GF(2^4)$. If α is one of the roots of the given primitive polynomial within the field $GF(2^4)$, evaluate the following :

(a) α^{12} / α^5 .

(b) $1 + \alpha^5 + \alpha^{10}$.

Or

12. What is a primitive polynomial ? Determine whether the polynomial $p(x) = x^3 + x^2 + 1$ over $GF(2)$ is primitive.

13. With suitable example clearly explain Hill cipher.

Or

14. Describe how a Playfair cipher differs from a simple substitution cipher with the help of an example. What are its major advantages ?

15. Discuss the shift row and mix column transformation techniques in Advanced Encryption Standard.

Or

16. Discuss about DES encryption.

17. Why is it a bad idea to use the same RSA key pair for both signing and encryption ?

Or

18. Discuss about the Public Key Infrastructure (PKI).

19. Explain rule based and anomaly based intrusion detection systems.

Or

20. Discuss about Intrusion Detection System and compare it with firewall.

(5 × 12 = 60 marks)

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Reg. No.....

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B.TECH. DEGREE EXAMINATION, MAY 2015

Eighth Semester

Branch : Electronics and Communication Engineering

EC 010 805 G02—E-LEARNING (Elective IV) (EC)

(New Scheme—2010 Admission onwards)

[Regular/Supplementary]

Maximum : 100 Marks

Time : Three Hours

Part A

*Answer all questions.
Each question carries 3 marks.*

1. What is a computer based training ?
2. What is white board environment ?
3. What is expert service ?
4. What is virtual University ?
5. What are the careers in e-learning ?

(5 × 3 = 15 marks)

Part B

*Answer all questions.
Each question carries 5 marks.*

6. Who is a system administrator ?
7. Discuss the features of audio conferencing.
8. What is knowledge acquisition ?
9. What is multi-channel learning ?
10. What are the tools for the development of an e-learning environment ?

(5 × 5 = 25 marks)

Part C

*Answer all questions.
Each question carries 12 marks.*

11. What are the barriers of e-learning ?

Or

12. Discuss the role of the Web Master.

Turn over

13. Write a note on Instant messaging. Discussion Forums and Bulletin Boards.

Or

14. How can you use teleconferencing as a technique for learning ?

15. Describe the different services in e-learning.

Or

16. Explain the method of knowledge management in e-learning.

17. Discuss the role of the teachers in e-learning.

Or

18. Discuss the teaching learning process in e-learning.

19. Describe various costs for the development of an e-learning environment.

Or

20. Write a note on the future of e-learning.

(5 × 12 = 60 marks)

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B.TECH. DEGREE EXAMINATION, MAY 2015

Eighth Semester

Branch : Electronics and Communication/Electrical and Electronics/Electrical and Instrumentation/Instrumentation and Control Engineering

IC 010 805 G05

EI 010 805 G05

EC 010 805 G05

EE 010 805 G02—INTELLECTUAL PROPERTY RIGHTS—Elective IV

(EC, EE, EI, IC)

(New Scheme—2010 Admission onwards)

[Regular/Supplementary]

Maximum : 100 Marks

Time : Three Hours

Part A

Answer all questions.

Each question carries 3 marks.

1. Explain how the interest of the society is considered in IPR.
2. What are the roles of the patent ?
3. Describe patentable inventions.
4. Comment on piracy in designs.
5. What is the importance of trademark ?

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. Explain the rationale behind IP.
7. Write short notes on transitional period.
8. What are the rights of patentee ?
9. Discuss international copyright and copyright societies.
10. Explain trademark law in India.

(5 × 5 = 25 marks)

Turn over

Part C

*Answer all questions.
Each question carries 12 marks.*

11. Explain different types of IP.

Or

12. Explain the relationship between IP and Constitution of India.

13. Explain the role and participation of India with WTO/TRIPS agreement.

Or

14. Explain the patent law implemented in India and its effectiveness.

15. Explain the limitations of particular right and infringement of patent.

Or

16. Explain how and why patent is revoked.

17. Explain the features of Indian Copyright Act.

Or

18. Explain the rights of broadcasters and performers.

19. Explain the process of trademark registration.

Or

20. Explain geographical indications and registration.

(5 × 12 = 60 marks)