Code No.D-2275/A/AICTE

FACULTY OF ENGINEERING

B.E. (EEE) VII – Semester (AICTE) (Main) Examination, March / April 2022

Subject: Professional Elective – IV
Power Quality Engineering

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

(Missing data, if any, may be suitably assumed)

PART – A

Note: Answer all questions. **(10 x 2 = 20 Marks)**

1. Define following terms (i) Voltage Fluctuations (ii) Harmonics
2. What is the most common problem in power quality?
3. What are the causes of voltage sag?
4. Define (a) Voltage sag duration (b) Phase angle jumps
5. What are the sources of sags and interruption?
6. Define Adjustable speed drive system?
7. What are the power quality issues?
8. Define waveform distortion and DC offset.
9. What are the characteristics of power line monitors?
10. What kind of equipment is needed to measure distorted waveform?

PART – B

Note: Answer any five questions. **(5 x 10 = 50 Marks)**

11. (a) Explain how power quality data can be stored and analyzed?
    (b) Explain remedies to improve power quality?
12. (a) Explain power quality and explain the reasons for increased concern in power quality?
    (b) What are the major power quality issues and explain them?
13. Explain the sag performance evaluation methods in non-radial distribution systems?
14. Explain in detail about the classification of linear loads and non-linear loads used in harmonic studies?
15. Explain the effect of momentary voltage dips on the operation of induction and synchronous motors?
16. (a) Explain the harmonic effects on transformers?
    (b) Explain the impact of distribution system capacitor banks on power quality?
17. Bring out the significance of power quality monitoring? What are the important power quality monitoring objectives?

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Code No. D-2276/AICTE

FACULTY OF ENGINEERING

B. E. (EEE) VII – Semester (AICTE) (Main) Examination, March / April 2022

Subject: Professional Elective – IV
Energy Management Systems and SCADA

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

(Missing data, if any, may be suitably assumed)

PART – A

Note: Answer all questions. **(10 x 2 = 20 Marks)**

1. What is EMS?
2. What is SCADA? How is it useful?
3. How RTU's are different from PLC's?
4. Draw the structure of SCADA in communication.
5. What is Data Communication in power system?
6. What are the communication techniques used in SCADA?
7. What is SCADA in power system?
8. Thermal and hydro constrains.
9. Incremental fuel cost.
10. (a) What is data acquisition? (b) Define RTUs.

PART – B

Answer any five questions. **(5 x 10 = 50 Marks)**

11 What is Energy Management System? Explain its functions.

12 Discuss objectives and advantages of EMS.

13 The cost function of a 50MW generation is obtained and given below.

$C1=225+53Pg_1+0.02Pg_1^2$ Rs/hr where P_{g1} is the generator loading. Find

(a) Incremental fuel cost IFC expression

(b) IFC when 100% loading is applied

(c) IFC when 50% loading is applied.

14 Draw the architecture of SCADA and list out the benefits of SCADA.

15 Explain SCADA in power system with its architecture.

16 Draw the structure of SCADA communication protocol and explain.

17 Explain the

(a) Human Machine Interface

(b) PLC's

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Code No: D-2281/AICTE

FACULTY OF ENGINEERING

BE. (EIE) VII - Semester (AICTE) (Main) Examination, March / April 2022

Subject: Professional Elective - IV

Instrumentation and Control in Petrochemical Industry

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

(Missing data, if any may be suitably assumed)

PART – A

Note: **Answer all questions**. **(10 x 2 = 20 Marks)**

1. What is Petroleum Exploration?
2. Explain the use of Separator?
3. Describe about Catalytic Reforming.
4. Explain in detail about Distillation Process.
5. How the Instruments are selected in Petrochemical Industries?
6. What are the Parameter require to measure in Petrochemical Industry?
7. Explain the function of Heat Exchanger.
8. Define PLC Scan.
9. What is Desalter?
10. Explain the necessity of Compressor in Petrochemical Industries.

PART - B

Note: Answers any five questions. **(5 x 10 = 50 Marks)**

11. a) Discuss briefly about survey of Petroleum Formation.
    b) Define the Refining Process and explain about different method of Petroleum Refining Process.

12. a) Explain about Vacuum and Atmospheric Distillation Process.
    b) Describe Thermal and catalytic Cracking.

13. a) Describe a brief note on Instruments used in Petrochemical Industries.
    b) Explain in detail about the Basic of Intrinsic Safety of Instrumentation.

14. a) Explain Measurement and Control of Reboiler and Reflux Control.
    b) List out the difficulties arising in Cracking with respect to Various Catalytic.

15. a) Draw the block diagram of PLC and explain its Principle of operation.
    b) Explain Briefly about Basics of SIL.

16. a) Explain about Petroleum Refining Capacity and Consumption in India.
    b) Describe and Explain in detail about the Principle on which the area of field instruments of Petrochemical industries are classified

17. Write short note on
    a) Safety Interlocks in Furnace
    b) Utility Plants and Cooling

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Code No. D-2287/AICTE

FACULTY OF ENGINEERING

B.E. (ECE) VII - Semester (AICTE) (Main) Examination, March / April 2022

Subject: Professional Elective – II
Mobile Cellular Communications

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

(Missing data, if any, may be suitably assumed)

PART – A

Note: Answer all questions. **(10 x 2 = 20 Marks)**

1. Define Frequency Reuse and obtain its expression.
2. Find the Fraunhofer distance for an antenna with maximum dimension of 1m and operating frequency of 900MHz.If antennas have unity gain, calculate the path loss.
3. Define Trunking and Grade of Service.
4. What are the parameters of mobile multipath channels?
5. List advantages of spread spectrum technologies.
6. Explain reservation protocol?
7. Draw GSM frame structure.
8. Explain signal processing in GSM.
9. Write about Blue tooth.
10. Write features of 5G.

PART – B

Note: Answer any five questions. **(5 x 10 = 50 Marks)**

11. (a) Explain methods to improve coverage and capacity in cellular systems.
    (b) Write about Hand-off strategies.

12. (a) Explain Durkin's outdoor propagation model.
    (b) Write about Free space propagation model.

13. (a) Differentiate FDMA, TDMA, CDMA techniques.
    (b) Explain CSMA protocols.

14. (a) Explain GSM system architecture in detail.
    (b) Write about ALOHA protocols.

15. (a) Explain UMTS system architecture.
    (b) Compare features of 3G,4G,5G technologies.

16. (a) Explain TDMA system in detail.
    (b) Explain Interference in cellular systems.

17. (a) Explain Channel Assignment strategies.
    (b) Classify Small scale Fading.

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Code No. D-2288/AICTE

FACULTY OF ENGINEERING

B.E. (ECE) VII - Semester (AICTE) (Main) Examination, March / April 2022

Subject: Professional Elective – II

Speech Signal Processing

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

(Missing data, if any, may be suitably assumed)

PART – A

Note: Answer all questions. **(10 x 2 = 20 Marks)**

1 Define zero crossing count.
2 Compare DPCM and ADPCM.
3 Why speech signal needs to be pre-emphasized?
4 What are allophones?
5 The number of speech samples present in a window of duration 22.5msec sampled at a frequency of 8 kHz.
6 Draw the block diagram of a channel vocoder.
7 Give the first three resonant frequency values of a typical vocal tract.
8 What are the challenges in ASR?
9 What is Morph dictionary?
10 Distinguish between speaker identification and speaker verification.

PART – B

Note: Answer any five questions. **(5 x 10 = 50 Marks)**

11 (a) Explain source filter model for speech production.
(b) Explain how vowels, semi-vowels and diphthongs are produced.

12 (a) Explain end point detection algorithm using short time energy and zero crossing count.
(b) Explain how a code book is formed in vector Quantization.

13 (a) Explain any one pitch detection method.
(b) With a block schematic explain homomorphic speech processing.

14 (a) With the help of a block diagram explain transform coding.
(b) Explain linear predictive vocoder. Give the lpc -10 algorithm.

15 (a) Explain text to speech synthesis system.
(b) Explain vocal tract model in articulatory speech synthesis.

16 (a) Explain DTW with respect to isolated word recognition.
(b) Compute the difference between the patterns $P_1(n) = \{5, 2, 2, 6, 3, 5\}$ and $P_2(m) = \{4, 3, 3, 2, 8, 5\}$. Determine also the time-alignment paths.

17 Write short notes on:
(a) Formant vocoder
(b) Linear predictive synthesizer.

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Code No. D-2290/AICTE

FACULTY OF ENGINEERING

B.E. (ECE) VII - Semester (AICTE) (Main) Examination, March / April 2022
Subject: Professional Elective – II
Digital Signal Processor Architecture

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

(Missing data, if any, may be suitably assumed)

PART – A

Note: Answer all questions. **(10 x 2 = 20 Marks)**

1 What are the applications of digital signal processing?
2 Compare RISC and CISC processor.
3 What is interrupt effect?
4 List the source of errors in DSP.
5 What are guard bits?
6 List the basic building blocks in DSP computation.
7 List the features of TMS320C54X.
8 What are the applications of TMS 320C5X.
9 How does DMA help in increasing the processing speed of a DSP processor?
10 List any four memory and I/O interfacing signals in TMS320C54X.

PART – B

Note: Answer any five questions. **(5 x 10 = 50 Marks)**

11 Write about the major architectural features used in DSP system to achieve high speed program execution.

12 (a) Explain about pipelining.
(b) Write about hardware looping.

13 (a) Explain about echo cancellation modems and spectrum analysis.
(b) Write about assembler and debugger.

14 Write about barrel shifter with neat diagrams.

15 (a) Explain about program sequencer with neat diagram.
(b) Write about parallelism.

16 Draw and explain about the architecture of TMS 320C5X.

17 Write about interrupt handling.

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Code No: D-3767/CBCS

FACULTY OF ENGINEERING

B.E VII - Semester (CBCS) (Backlog) Examination, March / April 2022

Subject: Open Elective – II
Green Building Technology

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

(Missing data, if any, may be suitably assumed)

PART – A

Note: **Answer all questions**. **(10 x 2 = 20 Marks)**

1 State the importance of green building?
2 What are the guidelines of IGBC rating system?
3 What do you mean by water efficient plumbing system?
4 Define solar heat gain co-efficient?
5 Define the term life cycle energy of a building and its component energies?
6 Explain the concept of net zero building?
7 State some examples of green building materials with recycled content?
8 What are the different types of waste products from a building that needs proper planning to be disposed?
9 What is indoor air quality?
10 What does ECBC means?

PART – B

Note: **Answer any five questions**. **(5 x 10 = 50 Marks)**

11. a) Describe in detail the key features of a green building?
b) Explain the technology of green buildings through the LEED certification system?

12 What is Urban Heat Island effect? What are the measures that can be adopted in a Green Building to reduce this effect?

13. a) What is meant by operational energy in building? Discuss various methods to reduce operational energy?
b) What is the need to conserve energy and water in buildings?

14. Explain the different techniques of recycling of industrial waste materials and demolition waster for reuse?

15. Write short notes on ANY Two of the following in relation to Indoor Environment Quality (IEQ) in green building practices:
a) Air Ventilation
b) Low VOC compounds
c) Building Acoustics
d) ASHRAE code

16 a) Discuss the economic benefits of sustainable development?
b) Explain in detail the criteria needed to remember in site selection and planning?

17 Discuss the various low energy approaches to water management in building sector?

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Code No.D-3769/CBCS

FACULTY OF ENGINEERING

B. E. VII – Semester (CBCS) (Backlog) Examination, March / April 2022

Subject: Open Elective – II
Fundamentals of IoT

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

(Missing data, if any, may be suitably assumed)

PART – A

Note: **Answer all questions**. **(10 x 2 = 20 Marks)**

1. What is the role of things and internet in IoT?
2. Briefly explain the concept of SaaS in cloud computing.
3. What is dynamic IP address assignment?
4. Differentiate between open source and closed source.
5. What is an API? How is different for human and IoT Devices?
6. List the types of memory.
7. What are various data types in Python?
8. Write a python program for blinking an LED on Pin no 20 of Raspberry pi.
9. Explain date and time operation in python with example.
10. Discuss about Amazon S3.

PART – B

Note: **Answer any five questions**. **(5 x 10 = 50 Marks)**

11 Discuss about IoT protocols.

12 (a) Draw the IPv4 header frame format & explain each field in it.

(b) What software are used in CNC milling. Explain briefly.

13 Explain polling and Comet technologies in detail.

14 (a) What are the advantages of Python over other languages?

(b) Write a Python program for sending an email on switch press.

15 (a) Discuss Map Reduce Programming model.

(b) Explain about various ethical issues in IoT.

16 (a) How is RAM allocation done in IoT devices.

(b) Write a python program for controlling LED with a switch for Raspberry Pi.

17 Write short notes on:

(a) 3D Printing

(b) Debugging

(c) SPI

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Code No. D-3771/CBCS

FACULTY OF ENGINEERING

B.E. VII - Semester (CBCS) (Backlog) Examination, March / April 2022

Subject: Open Elective – II

Entrepreneurship

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

(Missing data, if any, may be suitably assumed)

PART – A

Note: Answer all questions. **(10 x 2 = 20 Marks)**

1. Enlist challenges in Entrepreneurship.
2. What are the salient features of small-scale industries?
3. Differentiate between manager and an entrepreneur.
4. List out various factors to be considered in choosing the right technology.
5. What do you understand by project formulation?
6. How would you use internet to market a beauty product?
7. Explain why planning is necessary.
8. How project planning is carried out using CPM.
9. Explain time management matrix.
10. What is behaviour? Also explain the role of motivation in behaviour of an entrepreneur.

PART – B

Note: Answer any five questions. **(5 x 10 = 50 Marks)**

11. (a) List out various opportunities and challenges of entrepreneurs in Indian context.
    (b) Explain the role of entrepreneurs in developing the economic status of a country.

12. Discuss in detail about emergence of First-generation entrepreneurs and short notes on women entrepreneurs with one example.

13. What is project formulation? Explain in detail about marketing, financial and technical analysis in project formulation.

14. (a) Discuss in brief the role of management in project execution.
    (b) Discuss about the concept of assessment of tax burden and how it will be helpful to an entrepreneur in planning and managing finance effectively.

15. Discuss in detail about the concept and salient features of PERT and CPM techniques along with their role in helping an entrepreneur in successful completion of a project.

16. (a) Explain various approaches of time management with their strengths and weaknesses.
    (b) "Entrepreneurs are made not born". Give your views with proper justification.

17. Write short notes on any TWO of the following:
    (a) Choice of technology.
    (b) Project financing in India.
    (c) Human aspects in project management

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