B.TECH. DEGREE EXAMINATION, MAY 2014

Eighth Semester

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

ADVANCED MICROPROCESSORS (L, A, S)

(Old Scheme—Supplementary/Mercy Chance—Prior to 2010 Admissions)

Time : Three Hours   Maximum : 100 Marks

Part A

Answer all questions briefly.
Each question carries 4 marks.

1. What are the functions of AO and $\overline{BHE}$ signals in 8086?

2. How does the DMA controller get the control of system buses?

3. What are the differences between MOV AX, 1234H and MOV AX, [1234H] instructions? Explain clearly.

4. If the SS and SP registers contain 4000H and 1234H respectively, what is the physical address of the top of the stack?

5. List the advantages of segment addressing of (i) real mode ; and (ii) protected mode.

6. Determine the physical address of the top of the stack in 80286 real mode, if SS = 4000H and SP = A900H.

7. Describe how the physical address is computed in 80386, if paging is enabled?

8. Distinguish between the real, protected and virtual real-modes of 80386.

9. Determine the physical addresses of the starting and ending memory locations of a segment in 80486 protected mode, if the segment descriptor holds the base address 00200000H and the limit 000FFH and if the 'G' bit is set.

10. List the flags in Pentium processor.

(10 × 4 = 40 marks)

Part B

Answer all questions.
Each full question carries 12 marks.

11. (a) Write instructions to enable and disable the INTR interrupts. Explain why the INTR interrupt is automatically disabled when an INTR interrupt is recognised. Indicate when and how the interrupt is re-enabled.

(8 marks)

(b) Design an interfacing circuit for controlling NMI interrupts.

(4 marks)

Or

Turn over

12. (a) Design decoding logic for interfacing both input and output ports at I/O address 40H.

(6 marks)

(b) Explain, in detail, the minimum mode 8086 bus timing for a memory read operation.

(6 marks)

13. Determine the addressing modes of the following instructions and explain them :

(a) MOV CX, 4 [BX]

(b) SUB AX, AX

(c) INC AL

(d) STI

(e) IN AL, DX

(f) MOV AX, WORD PTR [BP] [DI]

(6 × 2 =12 marks)

Or

14. Write a 8086 ALP to compute simple interest for one year 10 principal amounts. The rate of interest is 10%. Write a subroutine for computing the interest. The subroutine should receive and send parameters through stack.

(12 marks)

15. (a) What do you mean by a descriptor? Discuss the structure of a 80286 descriptor? (6 marks)

(b) Explain real and protected modes in 80286. (6 marks)

Or

16. (a) Explain Virtual Memory. How much virtual memory can an 80286 address? (6 marks)

(b) Differentiate between logical and physical addresses. (6 marks)

17. (a) Illustrate TSS in 80386 with neat block diagram. (6 marks)

(b) How 80386 can place into the protected mode operation for a more complex system using a TSS?

(6 marks)

Or

18. (a) List and explain different data types supported by 80386 processor. (6 marks)

(b) Explain paging with reference to 80386. (6 marks)

19. (a) What is BIST? Explain 80486 burst. (5 marks)

(b) Explain the non-pipelined read cycle system timing for Pentium processor with neat circuit diagram and timing diagram.

(7 marks)

Or

20. With neat block diagram, explain the PENTIUM CPU architecture and also explain the superscalar organisation.

(12 marks)

[5 × 12 = 60 marks]

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B.TECH. DEGREE EXAMINATION, MAY 2014

Eighth Semester

Branch : Electronics and Communication Engineering

TELEVISION ENGINEERING (L)

(Old Scheme—Supplementary/Mercy Chance—Prior to 2010 Admissions)

Time : Three Hours　　　　　　　　　　　　　　　　　　Maximum : 100 Marks

Part A

Answer all questions briefly.
Each question carries 4 marks.

1. Why sync. pulses are needed in TV systems? Why is the retrace blanked?

2. Explain the need of pre-equalising, post-equalising pulses and serrations during vertical blanking.

3. Why does vidicon give rise to severe image lag?

4. Compare and contrast positive and negative modulation, as applied to TV systems.

5. How is noise transient eliminated automatically in a TV receiver?

6. Why is AFC needed for the H-sweep generator while it is not needed for V-sweep generation?

7. What is QAM? Why it is used in colour encoder?

8. When U and V have been isolated in D-PAL, even then synchronous demodulation is used for detection of colour signals. Why?

9. How do the pits and flats (lands) allow recovery of baseband signal in video disc ?

10. How is the problem of cross-talk interference removed in HDTV?

(10 × 4 = 40 marks)

Part B

Answer all questions.
Each full question carries 12 marks.

11. (a) Why video signals are amplitude modulated and audio signals are frequency modulated? Explain clearly.

　　(b) What is VSB Transmission? Clearly describe how the video bandwidth is 7 MHz in Indian TV system.

Or

12. Draw and describe the composite video waveform at the end of both even and odd fields locked to field frequency and explain how it is possible to maintain synchronism at all times? Give the standard values with respect to 625 PAL system.

Turn over

13. Define purity and convergence and explain why elaborate static and dynamic corrections become necessary to obtain colour purity and coincident rasters. Explain the procedure of colour purity adjustment.

Or

14. (a) Explain how LCDs can be used to form a solid state picture tube? Why have these not yet become popular for TV receivers?

    (b) What are the methods adopted to increase the sensitivity of photo surfaces in camera tubes? Explain.

15. Draw the various controls used in a TV receiver. Give their locations on a block diagram of a TV receiver. Also draw the wave shapes at the output of each block and explain.

Or

16. With a neat circuit diagram, explain the horizontal deflection amplifier. Explain how the line scanning is obtained.

17. (a) Why are the modulated sub-carrier vectors shifted by 30° to constitute Q and I signals in NTSC system? Why different bandwidths are assigned to Q and I signals?

    (b) Explain with neat block diagram, how both (R – Y) and (B – Y) signals are combined around the same subcarrier by quadrature modulation.

Or

18. (a) With a neat diagram, explain how the Y and the colour difference signals are developed from camera outputs. Why is the Y signal set = 0.3 R + 0.59 G + 0.11 B?

    (b) Explain how, by frequency interleaving, the colour information is accommodated within the same channel bandwidth of 7 MHz.

19. Draw a block diagram of a satellite TV system for rebroadcast and explain its working. Why it is called "distance insensitive"?

Or

20. With the help of neat diagrams, explain how the video signals are recorded on a compact disc. Why DVD is called "Digital Versatile Disc"?

(5 × 12 = 60 marks)

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(Pages : 2)

B.TECH. DEGREE EXAMINATION, MAY 2014

Eighth Semester

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

VHDL (Elective II) (LA)

(Old Scheme—Supplementary/Mercy Chance—Prior to 2010 Admissions)

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions briefly.
Each question carries 4 marks.

1. What is enumeration data type?

2. Explain entity declarations using one example.

3. Write a VHDL program using dataflow modelling.

4. With a program example, explain "wait" statement.

5. Explain generics with an example.

6. What is incremental binding? Give an example.

7. What is operator overloading? Give an example.

8. Explain a type conversion function.

9. Write a short note on aliases with an example.

10. Give the properties of aggregate targets.

(10 × 4 = 40 marks)

Part B

Answer all questions.
Each full question carries 12 marks.

11. With appropriate examples, explain all types of architectural bodies in VHDL.

Or

12. Describe the data objects in VHDL with suitable examples.

13. With necessary examples, explain "case" statement and "loop" statements.

Or

14. Explain with suitable examples, the different types of conditional statements that can be used in VHDL.

Turn over

15. Using generic, design a 4-bit down counter.

Or

16. Write description for an eight-to-one multiplexer with a 3-bit decoded input.

17. With necessary program examples, explain packages and libraries.

Or

18. Show the overloading function for the XOR operator and explain the program.

19. Write a test bench program for 8-bit register with asynchronous reset and load.

Or

20. Explain the design issues in a interacting state machine modelling.

(5 × 12 = 60 marks)

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B.TECH. DEGREE EXAMINATION, MAY 2014

Eighth Semester

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

MULTIMEDIA SYSTEMS (Elective III) (LASR)

(Old Scheme—Prior to 2010 Admissions)

[Supplementary/Mercy Chance] .

Time : Three Hours   Maximum : 100 Marks

Part A

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

1. Explain Multimedia.

2. List the various digital Audio file formats.

3. Differentiate between text and hyper-text.

4. List the various digital Image file formats.

5. Explain how compact disc family has revolutionized multimedia data storage.

6. How digital video interactive is achieved ?

7. Explain the constraints on multimedia programming.

8. Write a note on database integration.

9. Explain full motion Digital video.

10. Explain how video conferencing is done.

                                                    (10 × 4 = 40 marks)

Part B

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

11. Classify the Multimedia authoring tools and discuss each *one* in detail.

Or

12. Analyze video based on its domain, *i.e.*, analog and digital. Use proper sketches.

13. Describe JPEG image compression scheme with the help of neat schematic diagrams.

Or

14. Describe wavelet based Image compression with the help of suitable diagrams.

                                                    Turn over

15. Based on a comparison table of different storage devices, explain their merits and demerits. Also explain their storage capacity and speed.

Or

16. Explain multimedia PC and Microsoft Multimedia extensions.

17. Explain media classes and format classes in multimedia programming.

Or

18. Explain about multimedia programming with the help of neat schematic diagrams.

19. What is a Multimedia Network ? What are the various layers in it and discuss their functions ?

Or

20. Explain the different video capturing techniques with the help of neat schematic diagrams.

(5 × 12 = 60 marks)

B.TECH. DEGREE EXAMINATION, MAY 2014

Eighth Semester

Branch : Electronics and Communication Engineering

EC 010 801 – WIRELESS COMMUNICATION (EC)

(New Scheme–2010 Admissions)

[Regular]

Time : Three Hours   Maximum : 100 Marks

Part A

Answer **all** *questions.*

Each question carries 3 marks.

1. List the methods to improve coverage and capacity in cellular systems.

2. What is small scale fading?

3. What are the spread spectrum techniques available for wireless communication?

4. List out three types of dedicated control channel in GSM.

5. What do you mean by soft hand off ?

                                                        $(5 \times 3 = 15$ marks)

Part B

Answer **all** *questions.*

Each question carries 5 marks.

6. Explain cell sectoring techniques.

7. Derive the equation of the path loss using two-ray model with neat diagram.

8. Write a note on FHMA.

9. Draw and explain the frame structure for GSM.

10. Compare CDMA with GSM.

                                                        $(5 \times 5 = 25$ marks)

Part C

Answer **all** *questions.*

Each full question carries 12 marks.

11. Discuss the basic operation of a cellular system. Explain its advantages and disadvantages.

Or

12. (a) A cellular system has 32 cells. Each cell has 1.6 km radius and system reuse factor of 7. The system is to support 336 traffic channels in total. Determine the total geographical area covered, the number of traffic channels per cell and total number of simultaneous cells supported by this system.

(b) Define Grade or service.

(8 + 4 = 12 marks)

13. With a neat diagram, explain the free space propagation model. How the received, signal strength is predicted using free space propagation model?

Or

14. Derive the impulse response model of a multipath channel.

15. Explain Time Division Multiple Access (TDMA) in detail with its key features and comment on the efficiency of TDMA.

Or

16. Write a note on :

(a) Spread spectrum multiple access.

(b) ALOHA.

(6 + 6 = 12 marks)

17. Explain GSM services and architecture.

Or

18. (a) What multiplexing schemes are used in GSM and for what purpose?

(b) Explain various security services offered by GSM.

(6 + 6 = 12 marks)

19. Explain different features of forward CDMA channels and reverse CDMA channels.

Or

20. Briefly explain DECT architecture. Compare the complexity of DECT with that of GSM.

[5 × 12 = 60 marks]

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(Pages : 2)

Reg. No.................................

Name....................................

B.TECH. DEGREE EXAMINATION, MAY 2014

Eighth Semester

Branch : Electronics and Communication Engineering

EC 010 802 – COMMUNICATION NETWORKS (EC)

(New Scheme–2010 Admissions)

[Regular]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer **all** *questions.*

Each question carries 3 marks.

1. What are the responsibilities of Network Layer?

2. What is the difference between Pure ALOHA and Slotted Aloha protocol?

3. Explain Subnetting.

4. What services are provided by AAL?

5. What is meant by firewall?

(5 × 3 = 15 marks)

Part B

Answer **all** *questions.*

Each question carries 5 marks.

6. Explain the concept of circuit switching.

7. What is polling? Why is it used?

8. State the limitations of IPv4.

9. Explain ATM cell format.

10. How does PGP create a set of security parameters?

(5 × 5 = 25 marks)

Turn over

Part C

Answer all questions.

Each question carries 12 marks.

11. What is LAN? List and describe different topologies used for constructing networks.

Or

12. Explain OSI reference model in detail.

13. Mention the steps involved in CSMA/CD algorithm.

Or

14. Mention the functions of MAC and LLC layers.

15. Define Routing. Explain distance vector routing and link state routing.

Or

16. What is meant by ICMP? What are the different ICMP control and status messages?

17. What is the need for Adaptation layer in ATM? Justify with any two AAL protocols.

Or

18. How addressing is performed in ATM? Explain the protocols used for it.

19. What are the two protocols defined by IPSec? Explain.

Or

20. Define SSL. What are the services provided by SSL?

(5 × 12 = 60 marks)

G 1001   (Pages : 2)   Reg. No..............................

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B.TECH. DEGREE EXAMINATION, MAY 2014

Eighth Semester

Branch : Electronics and Communication Engineering

EC 010 803 – LIGHT WAVE COMMUNICATION (EC)

(New Scheme–2010 Admissions)

[Regular]

Time : Three Hours   Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 4 marks.

1. What are the various elements of light wave communication system ? Explain each element in brief.

2. Differentiate single mode and multimode fibers.

3. What is attenuation ? What are the different types of attenuation ?

4. Write notes on fiber couplers.

5. Explain the working principle of LED.

6. Explain the terms Responsivity and Quantum Efficiency.

7. Write short note on Semiconductor Optical Amplifiers.

8. What is MZ optical modulator ?

9. Give an account of optic link power budget with an example.

10. Write note on wavelength switching networks.

(10 × 4 = 40 marks)

Part B

Answer all questions.

Each full question carries 12 marks.

11. (a) Explain in detail about ray optics.

    (b) Derive an expression for Critical angle, acceptance angle and numerical aperture.

(6 + 6 = 12 marks)

Or

12. (a) Differentiate Step Index and Graded Index fiber.

    (b) What is V number? Explain its significance.

(7 + 5 = 12 marks)

Turn over

13. What is dispersion? Bring out the difference between chromatic dispersion and intermodal dispersion with neat sketches.

Or

14. With neat diagram, explain the principle of three optic fiber slicers.

15. Explain the working principle and structure of LASER.

Or

16. (a) Compare the performance of PIN and Avalanche photodiode.

   (b) Explain operating principle of photo detection.

(6 + 6 = 12 marks)

17. (a) Explain how light is amplified in optical amplifiers.

   (b) Describe fiber amplifiers and its types.

(6 + 6 = 12 marks)

Or

18. With energy band diagrams explain Erbium Doped Fiber Amplifiers.

19. Describe link power budget and maximum link length calculation.

Or

20. Explain Optical Networks. Compare wavelength routing and switching networks.

[5 × 12 = 60 marks]

Reg. No......................................

Name......................................

B.TECH. DEGREE EXAMINATION, MAY 2014

Eighth Semester

Branch : Electronics and Communication Engineering

EC 010 804 L03 – SECURE COMMUNICATION (Elective III) [EC]

(New Scheme–2010 Admissions)

[Regular]

Maximum : 100 Marks

Time : Three Hours

Part A

Answer all questions.

Each question carries 3 marks.

1. What are the properties of rings?

2. Write a note on active attacks.

3. What is a stream cipher?

4. Write a note on conventional encryption.

5. Who is a masquerader?

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. Explain a method to find the GCD.

7. Describe the security mechanisms.

8. Explain the linear cryptanalysis.

9. Discuss any *two* techniques for the distribution of public keys.

10. What are the password selection strategies?

(5 × 5 = 25 marks)

Part C

Answer all questions.

Each full question carries 12 marks.

11. Explain the technique to find multiplicative inverse in GF(p).

Or

12. Describe modular polynomial arithmetic with examples.

Turn over

13. Explain the symmetric cipher model.

Or

14. Discuss playfair cipher with an example.

15. Describe mix columns transformation with an example.

Or

16. Discuss the technique of DES encryption.

17. Describe the principles of public key crypto systems.

Or

18. Explain the RSA algorithm.

19. Describe the approaches for intrusion detection.

Or

20. Discuss various password management activities.

(5 × 12 = 60 marks)