F 3786

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B.TECH. DEGREE EXAMINATION, NOVEMBER 2010

Eighth Semester

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

ADVANCED DIGITAL SIGNAL PROCESSING [Elective—III] [LA]

(Supplementary)

Time : Three Hours

Maximum : 100 Marks

Part A

Each question carries 4 marks.

1. What is multirate digital signal processing system ? Explain.
2. Explain multistage implementation of sampling rate conversion.
3. Explain the need of adaptive filter.
4. Explain the practical limitations of LMS algorithm.
5. State and prove time-shifting property of 2D-DFT.
6. What is Heisenberg's uncertainty principle ?
7. Explain how is discrete wavelet transform obtained from dyadic sampling.
8. What is MRA ? Explain.
9. What is pipelining and discuss the different stages in pipelining.
10. What are the advantages and disadvantages of VLIW architecture ?

$(10 \times 4 = 40 \text{ marks})$

Part B

Answer any **five** *questions.*
Each question carries 12 marks.

11. Explain sampling rate conversion by a rational factor $\frac{I}{D}$ and derive input-output relation in both time and frequency domain.

Or

12. (a) Design a 4-stage decimator to reduce sampling rate from 20 kHz to 500 Hz. The specifications for the decimator filter are as given below :

Pass band edge = 200 Hz.

Stop band edge = 220 Hz.

Pass band ripple = 0.002.

Stop band ripple = 0.001.

Determine the filter lengths and the number of multiplications per second.

(9 marks)

(b) Explain the advantages of polyphase decomposition.

(3 marks)

Turn over

13. (a) Draw the basic block diagram of adaptive filter and explain the main components of the adaptive filter.

(6 marks)

(b) Derive basic LMS algorithm.

(6 marks)

Or

14. Derive exponentially weighted recursive least square algorithm.

(12 marks)

15. Explain how the discrete cosine transform can be obtained from DFT.

(12 marks)

Or

16. State and prove any *two* properties of Gabor transform.

(12 marks)

17. Derive the necessary conditions for p vanishing moments for scaling function interms of scaling function coefficients.

(12 marks)

Or

18. (a) Explain about wavelet packet synthesis.

(6 marks)

(b) Explain any *one* application of wavelet packet.

(6 marks)

19. Draw the functional block diagram of TMS320C4X processor and explain.

Or

20. Draw the block diagram of hardware multiply and accumulate unit and explain.

(12 marks)

[5 × 12 = 60 marks]

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B.TECH. DEGREE EXAMINATION, NOVEMBER 2010

Eighth Semester

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

ADVANCED MICROPROCESSORS (LAS)

(Supplementary)

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.
Each question carries 4 marks.

1. The starting address of an ISR is $214BA_b$. The CS register content is 2001_4. If one wishes to access this ISR using the INT-40 instruction show where and how this address is to be stored in the interrupt vector table ?

2. Why the memory is organized as odd and even bank in 8086 based systems ?

3. Which leads to different addressing modes ? Give one example for register addressing and for direct addressing.

4. Explain with example how an element in an array can be accessed using 8086 instruction ? Which addressing mode supports this ?

5. What are selectors and descriptors ?

6. List the flag bits of 80286 processors.

7. What is meant by task switching ?

8. Differentiate between Real mode and Protected mode of operation.

9. What is meant by pipe line operation ?

10. Why Cache memory is used in Personal Computer System ?

$(10 \times 4 = 40 \text{ marks})$

Part B

Each question carries 12 marks.

11. Discuss in detail about interrupt structure of 8086 processor.

Or

12. List the data types supported by 8087 math co-processor. Also discuss about the floating point register and stack organization in 8087 math processor.

13. With example explain the following addressing modes :—

    (i) Register relative addressing.

    (ii) Base relative plus index addressing.

    (iii) Stack memory addressing.

Or

Turn over

14. Explain the physical address formation (with examples) atleast in 4 different addressing modes.

15. Draw the internal architecture of 80286 in simplified form and explain.

Or

16. Discuss in detail about protected mode of operation of 80286.

17. Explain the paging mechanism of 80386 in detail.

Or

18. Write notes on :

   (i) Task switching.

   (ii) Segmentation and virtual memory.

   (iii) Segment privilege levels and protection.

19. (a) Explain the cache organization of 80486 processor.

   (b) Discuss about the pipe line operation in processors.

Or

20. Explain about the BIST (Built in Self Test) feature and branch prediction logic operation of Pentium.

(5 × 12 = 60 marks)

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B.TECH. DEGREE EXAMINATION, NOVEMBER 2010

Eighth Semester

Branch : Electronics and Communication Engineering

TELEVISION ENGINEERING (L)

(Supplementary)

Time : Three Hours   Maximum : 100 Marks

Answer all the questions.

Part A

Each question carries 4 marks.

1. What is Interlaced Scanning ? Explain it in detail.

2. Define and explain channel bandwidth.

3. Draw the structure of CCD. Explain its working in detail.

4. Explain the advantages and applications of LCD screens.

5. Draw a 2 element YAGI-Antenna. Explain its principle of operation.

6. Explain the principle of EHT generation with a neat schematic diagram.

7. Explain the three color theory in detail.

8. Explain the significance of chromaticity diagram.

9. Explain the applications of CCTV.

10. Give an account on "High Definition Television".

                                                        (10 × 4 = 40 marks)

Part B

Each question carries 12 marks.

11. Explain in detail the following :—

     (i)   Flicker.   (4 marks)

     (ii)   Horizontal and vertical resolution.   (4 marks)

     (iii)   Maximum video frequency.   (4 marks)

Or

12. Explain in detail the features of VSB for TV applications.

13. Explain in detail the working principle of image orthigen and Vidicon with neat diagrams.

Or

14. Differentiate Monochrome TV camera and Color TV camera. Explain the difference.

                                                           Turn over

15. Write technical notes on :

    (i) BALUN transformers.   (4 marks)

    (ii) RF tuner.   (4 marks)

    (iii) SAW filters.   (4 marks)

Or

16. Draw a neat block schematic of SMPS. Explain its principle in detail.

17. Explain in detail the three colour theory and additive mixing of colours.

Or

18. Differentiate PAL from NTSC. Explain the difference in detail.

19. Explain the principle and applications of CCN in detail.

Or

20. Write technical notes on :

    (i) LNB.   (4 marks)

    (ii) VCD and DVD.   (4 marks)

    (iii) Converters.   (4 marks)

[5 × 12 = 60 marks]

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B.TECH. DEGREE EXAMINATION, NOVEMBER 2010

Eighth Semester

Branch : ECE / Applied Electronics and Instrumentation Engineering

VHDL (Elective II) (LA)

(Supplementary)

Time : Three Hours   Maximum : 100 Marks

Part A

Answer all questions.
Each question carries 4 marks.

1. What is hardware abstraction?

2. Write notes on configuration declaration.

3. What is meant by delta delay? Explain.

4. Discuss about Assertion statement.

5. Discuss the syntax of configuration declaration.

6. Discuss about default rules.

7. Write notes on subprogram overloading.

8. Explain the syntax of package declaration.

9. Discuss about user defined attributes.

10. Explain state machine modelling.

(10 × 4 = 40 marks)

Part B

Each question carries 12 marks.

11. Discuss about Architecture Body, with suitable examples.   (12 marks)

Or

12. Explain the identifiers used in VHDL.   (12 marks)

Turn over

13. Obtain a behavioural model of 8 bit synchronous counter.   (12 marks)

Or

14. Write notes on:

(a) Data flow modelling.

(b) Multiple drivers.   (6 + 6 = 12 marks)

15. Obtain structural model for a 9-bit parity generator circuit.   (12 marks)

Or

16. Explain in detail configuration declaration with examples.   (12 marks)

17. Explain with examples operator overloading.   (12 marks)

Or

18. Write short notes on:

(a) Design file and design libraries.

(b) Explicit visibility.   (6 + 6 = 12 marks)

19. Describe user defined, predefined Attributes.   (12 marks)

Or

20. Discuss about different styles of modelling.   (12 marks)

[5 × 12 = 60 marks]

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B.TECH. DEGREE EXAMINATION, NOVEMBER 2010

Eighth Semester

Branch : Electronics and Communication Engineering, AE and I E and I

MULTIMEDIA SYSTEM (Elective III) (LAS)

(Supplementary)

Time : Three Hours   Maximum : 100 Marks

Answer **all** *questions.*

Part A

Each question carries 4 marks.

1. What is Multimedia and list the types of media ?

2. Explain any *one* of multimedia hardware application.

3. What is compression ? And explain wavelet compression ?

4. Short note on 'Capture and play back technique'.

5. What is CD ? Explain its technologies.

6. Write about 'Quick time'.

7. What are format classes and component classes in a multimedia framework ?

8. List the various problems in Programming related to multimedia system.

9. What are the characteristics of real time systems ?

10. Explain Desktop video conferencing in detail.

(10 × 4 = 40 marks)

Part B

Each question carries 12 marks.

11. Discuss in detail about the various multimedia authoring tools.   (12 marks)

Or

12. Discuss some hardware and software applications of multimedia.   (12 marks)

13. What is IPEG ? Explain the performance and objective of it.   (12 marks)

Or

14. (i)   Explain fractal compression in detail.   (6 marks)

    (ii) What is Image ? Explain its types.   (6 marks)

Turn over

15. Discuss the various modes of CDROM.

(12 marks)

Or

16. (i) Differentiate between MIDI and digital Audio.

(6 marks)

(ii) Short note on CD-interactive.

(6 marks)

17. Discuss in detail about the notion of synchronization.

(12 marks)

Or

18. Explain Format classes and component classes in a Multimedia framework.

(12 marks)

19. Explain realistic image synthesis techniques.

(12 marks)

Or

20. (i) Explain computer based vedio conferencing.

(6 marks)

(ii) Short note on 'Digital vedio'.

(6 marks)

[5 × 12 = 60 marks]

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Reg. No......*ECE*..............

Name ....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2010

Eighth Semester

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

COMPUTER NETWORKS (LAS)

(Supplementary)

Time : Three Hours

Maximum : 100 Marks

Part A

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

1. Explain any two data transmission mode.
2. Explain the concept of Internet.
3. Define Modem. Explain.
4. What are the roles of data link layer ? Explain.
5. Explain the transport protocol on X-25.
6. What is LAN ? Explain.
7. What is Cryptography ? Explain.
8. Short note on 'Session layer'.
9. Explain packet (cell) format in ATM.
10. Explan the basic principle of SDH.

(10 × 4 = 40 marks)

Part B

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

11. (i) Explain the concept of WAP technology in detail. (8 marks)

    (ii) What is meant by broad band transmission ? Explain. (4 marks)

Or

12. Explain the TCP/IP reference model in detail. (12 marks)

13. What is Routing ? Explain the problems in implementing a good routing. (12 marks)

Or

14. Short notes on :

    (i) Polling.

    (ii) Multiplexing.

    (iii) Datagram.

(4 + 4 + 4 = 12 marks)

Turn over

15. Short notes on :
    (i)   Transport protocol.
    (ii) IEEE 802 standards.
    (iii) Shared memory.

                                                                    (4 + 4 + 4 = 12 marks)

                                          Or

16. What is Flow Control ? Explain.   (12 marks)
17. What is Session layer ? Explain its design issues.   (12 marks)

                                          Or

18. What is presentation layer ? Explain.   (12 marks)
19. Explain with diagram different fields such as UNI and NNI in ATM cell header.   (12 marks)

                                          Or

20. Short notes on :
    (i)   SONET.   (4 marks)
    (ii) E-mail.   (4 marks)
    (iii) ATM adaptation layer.   (4 marks)

                                                            [5 × 12 = 60 marks]

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Name ....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2010

Eighth Semester

Branch : Electronics and Communication Engineering

ADVANCED COMMUNICATION SYSTEMS (L)

(Supplementary)

Time : Three Hours   Maximum : 100 Marks

Answer **all** *questions.*

Part A

1. Explain what is meant by look angles ?

2. Explain what is telemetry tracking and command sub-system ?

3. What is loading factor and how does it affect the FM/FDM signal transmission ?

4. Explain the structure of TDMA frame.

5. What is meant by frequency reuse ? Explain.

6. What is meant by cell splitting technique for expanding the capacity of cellular systems ?

7. Explain the principle of cordless telephone systems.

8. Explain about GSM radio subsystems.

9. Explain the advantages and disadvantages of spread spectrum techniques.

10. Define Jamming Margin and processing gain.

(10 × 4 = 40 marks)

Part B

11. Explain as to how a satellite is placed into geostationary orbit from earth ? What is transfer orbit and how is the orbit correction for the launch of satellite and latitude is obtained ? Explain.

Or

12. Draw the block diagram of spacecraft subsystem and explain in detail.

(12 marks)

13. Draw the block diagram of CDMA systems and explain in detail.   (12 marks)

Or

14. Write short note on :

   (i) Packet switching.

   (ii) Circuit switching.

(6 + 6 = 12 marks)

Turn over

15.   (a)   Explain channel planning for wireless systems.   (7 marks)

      (b)   Explain as to how a co-channel inference is reduced ?   (5 marks)

Or

16.   (a)   Explain about micro-cell concept.   (6 marks)

      (b)   Write short note on a Bluetooth technology.   (6 marks)

17. Explain in detail two types of GSM logical channels.   (12 marks)

Or

18. Explain the basic concepts of global positioning systems with block diagram.   (12 marks)

19.   (a)   Explain the characteristics of PN sequence. What is Chip ?   (4 marks)

      (b)   Explain the various steps involved to achieve the synchronization for Spread Spectrum Communication Systems.

                                                                 (8 marks)

Or

20. Explain fast and slow frequency hopping techniques.   (12 marks)

                                                            [5 × 12 = 60 marks]