

Code No: 126AN

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**

**B.Tech III Year II Semester Examinations, May - 2016**

**DIGITAL COMMUNICATIONS**

**(Electronics and Communication Engineering)**

**Time: 3 hours**

**Max. Marks: 75**

**Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

**PART - A (25 Marks)**

- 1.a) What are the drawbacks of delta modulation? [2]
- b) Explain the need for non-uniform quantization in digital communication. [3]
- c) Draw the Signal space Diagram of ASK. [2]
- d) List out the Advantages of Pass band Transmission over Baseband transmission. [3]
- e) Define Entropy. [2]
- f) Derive the Expression for the Information Rate. [3]
- g) Explain in one sentence about (i) Block Size (ii) Linear block codes. [2]
- h) List out Properties of Cyclic Codes. [3]
- i) Briefly explain about "Spread spectrum" [2]
- j) What is Frequency hopping spread spectrum? [3]

**PART - B (50 Marks)**

- 2.a) With neat block diagram, Explain the process of Sampling and Quantization in digital communication.
- b) Derive the expression for the Quantization error. [5+5]

**OR**

- 3.a) Explain about the noise in PCM systems.
- b) Write the comparison between PCM and Analog modulation techniques. [5+5]

- 4.a) With neat diagrams and equations, explain about PSK system.
- b) Draw the space representation of BPSK. And also draw its waveforms? [5+5]

**OR**

- 5.a) The bit stream 1011100011 is to be transmitted using DPSK. Determine the encoded sequence and transmitted phase sequence.
- b) Explain about DPSK system. And also give the comparison between DPSK and PSK. [5+5]

- 6.a) What is the need of pulse shaping for optimum transmission in baseband transmission? Explain.
- b) What is meant by Cross talk? Explain in detail about the causes for cross talk. [5+5]

**OR**

- 7.a) Briefly explain about Variable length coding.
- b) Explain in detail about Huffman coding and Lossy source code. [5+5]

- 8.a) Write short notes on Hamming codes.  
b) Explain about Error detection and Correction capabilities of Hamming codes. [5+5]

**OR**

- 9.a) Explain how Parity checking can be used for error detection or error correction.  
b) For a linear block code, prove with example that:  
i) The Syndrome depends only on error pattern and not on transmitted code word?  
ii) All error patterns that differ by a codeword have the same syndrome? [5+5]

- 10.a) Explain the role of code division multiple access technique in present generation?  
b) Give a brief history about direct sequence spread spectrum. [5+5]

**OR**

- 11.a) Explain about PN-Sequences generation and their characteristics. [5+5]  
b) What is meant by Synchronization? Why we require synchronization in spread spectrum? Explain in detail.

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**Code No: 126EA**

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**

**B.Tech III Year II Semester Examinations, May – 2016**

**INTELLECTUAL PROPERTY RIGHTS**

**(Common to EEE, ME, ECE, CHEM, EIE, IT, MCT, MMT, AE, AME, MIE, AGE)**

**Time: 3 hours**

**Max. Marks: 75**

**Note:** This question paper contains two parts A and B.  
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

**PART - A**

**(25 Marks)**

- 1.a) List out the types of intellectual property rights. [2]
- b) Discuss the treaties of Intellectual property rights. [3]
- c) What is the purpose of trademark? [2]
- d) Discuss about the protectable matter. [3]
- e) What is rights of reproduction? [2]
- f) State international copyright law. [3]
- g) Define trade secret law. [2]
- h) Discuss about false advertising. [3]
- i) What are new developments in trademark law? [2]
- j) Explain international property audits. [3]

**PART - B**

**(50 Marks)**

2. With an example, outline the importance of intellectual property rights. [10]
- OR**
3. Explain the historical view of intellectual property rights. [10]
  4. Explain the procedure for registration of trade marks. What are the effects of registration of trade mark? [10]
- OR**
5. With the help of an example explain the process for acquisition of trademark rights. [10]
  6. List out the issues involved in copyright ownership. [10]
- OR**
7. Explain the process involved for searching of a patent. [10]
  8. State and explain the trade secret Law. Explain the liability for misappropriations of trade secrets. [10]
- OR**
9. Discuss the legalities involved in protecting against unfair competition. [10]
  10. Describe in detail about the international development in patent law. [10]
- OR**
11. What are the new developments in copy right law and patent law? Explain. [10]

Code No: 126EC

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**  
**B.Tech III Year II Semester Examinations, May - 2016**  
**DISASTER MANAGEMENT**

(Common to EEE, ME, ECE, CHEM, EIE, BME, IT, AE, AME, MIE, PTE, MSNT, AGE)

Time: 3 hours

Max. Marks: 75

**Note:** This question paper contains two parts A and B.  
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

**PART - A**

(25 Marks)

- 1.a) What is environmental hazard? [2]
- b) How to prevent a Hazard from changing into a disaster? [3]
- c) Give examples of Planetary Hazards. [2]
- d) What are various types of environmental Hazards? [3]
- e) Distinguish between tropical cyclones and local storms. [2]
- f) What monitoring systems are used for tracing the path of cyclones? [3]
- g) What are the hazardous effects of volcanoes? [2]
- h) What causes earthquakes? [3]
- i) What are the three stages of disaster management? [2]
- j) List three pre-disaster activities to reduce the impact of cyclones. [3]

**PART - B**

(50 Marks)

- 2.a) Distinguish between environmental stress, hazard and disaster giving examples.
- b) Describe Ecosystem approach to mitigate environmental stress. In what way it is different from the perception approach? [5+5]

**OR**

- 3.a) How does human perception changes with environmental degradation? Discuss.
- b) How does landscape approach aid in reducing environmental stress? Give examples. [5+5]

- 4.a) How is environmental hazard linked to ecology? Explain with respect to Drought.
- b) Drought and floods occur in the same region but at different times. Explain the reason. [5+5]

**OR**

- 5.a) Distinguish between endogenous and exogenous hazards giving examples.
- b) Under what category will cyclones come? Explain with reasons. [5+5]

- 6.a) In what Zones earthquakes occur in India? Explain the reason why it occurs in those Zones?
- b) What are the pre-disaster measures are taken to prevent loss of life due to this hazard? [5+5]

**OR**

- 7.a) What are the environmental effects due to volcanic eruption?  
b) Discuss the methods that can be adopted to reduce the effect of volcanic eruption. [5+5]
- 8.a) Under what category will you put Bhopal Gas tragedy in India?  
b) What are toxic chemicals and describe a few measures that can be taken to reduce the impact of such events? [5+5]

**OR**

- 9.a) Describe the areas of flood hazard in India. What causes floods?  
b) Describe at least three flood control measures to reduce the impact of flood disaster. [5+5]
- 10.a) What are the pre-disaster measures taken to manage earthquake disaster?  
b) Relate the building collapse during earthquake to impact of earthquake disaster and explain both pre and post disaster measures undertaken to mitigate the sufferings of people in an earthquake situation. [5+5]

**OR**

- 11.a) Describe the measures taken during a land slide disaster.  
b) What pre disaster measures would have reduced the impact of land slide disaster? Explain. [5+5]

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Code No: 126EJ

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech III Year II Semester Examinations, May - 2016

MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

(Common to ECE, CSE, MMT)

Time: 3 hours

Max. Marks: 75

**Note:** This question paper contains two parts A and B. Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

**PART - A**

**(25 Marks)**

- 1.a) What is a normative statement? [2]
- b) Differentiate complementary goods from the substitutes. [3]
- c) What are implicit costs? Give suitable examples. [2]
- d) How do average fixed cost per unit and average variable cost per unit vary with output level? [3]
- e) What is the minimum and maximum number of partners in a non banking partnership firm? [2]
- f) What is the basic difference between monopolistic condition and duopoly? [3]
- g) Define profitability index. [2]
- h) What items constitute current assets? Give suitable examples. [3]
- i) Define ROI. [2]
- j) Define any of the two activity ratios and illustrate with assumed data. [3]

**PART - B**

**(50 Marks)**

- 2.a) What are the disadvantages of statistical techniques of demand forecasting?
- b) What are the determinants of demand? [5+5]

**OR**

- 3.a) A consumer was viewing movie in multiplex 8 times in a year with his family when his annual income was Rs.5,00,000. When the income was raised to Rs.8, 00,000 on his promotion, the frequency of entertainment of his family on movies per year became 12 times. Calculate the income elasticity of demand of entertainment.
- b) How does knowledge of managerial economics enable one to take better business decisions? [5+5]

- 4.a) How does marginal cost differ from average cost?
- b) A company is selling a product at Rs.20 of which variable cost is Rs.2. The fixed overheads of the company amount to Rs.1,80,000. What is the break- even point? What is the turnover required to earn a profit of Rs.36, 000? [5+5]

**OR**

- 5.a) With the usual notation write the equation for Cobb-Douglas production function.
- b) What are the internal economies of production? Explain each of them briefly. [3+7]

- 6.a) What are the forms of privatization?
- b) Which are the two cost-based pricing methods? What are their limitations? [5+5]

**OR**

- 7.a) Compare perfect completion with monopoly.
- b) What is partnership deed and mention its components? [6+4]

- 8.a) What factors influence the volume of working capital needed by an organization?  
b) Explain the concept of working capital cycle. [5+5]

**OR**

9. A corporation has to decide as to which of the following two machines need to be bought. The outlay for each of the projects is /Rs.2, 00,000.

Year	Cash flow for project A Rs.	Depreciation for project A Rs.	Cash flow for project B Rs.	Depreciation for project B Rs.
1	1,00,000	20,000	50,000	40,000
2	50,000	20,000	60,000	40,000
3	60,000	20,000	50,000	40,000
4	20,000	20,000	50,000	40,000
5			50,000	40,000

Calculate the payback period for each of the projects and rank them. [10]

- 10.a) A firm maintains a provision for bad debts at 5% and a provision for discount at 2% on total debtors. From the following particulars, write up the provision and reserve account.

Balances on 1<sup>st</sup> April 2014.

Provision for bad debts Rs.45,000.

Provision for discount on debtors Rs.40, 000.

Total debtors were on 31<sup>st</sup> March 2015 Rs. 10, 00,000 after writing off bad debts of Rs.25,000 and allowing discount of Rs.30,000.

On 31<sup>st</sup> March 2016 Rs.6, 00,000 after writing off bad debts of Rs.15, 000 and allowing discount of Rs.17,500.

- b) What are the limitations of ratio analysis? [5+5]

**OR**

- 11.a) A company's sales for the year was Rs.12,00,000/-, 60% of which were on credit basis. At the beginning of the year the opening Sundry debtors showed Rs. 80,000 and the closing balance was Rs. 40,000. Calculate debtor turnover ratio.

- b) Define 'Double entry principle' and elaborate the Accounting records to be maintained by an organization. [6+4]

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Code No: 126EK

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**  
**B.Tech III Year II Semester Examinations, May - 2016**  
**DIGITAL SIGNAL PROCESSING**

(Common to ECE, EIE)

Time: 3 hours

Max. Marks: 75

**Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

**PART – A****(25 Marks)**

- 1.a) Write four advantages of Digital Signal Processing over Analog Signal Processing. [2]
- b) Show that the frequency response of a discrete system is a periodic function of frequency. [3]
- c) Give the relation between DTFT and Z-Transform. [2]
- d) Distinguish between Linear convolution and circular convolution. [3]
- e) What are the advantages of Butterworth filter? [2]
- f) What are the advantages and disadvantages of Chebyshev filter. [3]
- g) Define Impulse Response. [2]
- h) Define sampling and Nyquist Rate. [3]
- i) Define Decimation. [2]
- j) What is the need for Multirate Digital Signal Processing? [3]

**PART – B****(50 Marks)**

- 2.a) Test the following systems for linearity, time invariance, causality and stability.  
 $y(n) = \sin(2n\pi/7)x(n)$
- b) A digital system is characterized by the following difference equation:  
 $Y(n) = x(n) + ay(n-1)$  Assuming that the system is relaxed initially, determine its impulse response. [5+5]

**OR**

3. By taking an example compute DFT by using Over-Lap save method. [10]
- 4.a) Compute the circular convolution of the sequences  
 $x_1(n) = \{1, 2, 0, 1\}$  and  
 $x_2(n) = \{2, 2, 1, 1\}$  Using DFT approach.
- b) What is FFT? Calculate the number of multiplications needed in the calculation of DFT using FFT algorithm with 32 point sequence. [5+5]

**OR**

- 5.a) Prove the following properties.
  - i)  $x^*(n) \rightarrow X^*((-K))_N R_N(K)$
  - ii)  $x^*((-n))_N R_N(n) \rightarrow X_{ep}(k) = \frac{1}{2} [X((K))_N + X^*((-K))_N] R_N(K)$
- b) Compare FFT for the sequence.  
 $x[n] = \{1, 0, 1, 1, 0, 1, 1, 1\}$  [5+5]



- 6.a) Discuss in detail about spectral transformations.  
b) Explain how IIR digital filters are designed from analog filters. [5+5]

**OR**

- 7.a) Compare the impulse invariance and bilinear transformation methods.  
b) Find the order and poles of a low pass Butterworth filter that has a -3db bandwidth of 400 Hz and an attenuation of 20db at 1KHz. [4+6]

- 8.a) Draw and explain frequency response of FIR digital filter.  
b) Design a high pass filter using hamming window with a cut-off frequency of 1.2 radians/second and  $N=9$ . [5+5]

**OR**

- 9.a) List the designing steps of FIR filters using fourier method.  
b) Design a low pass digital FIR filter using Kaiser Window satisfying the specifications given below.  
Pass band cut-off frequency = 100 Hz.  
Stop band cut-off frequency = 200 Hz.  
Pass band ripple = 0.1dB  
Stop band attenuation = 20 dB  
Sampling frequency = 1000 Hz. [3+7]

- 10.a) What are the Dead band Effects? Discuss.  
b) What is mean by sampling rate conversion? Explain. [5+5]

**OR**

- 11.a) What are Limit Cycles and discuss various types of Limit Cycles in brief.  
b) Discuss the process of performing sampling rate conversion by an rational factor  $I/D$ . [6+4]

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**Code No: 126EM**

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**

**B. Tech III Year II Semester Examinations, May - 2016**

**MICROPROCESSORS AND MICROCONTROLLERS**

**(Common to ECE, BME)**

**Time: 3 hours**

**Max. Marks: 75**

**Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

**PART - A**

**(25 Marks)**

- 1.a) List out different segmentations presented in 8086 Microprocessor. [2]
- b) Draw the flag register of 8086 Microprocessor and explain function of each flag. [3]
- c) Explain one byte and two byte instruction frame format. [2]
- d) List the data transfer instruction set of 8086 microprocessor. [3]
- e) Draw the BSR mode frame format. [2]
- f) Explain the concept of interrupt service routine of 8086 microprocessor. [3]
- g) Explain register set of 8051 Microcontroller. [2]
- h) List out the difference between microprocessor and microcontroller. [3]
- i) Draw the T0 and T1 registers of 8051 microcontroller. [2]
- j) Explain the hard ware interrupts of 8051 microcontroller with examples. [3]

**PART - B**

**(50 Marks)**

- 2.a) Draw the register organization of 8086 Microprocessor and explain it.
- b) Explain the minimum mode pins of 8086 Microprocessor in detail.
- c) Explain the concept of physical address calculation of 8086 microprocessor. [3+3+4]

**OR**

- 3.a) Draw the internal architecture of 8086 microprocessor and explain its operation.
- b) Draw the timing diagram of minimum mode write operation and explain it. [5+5]
- 4.a) Define addressing mode and explain different addressing modes used in 8086 Microprocessor with examples
- b) List out different assembler directives used in 8086 microprocessor with examples. [5+5]

**OR**

- 5.a) Write an assembly language program to find the largest number in an array of 8-bit numbers.
- b) List the string manipulation instruction set of 8086 microprocessor with examples. [5+5]

- 6.a) Draw the internal architecture of 8255 PPI and explain its operation.  
b) Draw the interacting diagram of A/D convertor with 8086 microprocessor and explain its operation. [5+5]

**OR**

- 7.a) Explain the concept of keyboard and interfacing along with block diagram.  
b) Explain the concept of methods of serial communication with examples. [5+5]

- 8.a) Draw the internal architecture of 8051 Microcontroller and explain its operation.  
b) Draw the PSW and TCON registers of 8051 microcontroller. [5+5]

**OR**

- 9.a) Explain the different features of 8051 microcontroller in detail.  
b) Draw the pin diagram of 8051 microcontroller and explain the function of each pin in detail. [5+5]

- 10.a) Explain the different addressing modes used in 8051 microcontroller with examples.  
b) Draw the SCON register frame format and explain it. [5+5]

**OR**

- 11.a) List out the different instruction set of 8051 microcontroller and explain with examples.  
b) Write an assemble language program for LED blinking in 8051 microcontroller. [5+5]

Code No: 126EN

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**  
**B.Tech III Year II Semester Examinations, May - 2016**  
**VLSI DESIGN**  
**(Electronics and Communication Engineering)**

Time: 3 hours

Max. Marks: 75

**Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

**PART - A****(25 Marks)**

- 1.a) Define  $g_m$  of MOS transistor. [2]
- b) Draw transfer characteristics of CMOS inverter. [3]
- c) Define scaling and explain it. [2]
- d) Explain difference between stick diagram and layout diagram. [3]
- e) Define delay and explain different time delays in gate level modeling. [2]
- f) Explain the importance of wiring capacitance of a MOS transistor. [3]
- g) Explain the difference between EPROM and EEPROM. [2]
- h) Draw 2-bit comparator. [3]
- i) Explain difference between PLA and PAL. [2]
- j) Define controllability and observability with respect to testing. [3]

**PART - B****(50 Marks)**

2. Draw the fabrication steps of CMOS transistor and explain its operation in detail. [10]
- OR**
3. Draw the fabrication steps of NMOS transistor and explain its operation in detail. [10]
- 4.a) Draw the flow chart of VLSI Design flow and explain the operation of each step in detail.
- b) Draw the stick diagram for three input AND gate. [6+4]
- OR**
5. What is the purpose of design rule? What is the purpose of stick diagram? What are the different approaches for describing the design rule? Give three approaches for making contacts between poly silicon and discussion in NMOS circuit. [10]
- 6.a) Draw and explain fan in and fan out characteristics of different CMOS design technologies.
- b) Explain different wiring capacitance used in Gate level design with example. [5+5]
- OR**
7. What are the alternate gate circuits available? Explain any one of item with suitable sketch by taking NAND gate as an example. [10]

- 8.a) Draw the basic circuit diagram of static RAM and explain its operation.  
b) Draw the basic block diagram of 4-bit adder and explain its operation in detail. [5+5]

**OR**

- 9.a) Explain the CMOS system design based on the I/O cells with suitable example.  
b) Design a four bit parity generator using only XOR gates and draw the Schematic of it. [5+5]

- 10.a) Why the chip testing is needed? At what levels testing a chip can occur?  
b) What is the drawback of serial scan? How to overcome this? [5+5]

**OR**

- 11.a) Briefly Explain different parameters influencing low power design in detail.  
b) What is sequential fault grading? Explain how it is analyzed. [5+5]

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Code No: 126EB

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year II Semester Examinations, May - 2016

HUMAN VALUES AND PROFESSIONAL ETHICS

(Common to EEE, ME, ECE, EIE, IT, MCT, AE, MIE, PTE, AGE)

Time: 3 hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

## PART - A

(25 Marks)

- 1.a) What is the need for 'Value Education' in technical and other professional institutions? [2]
- b) What is the difference between 'belief' and 'understanding'? [3]
- c) Suggest any 2 programs that you can undertake to improve the health of your body? [2]
- d) How do we go into conflicts when our activities are not guided by one natural acceptance? [3]
- e) Explain the term "Anu - Sangita". [2]
- f) What can be the basis of an undivided society- the "World family"? [3]
- g) Define sah-astitva? [2]
- h) Explain the term "nature submerged in space" with reference to existence? [3]
- i) What are the objectives of professional ethics? [2]
- j) Differentiate existence and co-existence. [3]

## PART - B

(50 Marks)

- 2.a) Justify the role of self exploration as in the process of Value Education? [5+5]
  - b) What are pre conditions? What is their source? [5+5]
- OR**
- 3.a) Critically examine the prevailing notion of happiness and prosperity and their consequences? [5+5]
  - b) What is the true essence of happiness and prosperity? [5+5]
- 4.a) What are the consequences of confusion between Sukh and Suvidha? [5+5]
  - b) "Human being is more than just the Body"- explain? [5+5]
- OR**
- 5.a) Why are the Physical facilities required? What do you mean by right utilization of Body? [5+5]
  - b) How does realization and understanding lead to definiteness of human conduct? [5+5]

- 6.a) The major crisis in today's society is that of Trust and Respect-Elucidate?  
b) What is "Justice" what are its four elements? Is it a continuous or a temporary need? [5+5]

OR

- 7.a) Explain the dimensions of human Endeavour in society conducive to manaviya Vyavastha?  
b) What is the meaning of Education and Sanskara? How does Sanskara follow education? [5+5]

- 8.a) Briefly explain the holistic perception of harmony at all levels of existence.  
b) Describe the recyclability and self-regulation of nature. [5+5]

OR

- 9.a) Explain the four orders in nature.  
b) Differentiate between units and space. How are units self-organized in space? [5+5]
10. Mention the steps that you can take to promote ethics among your colleagues over unethical practices prevailing? [10]

OR

- 11.a) Explain the holistic alternatives and describe the vision for the holistic alternatives.  
b) Explain the competence process in professional ethics. [5+5]

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