Code No. 2757/CBCS

FACULTY OF ENGINEERING

B.E VII-Semester (CBCS) (ECE) (Main) Examinations, December 2019

SUBJECT: Mobile and Cellular Communication (Elective – II)

Time: 3 Hours **Max Marks: 70**

Note: Answer all Questions from PART –A and any five Questions from PART-B.

PART-A (10 X 2 = 20 Marks)

1. Give any four examples of wireless communication systems. 2
2. What is cross talk? 2
3. Differentiate indoor and outdoor propagation models 2
4. What is diffraction? 2
5. What are the factors influencing small scale fading? 2
6. Write the difference between DSSS and FHSS 2
7. Draw GSM frame structure. 2
8. List the advantages of GSM. 2
9. Write about Bluetooth 2
10. List out wireless data services 2

PART-B (5 X 10 = 50 Marks)

11 a) Explain about frequency reuse with neat diagram 5

b) Write about handoff strategies. 5

12 a) Explain Durkin's outdoor propagation model 5

b) Write about indoor propagation models 5

13 a) Explain CDMA concept with neat diagrams 5

b) Write about slotted Aloha protocol 5

14 a) Explain about Various channels in GSM. 5

b) Explain CDMA Forward – channel system. 5

15 a) Explain Durkin's model 5

b) Differentiate Manual and Automatic Electronic exchanges. 5

16 a) Explain TDMA Systems 5

b) Write a short note on 1G, 2G, 3G, 4G. 5

17. a) Explain about UMTS. 5

b) Write about mobile antenna radiation pattern. 5

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Code No. 2758 / CBCS

FACULTY OF ENGINEERING

B.E. (ECE) VII – Semester (CBCS) (Main) Examination, December 2019

Subject: Speech Signal Processing (Elective – II)

Time: 3 Hours **Max.Marks: 70**

Note: Answer all questions from Part-A and any five questions from Part-B

PART – A (10x2 = 20 Marks)

1 Define average magnitude difference function [2]
2 What are formants? [2]
3 What is a spectrogram? [2]
4 What are the advantages of vector quantizer coders? [2]
5 How many number of speech samples are present in a window of duration 20msec sampled at a frequency of 8 kHz? [2]
6 What is windowing? [2]
7 Briefly explain mechanism of speech production. [2]
8 What are the applications of ASR systems? [2]
9 What is isochronous foot theory? [2]
10 Explain the advantage of increasing the number of channels in channel vocoder [2]

PART – B (5x10 = 50 Marks)

11 a) Explain general discrete time model for speech production. [5]
b) Write a short note on production of nasal and diphthongs. [5]

12 a) Why do we consider Short time representation of speech signals? [5]
b) Explain linear filtering interpretation of short time spectrum analysis with suitable block diagrams. [5]

13 a) Explain pitch period extraction using simplified inverse filter tracking method. [5]
b) With a block diagram explain cepstral analysis of speech. [5]

14 a) Explain the basic principle of linear predictive analysis. [5]
b) Explain the method of finding coefficients using auto correlation method. [5]

15 a) Draw the schematic of TTS system and explain the functions of each block. [5]
b) Explain Mermelstein's articulatory model. [5]

16 a) What are the problems associated with automatic speech recognition? [5]
b) Explain dynamic time warping with respect to isolated word recognition. [5]

17 Write short notes on:
a) Transform coding [5]
b) Hidden Markov Models. [5]

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Code No. 2759/CBCS

FACULTY OF ENGINEERING

B.E. VII Semester (CBCS) (ECE) (Main) Examination, December 2019

Subject: ELECTRONIC MEASUREMENTS & INSTRUMENTATION

(Elective-II)

Time: 3 hours **Max. Marks: 70**

Note: Answer All Questions in Part – A and any five questions from Part – B.

PART – A (20 Marks)

1. What is the significance of limiting error? [2]
2. Define resolution and sensitivity? [2]
3. Differentiate between active and passive transducers? [2]
4. Explain the principle of Velocity Transducer. [2]
5. Differentiate between sound pressure level and sound power level. [2]
6. Suggest the merits of a thermocouple system for the measurement of temperature, when compared with the wire resistance thermometer. [2]
7. A 3 ½ digital voltmeter has an accuracy specification of ±0.5% of reading ±1 digit. What is possible error in volt, when the instrument is reading 5.0 V on the voltage range? [2]
8. What are the advantages of dual slope over ramp type DVMs ? [2]
9. Draw typical ECG waveforms and explain its significance? [2]
10. Name three basic types of electrodes for measurement of Bio-potential. [2]

PART – B (50 Marks)

11. Explain different types of errors and give example for each? [10]

12. Show how Capacitive transducer can be used to monitor the thickness if an insulating sheet in motion, without making physical contact. Comment about the linearity and sensitivity of the system. [10]

13. (a) List out the characteristics of Sound. [5]
    (b) What do you mean by loudness and mention its units. [5]

14. List out various types of DVMs. Draw the block diagram for Successive approximation type DVM and explain its operation? [10]

15. With a neat diagram explain the operation of CT scanner and X-ray machine. [10]

16. (a) Describe different modes of operation of piezo-electric transducers. [5]
    (b) What are the limitations of X-rays and how are these overcome by CT technique? [5]

17. Write Short notes on: [10]
    (a) IEEE standards of measurements
    (b) SCADA
    (c) Ultrasonic Imaging systems

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Code No.2760/CBCS

FACULTY OF ENGINEERING

B. E. (ECE) (CBCS) VII – Semester (Main) Examination, December 2019

Subject: Digital Signal Processor & Archit. (Elective – II)

Time: 3 hours **Max. Marks: 70**

Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.

PART – A (20 Marks)

1. What is the need for special ASPs? 2
2. Using 16 bits for the mantissa and 8 bits for the exponent, what is the range of numbers that can be represented using the floating point format similar to IEEE-754. 2
3. What are the sources of errors in DSP processors? 2
4. List the DSP tools required for the development of a code. 2
5. What is the role of a Barrel shifter in DSP? 2
6. Write the basic architectural features of DSP processor. 2
7. Draw the register format of status register ST0 of a TMS320C54xDSP. 2
8. What are the addressing modes of floating point DSP processor? 2
9. Briefly explain programmed I/O mode interfacing. 2
10. What is the function Direct memory access? 2

PART – B (50 Marks)

11. (a) Explain the finite word length effects of DSP processor. 5

    (b) Compare DSP with General purpose processors. 5

12. (a) Explain the functionalities of various DSP tools. 5

    (b) Discuss on real time implementation considerations for a DSP system. 5

13. (a) Explain with a block diagram a basic DSP system. What are the advantages and disadvantages of programmable DSP processors? 5

    (b) With a neat block diagram explain the functions of address generation unit of DSP architecture. 5

14. (a) Describe the MAC unit of TMS 320 C 54xx processor with a neat block diagram. 5

    (b) Assume that the current contents of AR3 to be 400 h, what will be its contents after each of the following TMS 320 C 54 xx addressing mode is used? Assume that the contes of AR0 are 40h. (i) *AR3+0; (ii) *AR3+; (iii) *AR3+OB. 5

15. (a) Explain a data memory system with address range 000800h-00FFFh for a C5416 processor using 2Kx8 SRAM memory chips. 6

    (b) Briefly explain parallel I/O interface. 4

16. (a) Explain the circular addressing mode with an example for TMS320C54xDSP. 6

    (b) Explain the branch effects and interrupt effects in DSP processor. 4

17. Write short notes on

    (a) Echo cancellation modems. 5

    (b) Multichannel buffered serial port (McBSP)

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