Code No.D-2272/A/AICTE

FACULTY OF ENGINEERING

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

Subject: Professional Elective – III
Special Electric Machines

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. Distinguish the half step and full step operations of a stepper motor?
2. Define slewing in stepper motors?
3. Discuss the principle of operation of switched reluctance motor?
4. List the applications of PMSM?
5. Draw the torque speed characteristics of SRM?
6. What are the different configurations of the PMSM?
7. Write the Principle operation of BLDC motor?
8. Draw the schematic diagram for closed loop control?
9. Mention the types of Linear Synchronous Motor?
10. Write the torque equation of SRM?

PART – B

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

11. Compare between open loop and closed loop systems. With a neat schematic diagram, explain the closed loop control of stepper motors.
12. Draw a schematic diagram and explain the operation of a 'C' dump converter used for the control of SRM.
13. (a) Draw the B-H curve of a magnetic material and discuss the role of hysteresis loop.
    (b) Explain the advantages and disadvantages of permanent magnet Synchronous Motors.
14. (a) In what way BLDC motor is different from synchronous motor? Explain.
    (b) Discuss the need for rotor position sensor in BLDC motor operation.
15. (a) What are linear motors? What are their applications? What are various types of linear motors?
    (b) Discuss the principle of operation of linear induction motor.
16. (a) Describe hybrid stepping motor.
    (b) Explain clearly the constructional details of brushless de motor.
17. Explain different power converter configurations for Switched reluctance motor.

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Code No. D-2273/AICTE

FACULTY OF ENGINEERING

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

Subject: High Voltage Engineering (PE - III)

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 (i) Statistical time lag (ii) Formative time lag.
2. Explain the limitations of Townsend's theory.
3. What is 'TRACKING and 'TREEING' in solid dielectric Break down.
4. What are the different commercial Liquid Dielectrics used in practice?
5. What is the necessity for generating high voltages?
6. Explain the principle of operation of resonant transformer.
7. Define generating voltmeter and specify by which it can be driven?
8. Discuss the applications of generating voltmeter.
9. Explain the terms: (i) With stand voltage (ii) Flash over voltage.
10. Name the different tests on cables (any four).

PART – B

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

11 (a) In an experiment in a certain gas, it was found that the steady current A at 10KVat a distance of 0.5 cm between the plane electrodes. Keeping the field constant and reducing the distance to 0.2 cm results in a current of A. Determine Townsend's primary ionization coefficient.

(b) Derive an expression for the current growth in the air gap by considering the Townsend's secondary ionization coefficient.

12 Explain briefly various theories in liquid dielectrics.

13 (a) Explain the principle of operation of an electrostatic generator.

(b) Explain Cockraft Walton voltage multiplier circuit.

14 What are the different types of resistive shunts used for impulse current measurements? Explain in detail.

15 Discuss the different types of power frequency and impulse tests done on insulators?

16 (a) Derive the criterion for breakdown in electronegative gases.

(b) Discuss breakdown in solid dielectrics.

17 (a) Explain the measurement of impulse voltage by using a mixed potential divider.

(b) Discuss various test voltages in AC and DC equipment.

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Code No. D-2274/AICTE

FACULTY OF ENGINEERING

B. E. (EEE/EIE) VII – Semester (AICTE) (Main) Examination, March / April 2022
Subject: Professional Elective – III
Digital Control Systems

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. Find Z – Tranform for $X(k) = \begin{cases} ak, k = 0,1,2... \\ 0, k < 0 \end{cases}$
2. Draw the block diagram of the linear time invariant discrete – time control System represented in state space.
3. Recall the observability condition.
4. Define reduced order observer.
5. Define negative semi definiteness of a function.
6. Determine the initial value x(0) if the z transform of x(t) is given by:

$$X(z) = \frac{(1-e^{-T})z^{-1}}{(1-z^{-1})(1-e^{-T}z-1)}$$

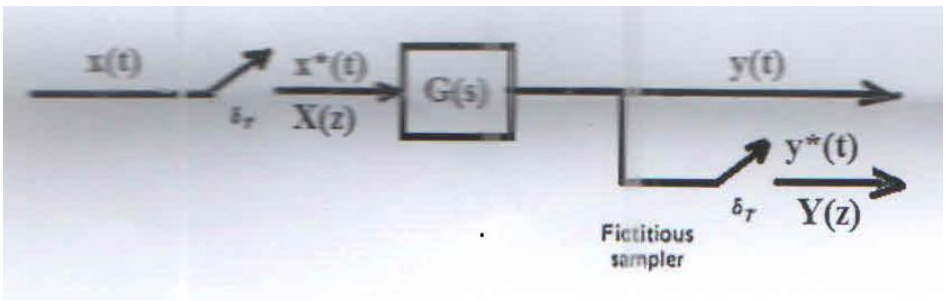
7. Explain state variables in discrete control theory.
8. Recall controllability of a discrete control system.
9. Write the characteristic equation to determine Gain matrix K in state observer.
10. What are the conditions for asymptotic stability with reference to Liapunov Stability criterion.

PART – B

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

11 Obtain the pulse transfer function of the system shown in below figure

Where $G(s) = \frac{1-e^{-Ts}}{s} \frac{1}{s(s+1)}$



12 (a) Recall the properties of state transition matrix.

(b) Write the short notes on Observable canonical form.

13 Check the controllability and observability of the given system

$$X(t) = \begin{bmatrix} 0 & 1 \\ 0 & -1 \end{bmatrix} X(t) + \begin{bmatrix} 0 \\ 10 \end{bmatrix} \mathrm{u(t)}$$

$$\mathrm{y\,(t)} = [1\,0\,]\, X(t)$$

14 Explain the Design of the Full order discrete observer.

15 Using direct method of Liapunov, investigate stability of the equilibrium state for the system

$$x(k+1) = Hx(k)$$

$$Where H = \begin{bmatrix} 0 & 0.3 \\ -0.3 & -1 \end{bmatrix}$$

16 Explain State estimation through Kalman's filter.

17 Explain bilinear transformation.

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Code No.D-2275/AICTE

FACULTY OF ENGINEERING

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

Subject: Professional Elective – III
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. Differentiate between transient and interruption?
2. What is power quality phenomenon?
3. What are the different types of voltage sags?
4. Define (a) phase angle jumps (b) voltage sag duration.
5. What is the importance of estimating sag performance?
6. How do harmonics effect the load?
7. What is harmonic index? State its significance.
8. What is the technical barrier for adjustable speed drive?
9. What are the guidelines for limiting voltage harmonics?
10. What is the purpose of power quality monitoring system?

PART – B

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

11. Discuss the following characteristics of power quality events.
    (a) Short duration interruptions
    (b) Long duration interruptions
12. (a) What is the need of estimating sag performance?
    (b) Explain the various causes and effects of voltage sags?
13. Explain the sag performance evaluation methods in radial distribution systems?
14. Explain about the phenomenon of how current distortion affects the voltage distortion under the presence of harmonics?
15. (a) Discuss the effects of harmonic distortion on transformer and induction motors?
    (b) Discuss the effects of harmonics on the adjustable speed drive?
16. Explain how evaluation method of harmonic levels in industrial distribution systems are done?
17. Explain the steps involved in power quality monitoring. What are the information obtained from monitoring site surveys?

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Code No. D-2280/AICTE

FACULTY OF ENGINEERING

B. E. (EIE) VII – Semester (AICTE) (Main) Examination, March 2022

Subject: Professional Elective – III

Automation in Process Control

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 meant by automation in process control?
2. Write the advantages of solid-state relays.
3. Define offset.
4. Distinguish between DDC and SCADA systems.
5. List any two applications of SCADA.
6. Draw P&ID symbols for capillary tube and pneumatic signal.
7. What is heat exchanger?
8. What is a field bus?
9. What are the advantages of smart sensors?
10. What is a HART signal?

PART – B

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

11 (a) With a block diagram, explain the concept involved in a data acquisition system.
(b) With a neat diagram, explain about optocoupler.

12 With a neat block diagram, explain clearly about SCADA system.

13 Explain clearly about hierarchical stages of distributed control system.

14 (a) Mention the guidelines to be followed in selecting the data acquisition & control boards.
(b) Mention the different control system actuations used in process automation.

15 With a neat diagram, explain about online optimization control of a distillation column.

16 Explain the functional diagram of a smart differential pressure transmitter.

17 Write short notes on
(a) Sample and hold circuit
(b) Hierarchical structure of a field bus system.

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Code No. D-2406/AICTE

FACULTY OF ENGINEERING

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

Subject: Open Elective – II
Green Building Technologies

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 the various features of a Green Building.
2 What are the benefits of a green building?
3 What is Urban Heat Island (UHI)? What are the effects of UHI on the environment?
4 Name any four criteria used in the category of “Water Conservation and Efficiency” for Green rating of building projects.
5 Distinguish between the terms embodied energy and operational energy.
6 List any four criteria used in the category of “Energy Efficiency” for Green rating of building projects.
7 What is the purpose of encouraging the use of building materials with recycled content in Green Buildings?
8 What are the different types of waste products from a building requiring proper disposal planning and segregation?
9 What is the intent of having exhaust systems in kitchen and bathrooms in green buildings?
10 What is the purpose of using low VOC materials, paints and adhesives in green buildings?

PART – B

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

11 (a) Describe in detail the key features of a Green Buildings.
(b) What are the Green Building Rating systems available in India? Describe how these ratings have come about and instituted.

12 What is the importance of protecting the top soil in a construction site? Briefly describe the measures to be used for Soil erosion and sedimentation control.

13 Discuss the measures used for building envelop design in order to contribute to energy efficiency in buildings.

14 Write short notes on the following measures of using sustainable building materials in Green Building Projects.
(a) Use of Local Materials (b) Use of salvaged building materials.

15 Write short notes on any two of the following in relation to Indoor Environmental Quality (IEQ) in green building practices:
(a) Building flush out (b) Air Ventilation
(c) CO_2 monitoring (d) Low VOC compounds.

16 What is the intent of having on-site waste water treatment system in a green building? Describe the measures and methods for treatment and reuse of waste water.

17 Describe the approaches for reducing the environmental impact due to waste disposal due to construction and post-occupancy activities.

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Code No. D-2407/AICTE

FACULTY OF ENGINEERING

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

Subject: Open Elective – II
Data Science and Data Analytics

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 Why Data Science?
2 What are Orthogonal Vectors? Give Example.
3 How do you characterise a Random phenomenon?
4 What is the motivation for Hypothesis Testing?
5 Explain response and a predictor variable.
6 Which function is used to implement Logistic Regression?
7 What do you mean by attribute-value pair?
8 Give the formula for calculating Information Gain.
9 Calculate the Support for pen, pencil and notebook?

Transactions	Item sets
T1	{pen, pencil, notebook}
T2	{pen, pencil, eraser}
T3	{sharpener, pencil, notebook}

10 What is Synthetic Data?

PART – B

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

11 (a) "Mathematics in particular Linear Algebra is the language of Data Science"- Elucidate.
(b) Discuss how extracting solutions for matrix equations is the most fundamental aspect of Data Science.

12 (a) Elucidate why do we need a notion of a random variable and how it is useful in Data Science.
(b) "Hypothesis Testing is an important activity when you want to make decision from a set of data"-Discuss.

13 (a) Calculate the Kendall Rank Correlation Coefficient for the following data of two experts ranking the food items.

Food Item	Expert1	Expert2
1	1	1
2	2	3
3	3	6
4	4	2
5	5	7
6	6	4
7	7	5

(b) Explain with an example how to build multiple linear regression model.

14 (a) Discuss basic Decision Tree Learning Algorithm with an example.
(b) Explain with example KNN Algorithm.

15 (a) Explain K-Means Algorithm.
(b) How association rules are generated using Apriori Algorithm?

16 (a) Explain useful measures of Association Rules
(b) Distinguish Data Mining, Machine Learning, Deep Learning, AI and Data Science.

17 (a) Write short notes on Hyper planes and Half spaces.
(b) Write short notes on Sample Statistic.

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Code No. D-2426/AICTE

FACULTY OF ENGINEERING

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

Subject: Open Elective – II
Non-Conventional Energy Sources

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 the term Polarization.
2 Mention the classification of Fuel cells.
3 List the application of solar pond.
4 Define the term Solar Constant.
5 What are the advantages of wind energy system?
6 What are the different types of WECS?
7 List the advantages of tidal power generation.
8 What is Geo- thermal Energy?
9 Explain the biomass gasifier.
10 What are the advantage of biogas generation?

PART – B

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

11 With a neat sketch explain the block diagram of fuel cell system.

12 With help of usual expression, explain the beam, diffuse and Reflected solar radiation.

13 (a) Write short notes on collector efficiency factor and collector heat removal factor.
(b) Classify different solar energy storage systems and explain them in brief.

14 Derive an expression for maximum power coefficient for a horizontal axis wind turbine.

15 With a neat sketch explain the principle of power generation in Geothermal and mention the applications.

16 (a) Explain the process of photosynthesis. And also mention the necessary conditions for it?
(b) List the factor affecting bio gas generation.

17 What are the main application of bio gas? Explain briefly the sources of production of biomass.

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Code No. D-2408/ AICTE

FACULTY OF ENGINEERING

B.E. VII - Semester (AICTE) (Main) 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 List few application of IoT.
2 Define the IoT.
3 Name the different IoT platforms.
4 Analyze the features of Raspberry PI.
5 Emphasis on features of API.
6 Explain the term debugging in API.
7 What are the interfaces in Raspberry?
8 Explain the term python.
9 List the different platform in Skynet.
10 Explain Smart Irrigation.

PART – B

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

11 Explain the various emerging IoT applications.

12 (a) What are different IP address and explain them?
(b) List the different protocol in internet communication. Explain.

13 What is IoT design Methodology and explain about IoT system for weather monitoring?

14 (a) Explain about control flow in python.
(b) What is module and explain its function in python?

15 List different illustrating IoT design and explain them.

16 Demonstrate the IoT Components with neat diagram.

17 Explain any two:
(a) Business model for IoT production manufacturing
(b) Mass manufacturing for IoT production
(c) Wireless Sensor Network.

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Code No. D-2410/ AICTE

FACULTY OF ENGINEERING

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

Subject: Open Elective – II
Cyber Security

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 computer threat Repeated?
2 What are different types of email attacks?
3 What is security and protection in operating system?
4 What are the security issues in design of an operating system?
5 What is Cryptography?
6 What are the types of cryptography?
7 What is cyberspace privacy?
8 What are the principles of data privacy?
9 What is email security?
10 What is the impact of technology on privacy?

PART – B

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

11 (a) Discuss various computer security threats.
(b) What are browser attacks? What are 3 ways a web browser is compromised through browser vulnerability?

12 (a) Describe briefly the security aspects in an operating system.
(b) Discuss briefly the various threats to network communications.

13 (a) Explain the concept of intrusion detection and prevention systems.
(b) Discuss the concepts of database disclosure.

14 (a) Describe the privacy principles and policies.
(b) Discuss briefly the privacy impacts of emerging technologies.

15 (a) What new developments in technology there are to improve cyber security?
(b) What are the relationship between cyber law and IT Act?

16 (a) What are the 4 types of access control?
(b) Discuss briefly the security counter measures.

17 Write short notes on:
(a) Firewalls
(b) Denial of Service.

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Code No. D-2411/AICTE

FACULTY OF ENGINEERING

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

Subject: Open Elective – II
Start- Up 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. What do you mean by entrepreneur?
2. Briefly explain about large scale industries.
3. State the opportunities of an entrepreneur.
4. What are difficulties faced by first generation entrepreneurs.
5. Briefly explain economic growth in entrepreneurship.
6. What are the responsibilities of a project manager?
7. What do you mean by intellectual property rights?
8. Define the concept of patent.
9. Briefly explain market demand analysis.
10. What are the aspects of start-up entrepreneurship?

PART – B

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

11. (a) How do you see Indian industrial environment competence?
    (b) Explain the difference between scalable and large scale industry.
12. (a) Discuss the various characteristics of an entrepreneur.
    (b) What is the environment influence on women entrepreneurs in India?
13. Explain in detail financial analysis and profitability analysis.
14. (a) What are the different agencies for project financing in India.
    (b) Give the classification of Intellectual property.
15. (a) How do you protect intellectual property?
    (b) How Govt. of India helps in start-up entrepreneurship.
16. (a) Describe the process for granting of patent.
    (b) What do you understand by transfer of technology, explain.
17. Write short notes on any three of the following.
    (a) Project management
    (b) Medium industries
    (c) Risk factor for entrepreneur
    (d) Invention protection
    (e) Principles of future organization

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Code No: D-3737/CBCS

FACULTY OF ENGINEERING

BE (Civil) VII - Semester (CBCS) (Backlog) Examination, March / April 2022

Subject: Foundation 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. The increment in vertical stress σ_z under the same load at a point (2, 2, 1).
2. What is significant depth? Mention its importance
3. State the Dilatancy correction to be applied on Standard penetration number
4. Bring out clearly the effect of shape of footing on bearing capacity
5. Give classification of piles based on method of installation.
6. Using a drop hammer of 20 kN capacity and the height of drop being 4m. The average penetration over the last 5 blows was 10 mm. Determine the allowable load on the pile using Engineering news formula
7. What is meant by Area Ratio? Mention its value for undisturbed soil samples
8. List out the types of machine foundations with neat sketches
9. Briefly explain the purpose of dewatering
10. Differentiate between woven and non- woven geotaxtiles.

PART – B

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

11.a) Derive an expression for the vertical stress by using Boussinesq's theory at any point on the vertical axis passing through the centre of uniformly loaded circular area.

b) A rectangular area 4m x 6m carries a uniformly distributed load of 100kN/m^2 at the ground surface. Estimate the vertical pressure at a depth of 6m vertically below the centre and also below a corner of the loaded area..

12.a) Derive the Terzaghi's one dimensional bearing capacity equation for shallow foundations. Also mention its assumptions.

b) Determine the safe bearing capacity of a 1.2m circular footing located at a depth of 1m below ground level in a soil having C = 30kN/m^2, φ = 27^o and γ = 18 kN/m^3. Take FOS = 2.5 and assume water table is present at foundation level. Consider N_c = 32, N_q = 18, N_γ = 16.

13.a) Explain in detail how the load carrying capacity of a pile is determined using pile load test.

b) Determine the safe load carrying capacity of a group of 15 number of 300mm sized square piles arranged in 3 X 5 pattern, installed to a depth of 9m in a pure clayey deposit. The properties of the clay include q_u= 120 kPa, α = 0.68.

14. a) Enumerate the various methods of soil exploration and mention the circumstances under which each is best suited.
    b) Describe the component parts of well foundation with a neat sketch.

15. a) What is meant by underpinning? Discuss the methods of Underpinning.
    b) What is a coffer dam? Discuss the various types of coffer dams with their relative advantages and disadvantages.

16. a) Explain the step-by-step construction procedure to develop a New mark's chart What are the advantages of it?
    b) How the capacity and efficiency of pile groups can be estimated?

17. a) Discuss about variety of samplers and the samples quality from each.
    b) Classify geo-synthetics and mention the basic application of each type.

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Code No. D-3777/CBCS

FACULTY OF ENGINEERING

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

Subject: Professional Elective – II
Mobile and Cellular Communication

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 Explain the concept of microcell zone.
2 Describe methods to reduce adjacent channel interference.
3 What is 'log distance path loss model'of mobile radio propagation?
4 Explain partition losses in same floor.
5 Give an expression for path loss and indicate the terms.
6 Obtain the expression for frame efficiency in TDMA system.
7 Explain CSMA protocol.
8 Draw GSM frame structure.
9 What is digital cellular standard (IS-95)?
10 Compare the 2G and 3G standard.

PART – B

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

11 (a) Explain how cell splitting and sectoring is used for improving coverage and capacity in cellular system.
(b) Derive an expression for SIR for a 7 cell system and assuming distance between Co-channel cells is R.

12 (a) Explain Durkin's model for outdoor propagation in detail.
(b) Define Doppler spread and Coherence time.

13 (a) Differentiate between FDMA, TDMA and CDMA techniques.
(b) How does slotted ALOHA improve throughput compared with pure ALOHA?

14 (a) Explain GSM Services and Features in detail.
(b) Explain reuse IS-95 channel modulation process for a single user.

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

16. (a) Discuss about Trunking and Grade of Service in cellular mobile systems?
(b) Differentiate between indoor and outdoor propagation models?

17. (a) Classify types of Small scale fading and what are the various factors influence small scale fading.
(b) Define the Parameters of mobile multipath channels.

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Code No. D-3778/CBCS

FACULTY OF ENGINEERING

B. E. (ECE) VII – Semester (CBCS) (Backlog) 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. Explain the speech articulators?
2. Define average magnitude difference function.
3. Define Pitch period.
4. What are the disadvantages of vector quantizer coders?
5. Explain the term Homomorphic?
6. Mention few the properties of Cepstrum.
7. List the rules of speech synthesis?
8. Explain the term transforms coding?
9. What is the advantage of transforming the signal in speech coding?
10. What are application of Automatic Speech Recognition?

PART – B

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

11 (a) What are the types of phonemes in American English? Specify with at least one example in each.

(b) Explain about Differential PCM in brief.

12 (a) How is Short time Energy, Short time average magnitude and short time zero crossing rate is useful in speech processing.

(b) Explain linear filtering interpretation of short time spectrum analysis with suitable block diagrams.

13 How is pitch is estimated using cesptrum analysis?

14 (a) Draw the schematic of TTS system and explain the functions of each block.

(b) Explain about sub-banding coding and transforms coding.

15 Explain in detail automatic Speech Recognition system with suitable example.

16 (a) Why do we consider Short time representation of speech signals?

(b) Explain in detail about vector quantization.

17 Write short notes on:

(a) Transform coding

(b) Linear predictive decoder.

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Code No: D-3779/CBCS

FACULTY OF ENGINEERING

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

Subject: Professional Elective – II

Electronic Measurements and Instrumentation

Time: 3 Hours **Max marks: 70**

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

PART – A

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

1. Define accuracy & resolution with examples.
2. A 0-250V Voltmeter has a guaranteed accuracy of 2% of full scale reading. The Voltage measured by the meter is 150 Volts. Determine the limiting error in Percentage.
3. Give the factors for the selection of transducer.
4. State Piezo-resistive effect with an example.
5. Define sound pressure level & how it is calculated?
6. Define loudness. How it is measured?
7. Write short notes on I EEE 488 interface protocol
8. What is virtual instrumentation?
9. What are resting & action potentials? Plot them.
10. Give some properties of X-rays

PART – B

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

11. a) Define standard of measurement. Explain in detail classification of standards.
    b) What are IEEE standards? Give some examples.

12. Explain the input-output relationship of Linear Variable Differential Transducer (L.V.D.T).

13. Explain the following active electrical transducers in detail:
    a) Photo - Conductive Transducer
    b) Photo – Emissive Transducer

14. What is a Thermocouple? Explain in detail the construction, working of thermocouple

15. With a neat diagram, explain in detail successive approximation type DVM with waveforms.

16. Explain in detail. Digital storage oscilloscope with waveforms.

17. Explain EEG with a neat block diagram & its waveforms.

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Code No. D-3780/CBCS

FACULTY OF ENGINEERING

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

Subject: Professional Elective – II
Digital Signal Processing Architectures

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 Explain the Arithmetic with respect to DSP processor.
2 Draw the architecture of DSP processor.
3 Discuss the Debugger in DSP tool.
4 What are the different applications of DSP processor?
5 Explain the data addressing capabilities of programmable DSP device.
6 What are different addressing mode of TMS320-1X processor?
7 List the different assembly instructions.
8 Explain about parallel input and output interface of C54X processor.
9 Discuss about memory space organization.
10 In programmable DSP, give an idea of speed issue.

PART – B

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

11 Difference between DSP and other general purpose processor architecture.

12 Explain in detail about the application of DSP tool
(a) Echo cancellation modern
(b) Spectrum analysis

13 Explain about the pipeline and performance in DSP implementations.

14 Describe about the address generating unit of programmable DSP processor.

15 Draw and explain the architecture of TMS 320C5X.

16 With neat diagram explain the CODEC interface.

17 Classify the interrupts and explain the interrupt handling sequence by the C54X DSP.

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Code No: D-3753/CBCS

FACULTY OF ENGINEERING

BE (MECH/PROD/AE) VII Semester (CBCS) (Backlog) Examination,

March / April 2022

Subject: Managerial Economics and Accountancy

Time: 3 Hours **Max marks: 70**

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

PART – A

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

1. Define Management.
2. What is time perspective?
3. Define income elasticity of demand.
4. What are the different types of imperfect markets?
5. Distinguish between Sunk cost and shutdown cost
6. What is Expansion path?
7. Tell about profitability Index.
8. Recall Gross working capital.
9. What do you mean by Bills of exchange?
10. Recall Trial balance.

PART – B

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

11. 'Managerial economics is economics applied in decision – making' Discuss

12. Explain the factors responsible for determining demand of any product or service.

13. Elaborate the law of variable proportions

14. From the following details of two machines X and Y, each costing Rs. 1,20,000 and having a life time of 4 years. Cash flows after tax are expected to be as follows: Cost of capita may be assumed to be 8%. Compare the project using NPV and Profitability index

Year	Machine X (Rs.)	Machine Y (Rs.)
1	65,000	20,000
2	50,000	35,000
3	35,000	50,000
4	20,000	80,000

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15. Prepare a Bank Reconciliation Statement as on 31st December, 2003 from the following information:
    a) Balance as per Pass Book (Credit Balance) Rs. 20,000
    b) Cheques drawn, but not cashed at Bank Rs. 3,000
    c) Cheques deposited in Bank, but not shown in the Pass Book Rs. 2,250
    d) Dividend of Rs. 2,000 collected by Bank directly on 30.12.2003 was not recorded in Cash Book.
    e) Cheque amounting to Rs. 600 was deposited in Bank but it was recorded in the debit side of the Pass Book
    f) Book charges recorded twice in the Cash Book Rs. 50.

16. What are the sources of Working Capital? Explain

17. From the following balances of Mr. X, prepare the Trading and Profit and Loss account for the year ended 31st March, 2000

Particulars	**Amount (Rs.)**
Stock at commencement	25,000
Salaries	
Sundry expenses	2,000
Rent and Taxes	3,000
Purchases	90,000
Freight Inward	2,500
Advertising	1,500
Sales	1,85,000
Discount allowed	1,800
Discount Received	1,000

The closing stock was valued at Rs. 18,000

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Code No: D-3190/NON-CBCS

FACULTY OF ENGINEERING

B.E IV/IV (Civil)I-Semester (NON-CBCS) (Backlog) Examination, March/April 2022

Subject: CONCRETE TECHNOLOGY

Time: 3 Hours **Max. Marks: 75**

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

PART – A

Note: Answer all questions. **(25 Marks)**

1 Explain the relationship between water cement ratio and strength of concrete.

2 List the advantages of Ready-Mix concrete.

3 Explain the term “Effective w/c ratio”.

4 Differentiate between ‘Nominal mix’ and ‘Design mix’.

5 Write about Grading of aggregate.

6 Give examples of chemical admixtures.

7 Explain Maturity concept.

8 State applications of Light weight concrete.

9 Name the most common Accelerator and retarder.

10 List the properties of Self compacting concrete.

PART – B

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

11. (a) Explain various types of cement and their composition.
(b) What are the factors affecting the workability of concrete.

12. (a) What is the difference between shrinkage and creep? What are the factors influencing the same?
(b) Write short notes on stress-strain curve of concrete.

13. Write the stepwise procedure for the concrete mix design according to IS specifications

14. (a) Discuss the influence of various admixtures on properties of concrete.
(b) Write detailed notes on classification of chemical admixtures.

15. (a) Discuss in brief the important properties of durability of Recycled aggregate concrete
(b) Differentiate between High strength concrete and High density concrete.

16. (a) What are the advantages of using Ready mixed concrete
(b) What are the applications of Ferro cement and Fibreshotcrete.

17. Write short notes on any **TWO** of the following:
(a) Mixing and Batching.
(b) Fly ash concrete.
(c) Methods of Curing.

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Code No.D-3266/NON-CBCS

FACULTY OF ENGINEERING

B. E. IV / IV (CSE) I Semester (NON-CBCS) (Backlog) Examination,

March / April 2022

Subject: Principles and Applications of Embedded Systems

Time: 3 Hours **Max. Marks: 75**

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

PART – A

Note: Answer all questions. **(25 Marks)**

1. What is the purpose and format of CPSR in ARM processor?
2. Compare 'traps' and 'supervisor mode' for embedded computing.
3. What is Co-processor? Give any two examples.
4. Write the uses of multilevel caches for a high performance computing systems.
5. Explain why memory management is not used in embedded systems?
6. What is Re-entracy? What is the role of Re-entrant function?
7. What is Multirate embedded computing system? List its advantages.
8. Define the terms race condition and interrupt Latency.
9. What is meant by scaffold code? Write its advantages.
10. Illustrate the steps of loading S/W into target system in embedded system?

PART – B

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

11 (a) Discuss the key characteristics of embedded system applications.

(b) Explain the detailed requirements, specification and design process of GPS.

12 Explain an interrupts driven I/O interfacing techniques for copying characters from input to output with example.

13 What is semaphore? What are the problems which arise due to shared data and canthe Semaphore be used to solve this problem? Explain with example.

14 Describe the following real time scheduling algorithms with example

(a) Rate Monotonic scheduling (b) Earliest-deadline-first scheduling.

15 (a) What are the hard real-time scheduling considerations? Explain various methods for saving memory in RTOS.

(b) Describe the various methods for Getting Embedded software into the Target System.

16 (a) Explain the process of testing embedded systems using Laboratory Tools.

(b) Explain the architecture of shared memory multiprocessor with example.

17 Write short notes on

(a) Multiple interrupts

(b) Set associative cache

(c) Linker/Locator for Embedded software.

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