

**VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)**

M.E -DEGREE EXAMINATIONS - FEB-2022

BIOTECHNOLOGY

Second Semester

STEM CELL BIOLOGY

(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours

Maximum Marks:100 Marks

Answer **ALL** questions

Part-A (10 x 2 =20 Marks)

- 1 Expand ICM. Add a short note on it
- 2 Write a note on germ layers.
- 3 Write short notes on cell cytotoxicity.
- 4 What is gas foaming?
- 5 Give brief account on Aldefluor assay.
- 6 Comment on the adult cell importance in cloning.
- 7 List the advantages and limitations of human embryonic stem cells.
- 8 Give the current advantages and limitations of human somatic stem cells.
- 9 Comment on nuclear nuclear transplantation and therapeutic transplantation.
- 10 Explain in short about syngeneic and allogenic stem cell transplant

PART-B (5 x 16 = 80)

- 11 a. Write in detail about the mammalian stem cells development.
OR
b. What are the advantages and disadvantages in using cord blood cells for patients?
- 12 a. Give the role of Scaffolds in tissue reconstruction.
OR
b. Discuss in detail about cells Assays for cell viability and cytotoxicity
- 13 a. Explain the process of the development of human neurospheres in neurons.
OR
b. Explain the Stem cells and cloning and its importance.
- 14 a. Discuss about the current advantages and limitations of human somatic stem cells.
OR
b. Enumerate human embryonic stem cell public policy.
- 15 a. Enumerate in detail about nuclear transplantation methods.
OR
b. How hematopoietic stem cells can be used to treat autoimmune diseases?

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)

M.E -DEGREE EXAMINATIONS - FEB-2022
COMPUTER SCIENCE AND ENGINEERING

Second Semester

DATABASE TECHNOLOGY

(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours

Maximum Marks:100 Marks

Answer **ALL** questions

Part-A (10 x 2 =20 Marks)

- 1 What are the advantage and disadvantage of distributed database?
- 2 List out the rules of DDBMS.
- 3 Differentiate between OODB and relational DB.
- 4 What is the use of group by clause?
- 5 Define data warehousing.
- 6 Describe mobile connectivity.
- 7 What is functional dependency?
- 8 What is called mirroring?
- 9 Differentiate Information system and database system.
- 10 What do you mean by image search?

PART-B (5 x 16 = 80)

- 11 a. What is meant by transaction? Explain in detail about transaction processing.

OR

- b. Discuss in detail the architecture of distributed databases

- 12 a. Explain multi version locks with an example.

OR

- b. Explain the concurrency techniques in OODB.

- 13 a. Write a detailed note on data mining.

OR

- b. Illustrate different types of schedules are acceptable for recoverability.

- 14 a. Write short notes on database tuning.

OR

- b. Describe the structure of multimedia databases.

- 15 a. Explain briefly about text databases.

OR

- b. Give XML representation of bank management system and also explain about Document Type Definition and XML schema.

VINAYAKA MISSIONS RESEARCH FOUNDATION**(Deemed to be University)****M.E -DEGREE EXAMINATIONS - FEB-2022****POWER SYSTEMS ENGINEERING****Second Semester****TRANSIENTS IN POWER SYSTEM****(Candidates admitted under 2017 Regulations-CBCS)**

Time : Three Hours

Maximum Marks:100 Marks

Answer **ALL** questions**Part-A (10 x 2 =20 Marks)**

- 1 Describe 'pre discharge current'.
- 2 Mention the parameters of lightning current?
- 3 What is the significance of resistance in transients?
- 4 Define transient recovery voltage.
- 5 Draw beweley's lattice diagram.
- 6 Explain attenuation of traveling wave.
- 7 Explain shielding angle.
- 8 Explain substation.
- 9 State frequency domain transient program?
- 10 Write the special expression for voltage and current for an open circuit.

PART-B (5 x 16 = 80)

- 11 a. Derive the expressions for voltage stress experienced by insulator when a stroke contacts a tower and midspan.

OR

- b. Briefly explain about Electrification of thunderclouds.

- 12 a. Illustrate switching surges on integrated power systems.

OR

- b. Explain briefly about
i) Switching transients
ii) Harmonics

- 13 a. Derive the differential equations and their solutions in time domain for travelling waves.

OR

- b. Illustrate about time domain transient program (TTP). Give an example.

- 14 a. Explain the different methods employed for lightning protection of overhead lines?

OR

- b. Write the short notes on insulation co-ordination of substation.

- 15 a. Obtain the solution in Laplace transform for a transmission line which is terminated with a line having matched impedance.

OR

- b. Obtain the solution for a short circuited transmission line in Laplace transform.

VINAYAKA MISSIONS RESEARCH FOUNDATION
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M.E -DEGREE EXAMINATIONS - FEB-2022

BIOTECHNOLOGY

Third/Fifth Semester

RESEARCH METHODOLOGY

(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours

Maximum Marks:100 Marks

Answer **ALL** questions

Part-A (10 x 2 =20 Marks)

- 1 Differentiate between Action researches ex post Facto research.
- 2 Define Pilot study.
- 3 Write the uses of Sampling distributions.
- 4 Write the significance of tabulation in frequency distribution.
- 5 Calculate the arithmetic mean of 2,4,6,8,10
- 6 Define Analysis of variance
- 7 What are the applications of paper chromatography?
- 8 Write down the applications of thin layer chromatography.
- 9 Note down the applications of colorimeter in biotechnology.
- 10 What are the applications of UV-Spectrophotometer?

PART-B (5 x 16 = 80)

- 11 a. Writ brief notes on the following
- a. Exploratory research designs.
 - b. Diagnostic research designs.
 - c. Descriptive research designs
 - d. Experimental research designs.

OR

- b. Explain the following.
- a. Abstract.
 - b. Informative abstracts.
 - c. Bibliography.
 - d. Reference styles.
 - e. End notes.
 - f. Abbreviations used in scientific writing.

- 12 a. Write note on data. Explain in detail about collection and presentation of data.

OR

- b. Give brief note on discrete scale and continuous scale.
- 13 a. A normal population has a mean of 6.8 and standard deviation of 1.5. A sample of 400 numbers gave a mean of 6.75. Is the difference significant?

OR

- b. The nicotine content in milligrams in two samples of tobacco were found to be as follows

(Sample A	24	27	26	21	25	
Sample B	27	30	28	31	22	36

Can it be said that the two samples came from the same normal population

- b) Two random samples gave the following results.

Sample	Size	Sample Mean	Sum of squares of deviations from the mean
1	10	15	90
2	12	14	108

Test whether the samplers come from the same normal population.

- 14 a. Explain in detail about the principle and applications of paper chromatography.

OR

- b. List out the applications of thin layer chromatography in various field.
15 a. Explain in detail about principle and applications of UV-Spectrophotometer.

OR

- b. Describe in detail about Instrumentation of Flame Photometry.

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.E -DEGREE EXAMINATIONS - FEB-2022
COMPUTER SCIENCE AND ENGINEERING
Third/Fifth Semester
ELECTIVE - MOBILE APPLICATION DEVELOPMENT
(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours

Maximum Marks:100 Marks

Answer **ALL** questions
Part-A (10 x 2 =20 Marks)

- 1 Difference between Verification and Validation?
- 2 Give the Advantages and Disadvantages for Mobile Application?
- 3 Give the characteristics involved in mobile devices?
- 4 What is OWASP?
- 5 Compare Web Access for Novell iFolder 2.x and 3.
- 6 What are the issues in social media networking.
- 7 How do you establish the android development environment?
- 8 Why does Google maps need WiFi?
- 9 What are the datas present in Address Book?
- 10 What are the frameworks present in touch framework?

PART-B (5 x 16 = 80)

- 11 a. What is Requirement Gathering? Explain in detail.
OR
b. Explain in detail the role of simulators and Emulators in Mobile Application?
- 12 a. Discuss various user interfaces in mobile application.
OR
b. Explain the hardware constraints involved in mobile design.
- 13 a. Explain with diagram the mobile cloud architecture.
OR
b. Explain in detail about interactive multimedia application.
- 14 a. Explain how to interact with UI with suitable example.
OR
b. Explain in detail about deployment and its tools.
- 15 a. Explain Data Persistence using core data.
OR
b. Discuss briefly the integration of calendar and address book with social media application.

VINAYAKA MISSIONS RESEARCH FOUNDATION**(Deemed to be University)****M.E -DEGREE EXAMINATIONS - FEB-2022****POWER SYSTEMS ENGINEERING****Third/Fifth Semester****ELECTIVE - EHV POWER TRANSMISSION****(Candidates admitted under 2017 Regulations-CBCS)**

Time : Three Hours

Maximum Marks:100 Marks

Answer ALL questions**Part-A (10 x 2 =20 Marks)**

- 1 What are the advantages and disadvantages of transmitting the power by three phase AC system?
- 2 Elucidate break even distance.
- 3 What is bundled conductor?
- 4 Elucidate neutral loading of lines.
- 5 What is meant by high temperature super conducting technology (HTSC)?
- 6 Elucidate Electrostatic effect.
- 7 Define disruptive critical voltage and visual critical voltage.
- 8 Differentiate between I^2R and corona loss.
- 9 State the minimum clearances between the conductors of a power line and telecommunication cable for 22kv, 400kv, 760kv lines.
- 10 List any three applications to be followed for measurement of ES field.

PART-B (5 x 16 = 80)

- 11 a. A 2 wire dc distributor is changed to a 3wire dc system by running a third similar conductor. For the same percentage of loss and same consumer's voltage, calculate the additional power which can be supplied. Assume balanced loads.

OR

- b. A single circuit 3-phase 50 Hz, 400KV line has series reactance per phase of 0.327 ohm/km. Neglect line resistance. The line is 400km long and the receiving end load is 600Mw at 0.9p.f. lag. The positive sequence line capacitance is 7.27nF/km. In the absence of any compensating equipment connected to ends of line, calculate the sending end voltage work with and without considering line capacitance. The base quantities for calculation are 400KV, 1000MVA.
- 12 a. A three phase 500kv line has a building arrangement of two conductors per phase.. Each conductor carries 50% of phase current. Assume full transposition and following parameters :Diameter of conductor =30 mm ; Span between centre of 2 conductors per phase =0.5m ;Span between the conductors of each phase =15m . Compute the reactance per phase of this line at 50 Hz

OR

- b. Discuss briefly about the calculation of sequence inductance and capacitance.
- 13 a. Explain about accurate methods for the multiconductor problem and markt and mengele's method.

OR

- b. Derive an equation for distribution of voltage gradient on sub conductors of bundle and draw the characteristics.
- 14 a. A 3 phase 50Hz, 1000KV transmission line has conductor in equilateral formation spaced 2.5 m apart .the conductor diameter is 1.04 cm and the surface factor is 0.85. The air pressure and temperature are 74 cm of Hg and 210C. Determine the critical visual voltage for corona and the corona loss per km per phase of the line. Take $m_v=0.72$

OR

- b. Describe briefly about the charge voltage diagram and corona loss.
- 15 a. Compare the wire antenna and transmission line model for transient analysis of grounding electrodes.

OR

- b. Describe briefly the meters and measurements of electrostatic fields.

VINAYAKA MISSIONS RESEARCH FOUNDATION
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M.E -DEGREE EXAMINATIONS - FEB-2022
EMBEDDED SYSTEM TECHNOLOGY
Third/Fifth Semester
ELECTIVE – ADVANCED WIRELESS NETWORKS
(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours

Maximum Marks:100 Marks

Answer **ALL** questions
Part-A (10 x 2 =20 Marks)

- 1 Define Radio Access Technology (RAT).
- 2 Mention the concept of OFDM.
- 3 Define Internal Collision.
- 4 Mention the need of a Schedule Table.
- 5 Define Serial Timeout.
- 6 Define Cross layer Optimization in Wireless Sensor Networks.
- 7 What is the function of IERP?
- 8 Define Success Ratio.
- 9 Define ISM Frequency band& mention its Frequency range.
- 10 Define Sybil attack.

PART-B (5 x 16 = 80)

- 11 a. Discuss about Protocol Boosters with suitable Examples.
OR
b. Summarize on OFDM with necessary diagrams.
- 12 a. Describe on MAC for Wireless Sensor Networks.
OR
b. Elaborate on Graph, Directed Graph, Undirected Graph, Weighted Graph, Degree of a Vertex, Connected Graph and Tree with diagrams.
- 13 a. Describe on Random Early Detection Gateways for Congestion Avoidance.
OR
b. Enumerate on Mobility Management in Cellular Networkswith SS7 Signaling Network.
- 14 a. Describe about Hybrid Routing Protocol with focus on Look-back Termination &Early Termination.
OR
b. Discuss on
(a) Token-based Routing
(b) Delay-constrained Routing

(p.t.o)

15 a. Elaborate on Data Funneling.

OR

b. Discuss on

(a) Security Management in GSM

(b) Security Management in UMTS

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VINAYAKA MISSIONS RESEARCH FOUNDATION
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M.E -DEGREE EXAMINATIONS - FEB-2022

VLSI DESIGN

Third/Fifth Semester

ELECTIVE - MOBILE COMPUTING

(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours

Maximum Marks:100 Marks

Answer **ALL** questions

Part-A (10 x 2 =20 Marks)

- 1 List out the features of time division multiple access.
- 2 Define TDMA.
- 3 What are subsystems in GSM system?
- 4 Expand GSM, GPRS and UMTS.
- 5 What is exponential back off?
- 6 Define infrastructure
- 7 Mention the performance issues of ADHOC networks
- 8 Make clear least interference routing.
- 9 What are the advantages of Hawaii?
- 10 Define indirect TCP.

PART-B (5 x 16 = 80)

- 11 a. Compare the SDMA, TDMA, FDMA and CDMA.
OR
b. Explain the Forward Channels used in CDMA.
- 12 a. Explain the Satellite system used in mobile computing.
OR
b. Describe about the digital video broadcasting with diagram.
- 13 a. Explain about the MAC management.
OR
b. Explain the function of HIPERLAN.
- 14 a. Describe about the destination distance vector.
OR
b. Elucidate about the mobile ADHOC networks.
- 15 a. Enlighten about the traditional TCP.
OR
b. Give details about the transitive oriented TCP.

VINAYAKA MISSIONS RESEARCH FOUNDATION
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M.E -DEGREE EXAMINATIONS - FEB-2022
CONSTRUCTION ENGINEERING AND MANAGEMENT
Third/Fifth Semester
ELECTIVE - PROJECT SAFETY MANAGEMENT
(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours

Maximum Marks:100 Marks

Answer **ALL** questions
Part-A (10 x 2 =20 Marks)

- 1 What are direct costs of an accident?
- 2 What measures are to be followed for accident preventions?
- 3 Who can attend the safety meetings?
- 4 What are the aims of project manage to achieve the mission?
- 5 What do you mean by substance abuse?
- 6 List out the possible obligation in contractual relationships.
- 7 Define compensation.
- 8 Mention any two work of safety committee.
- 9 Define the term designer.
- 10 List out the functions of designer.

PART-B (5 x 16 = 80)

- 11 a. Explain about human factors in construction safety.
OR
b. Discuss the provisions for health measures.
- 12 a. Discuss about the duties and responsibility of the organise.
OR
b. Explain the various steps in planning for construction projects.
- 13 a. Brief about the conditions laid down in the contract.
OR
b. Write short notes on
 - a) Earnest money deposit
 - b) Security deposit money
- 14 a. Elaborate the role played by the middle managers in safety.
OR
b. Discuss the provisions and measures of working compensation.
- 15 a. Brief about the safety provisions followed by the designers.
OR
b. Distinguish between the role of designer and CDM coordinator.

VINAYAKA MISSIONS RESEARCH FOUNDATION
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M.E -DEGREE EXAMINATIONS - FEB-2022

BIOTECHNOLOGY

Second Semester

IMMUNOTECHNOLOGY

(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours

Maximum Marks:100 Marks

Answer **ALL** questions

Part-A (10 x 2 =20 Marks)

- 1 Define Hematopoises and Lymphopoises.
- 2 Comment on mononuclear phagocytes
- 3 What is clonal anergy?
- 4 Briefly explain macrophage microbicidal Assay.
- 5 Name few drugs used for treating tuberculosis.
- 6 Write the importance of MHC molecules in defence mechanism.
- 7 Comment on cross reactivity.
- 8 List the applications of Western blot technique.
- 9 Differentiate attenuated and inactivated vaccines.
- 10 comment on multivalent subunit vaccines.

PART-B (5 x 16 = 80)

- 11 a. With a neat sketch explain the organization and structure of lymphoid organs.
OR
b. What are APCs? Explain how the macrophages degrade particulate antigen.
- 12 a. Write the properties of cytokines and list the functional groups of cytokines with their targets and effects.
OR
b. Discuss in detail about the role of interleukins in cell mediated immunity.
- 13 a. Describe the causative agent, pathogenesis and diagnosis of leprosy
OR
b. Write short notes on the following:
a. rabies
b. typhoid
- 14 a. Write in detail about a) radioimmunoassay. b) immunomics.
OR
b. What is ELISA? Write its principle, types and applications with a neat labelled sketch.
- 15 a. Discuss in detail about designing of DNA vaccine.

OR

b. Discuss in detail about combinatorial libraries for antibody production

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)

M.E -DEGREE EXAMINATIONS - FEB-2022

POWER SYSTEMS ENGINEERING

Second Semester

POWER SYSTEM CONTROL

(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours

Maximum Marks:100 Marks

Answer **ALL** questions

Part-A (10 x 2 =20 Marks)

- 1 State the necessity of large mechanical forces in speed governing system.
- 2 Enumerate the necessity of secondary ALFC loop.
- 3 Mention the types of tap changing transformer.
- 4 Derive the fundamental components of current wave form equation of TCR.
- 5 Enumerate the main function of SCADA.
- 6 Discuss about RTU.
- 7 Discuss about standard deviation.
- 8 What is diagonal matrix?
- 9 Draw the typical structure of deregulated electricity system.
- 10 Describe about demand in real time.

PART-B (5 x 16 = 80)

- 11 a. Derive an expression for the static frequency change of a single area ALFC. How can the static frequency change be compensated?

OR

b.

The two 50 HZ power system are connected by means of interconnected cable of negligible impedance so that stations work in parallel.

Station A	Station B
15 MW full load capacity	1.4 MW full load capacity
Regulation 3%	Regulation 4%

The Load on A is 10 MW and on B is 4MW. Calculate the generator output of the each station, power transmitted by the interconnection and operating frequency? Assume free governor action and the speed changes generators were set to have a frequency of 50 HZ

- i. at No load
- ii. at Full load

- 12 a. How is voltage control possible using tap changing transformer? How can tap ratio be calculated? Derive the necessary equation.

OR

- b. A, B, C are connected to a common bus bar. Supply point A maintained at nominal 275kV and it is connected to M to a 275/132kV, transformer reactance of 0.1p.u and a 132 kV line of reactance 50ohm. Supply point B is nominally at 132 kV and connected to M to a 132 kV line of 50 ohm reactance. Supply point C is nominally at 275 kV to connect to M to 275 kV/132 kV of 0.1 reactance, 132 kV reactance 50 ohm if at a particular system load the line voltage. M falls below of its nominal voltage by 5 kV. Calculate the magnitude of reactive VA injection required at M to maintain voltage 500 MVA Base voltage.

- 13 a. Explain about reliability planning and monitoring.

OR

- b. Illustrate about concentric relaxation.

- 14 a. Derive and explain the generation shift factor and linear sensitivity factor of power system.

OR

- b. Give an algorithm of least square error method.

- 15 a. How deregulation has affected the power system and validate with example?

OR

- b. Explain briefly about Load frequency control under deregulated environment.

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.E -DEGREE EXAMINATIONS - FEB-2022
CONSTRUCTION ENGINEERING AND MANAGEMENT
Second Semester
ELECTIVE - MAINTENANCE AND REHABILITATION OF
STRUCTURES

(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours

Maximum Marks:100 Marks

Answer **ALL** questions
Part-A (10 x 2 =20 Marks)

- 1 What are the steps in repair aspect?
- 2 List out the various materials used for rehabilitation.
- 3 What are the important aspects that will be studied under thermal properties of concrete?
- 4 Write short notes on cathodic protection.
- 5 What are the methodologies used for selecting repair materials?
- 6 Difference between shoring & under pinning
- 7 Explain the process of Damp Proof Courses in construction joints.
- 8 Briefly explain polymer concreting.
- 9 What is the need of demolition work?
- 10 Define accident.

PART-B (5 x 16 = 80)

- 11 a. Explain evaluate the need of repair

OR

 b. Discuss in detail about the causes of deterioration of concrete structures
- 12 a. Discuss in detail about control of cracking in mass concrete and repair of cracks.

OR

 b. Explain in detail about the influence of sulphate attack in concrete
- 13 a. Explain in detail about polymers in concrete and its applications.

OR

 b. Discuss in detail about control of cracking and repair of cracks due to shrinkage.
- 14 a. Discuss in detail about the special concrete of sulphur infiltrated concrete.

OR

 b. Discuss in detail about concrete chemicals their properties and applications.
- 15 a. Explain the various types of recent advanced demolition techniques.

OR

 b. Explain concrete demolition, runway demolition and underwater demolition.

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)

M.E -DEGREE EXAMINATIONS - FEB-2022

BIOTECHNOLOGY

Third/Fifth Semester

BIOINDUSTRIES AND ENTREPRENEURSHIP

(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours

Maximum Marks:100 Marks

Answer **ALL** questions

Part-A (10 x 2 =20 Marks)

- 1 What are the main functions of management?
- 2 List the types of motivation.
- 3 Differentiate strategic and tactical planning.
- 4 Why strategy evaluation is important?
- 5 Explain gender bias.
- 6 Give some controversies over the organ donation
- 7 List any four leading companies in biotechnology.
- 8 How does the healthcare industry use biotechnology?
- 9 What are the 4 major industrial areas in biotechnology?
- 10 Define tactics

PART-B (5 x 16 = 80)

- 11 a. What do you understand by leadership style? Describe the different styles of leadership.
OR
b. Define decision making and explain the process of decision making that affects the efficiency of the business decisions.
- 12 a. Elaborate about strategic implementation process.
OR
b. What is strategy evaluation? Discuss the steps involved in strategy evaluation framework.
- 13 a. Write a detailed note on National and international laws in Bioethics.
OR
b. Writ short notes on: a) ethical issue on life and death b) personhood) ethical issues in abortion.
- 14 a. Discuss the essential skills do entrepreneurs need.
OR
b. Elaborate in detail about origin of Bio-entrepreneurship and relation between biotechnology and Bio-entrepreneurship
- 15 a. Elaborate about Venture capital financing of Biotechnology with example.
OR
b. Discuss in detail about Perception analysis of biotech companies with a case study.

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M.E -DEGREE EXAMINATIONS - FEB-2022
COMPUTER SCIENCE AND ENGINEERING

Third/Fifth Semester

ELECTIVE - AD HOC NETWORKS

(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours

Maximum Marks:100 Marks

Answer **ALL** questions

Part-A (10 x 2 =20 Marks)

- 1 List the high and low frequency bands in the electromagnetic spectrum.
- 2 What is wireless sensor network?
- 3 What is the approach used to find link stability in ABR?
- 4 Based on routing information update mechanism how the routing protocols are classified?
- 5 What is data aggregation?
- 6 What is the CDMA and TDMA?
- 7 What are the two mechanism for location discovery?
- 8 What is fault tolerance?
- 9 List the services provided by IEEE802.11
- 10 Define wireless Mesh network.

PART-B (5 x 16 = 80)

- 11 a. Explain the applications areas of ad hoc networks.
OR
b. List the important goals of designing a MAC protocol for ad hoc wireless networks.
- 12 a. Discuss table driven protocols with examples.
OR
b. Explain the types of ad hoc network routing protocols based on routing information update mechanism.
- 13 a. Write notes on Dynamic Energy and power management

OR

(P.T.O)

b. Explain about the MAC protocol in WSN.

14 a. Write notes on triangulation

OR

b. Briefly explain about the in WSN routing.

15 a. Explain the contention based protocols with scheduling and reservation in detail.

OR

b. How is scheduling mechanism achieved in distributed wireless ordering protocol? Explain in detail. How are Information symmetry and perceived collisions handled?

VINAYAKA MISSIONS RESEARCH FOUNDATION
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M.E -DEGREE EXAMINATIONS - FEB-2022
POWER SYSTEMS ENGINEERING
Third/Fifth Semester
ELECTIVE - WIND ENERGY CONVERSION SYSTEMS
(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours

Maximum Marks:100 Marks

Answer **ALL** questions
Part-A (10 x 2 =20 Marks)

- 1 Which types of generators are used for wind turbine?
- 2 What are the assumptions to be considered for the design of wind turbine?
- 3 Give the merits of 3 blade rotor over 2 blade rotor.
- 4 Define power regulation.
- 5 Draw the structure of fixed speed squirrel-cage induction generator.
- 6 List the types of generator drive for the operation of WECS.
- 7 What is the need of variable speed system?
- 8 Write short notes on variable speed direct drive.
- 9 What is stand alone WECS?
- 10 What is fixed speed wind turbines?

PART-B (5 x 16 = 80)

- 11 a. Write short notes on.
- i. Blades.
 - ii. Nacelle.
 - iii. Gear Box.
 - iv. Brake.
 - v. Yaw System

OR

- b. Describe in detail about simple momentum theory.
- 12 a. Describe in detail about the rotor design considerations.

OR

- b. Write short notes on :
- i. Passive – Stall control.
 - ii. Active – Stall control.

- 13 a. Derive the transient model of Induction Generator.

OR

- b. Briefly explain about fixed – speed wind turbine.
- 14 a. Describe the DFIG wind power system model.

OR

- b. Discuss about variable speed Variable frequency scheme.
- 15 a. Briefly explain about the stand alone wind energy conversion system.

OR

- b. Describe in detail about problems related with grid connections

VINAYAKA MISSIONS RESEARCH FOUNDATION
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M.E -DEGREE EXAMINATIONS - FEB-2022

EMBEDDED SYSTEM TECHNOLOGY

Third/Fifth Semester

ELECTIVE – MEDICAL IMAGE PROCESSING

(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours

Maximum Marks:100 Marks

Answer **ALL** questions

Part-A (10 x 2 =20 Marks)

- 1 What is imaging software?
- 2 What is Emission imaging?
- 3 What are the reconstruction methods for CT imaging?
- 4 What is the basic principle of computed tomography?
- 5 What are the advantages of digital fluoroscopy?
- 6 What is attenuation CT?
- 7 Which energy is used in MRI?
- 8 What is the wavelength of an MRI?
- 9 What is one disadvantage of MRI as a brain imaging technique?
- 10 Is breast MRI better than 3d mammogram?

PART-B (5 x 16 = 80)

- 11 a. Explain in detail about the use PET scan.

OR

- b. Narrate about fixed segmentation of a system.

- 12 a. Explain about the two projection geometries have been used in CT imaging

OR

- b. Derive the proof for central slice theorem. With an example

- 13 a. Define Visual recognition techniques.

OR

- b. Describe about the Iodine is a good CT contrast agent?

- 14 a. What is the best neuroimaging technique?

OR

- b. What are the different types of neuroimaging?

- 15 a. Explain about the Time required to obtain Images.

OR

- b. Describe about the Origin of Doppler shift.

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.E -DEGREE EXAMINATIONS - FEB-2022
VLSI DESIGN
Third/Fifth Semester
ELECTIVE - VLSI FOR WIRELESS COMMUNICATION
(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours

Maximum Marks:100 Marks

Answer **ALL** questions
Part-A (10 x 2 =20 Marks)

- 1 List out the issues which should be consider while designing wideband amplifier.
- 2 Write the importance of high gate resistance.
- 3 Show the circuit representation of an NLTI system.
- 4 Relate intrinsic noise and extrinsic noise in mixers.
- 5 Outline the state diagram of phase frequency detector.
- 6 State frequency divider in frequency synthesizer circuit.
- 7 Differentiate Static Performance and Dynamic Performance.
- 8 Mention the need of Mixer circuit.
- 9 List the application of multitier network interface card.
- 10 Identify the Key Time Scales for System Design.

PART-B (5 x 16 = 80)

- 11 a. (a) Sketch the differences between Narrowband and Wideband LNA.

OR

- b. Analyze the operation of
(a) Class A power amplifier.
(b) Class B power amplifier.

- 12 a. Illustrate the Gilbert Mixer distortion in high frequency case.

OR

- b. Elaborate the theory of linear periodic LPTV system.

- 13 a. Elaborate the design procedure of LC oscillator with example.

OR

- b. Demonstrate the detailed considerations of phase noise.

- 14 a. Elaborate the concept of Time-Interleaved ADCs passive element.

OR

- b. Implement LMS algorithm using VHDL.

- 15 a. Demonstrate how the Home/Desk Area WLAN operates, with details.

OR

- b. Demonstrate the following in detail
 - (a) Multiple Access
 - (b) Interference Management

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.E -DEGREE EXAMINATIONS - FEB-2022
CONSTRUCTION ENGINEERING AND MANAGEMENT
Third/Fifth Semester
ELECTIVE - RESOURCE MANAGEMENT AND CONTROL IN
CONSTRUCTION

(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours

Maximum Marks:100 Marks

Answer **ALL** questions
Part-A (10 x 2 =20 Marks)

- 1 List out the classifications of materials.
- 2 What do you mean by equipment classification?
- 3 What are the various classes of labour?
- 4 What are the courses of labour's law moral?
- 5 How classify construction materials?
- 6 What do you mean by equipment outlay?
- 7 How duration is assessed?
- 8 Differentiate between normal time and crash time.
- 9 Brief about the labeling approach.
- 10 List out the barriers in leveling and loading.

PART-B (5 x 16 = 80)

- 11 a. Explain about Equipment selection and its types.
OR
b. Suggest the methods of manpower and its implementation.
- 12 a. Explain about Equipment selection and its types.
OR
b. Explain about materials provisioning process.
- 13 a. Suggest various measures to minimize the wastage.
OR
b. Write short note on:
a) Material procurement
b) Scheduling materials requirement
c) Material
- 14 a. Define planning.Explain the process of planning in project.
OR
b. Elaborate the steps in computing critical paths.
- 15 a. Discuss the scope and importance of value management.
OR

b. What are the various management techniques applying in resource management?

Sl.No. M.E-3012

Sub.Code: 41417101

**VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)**

**M.E- DEGREE EXAMINATIONS – FEB-2022
CONSTRUCTION ENGINEERING AND MANAGEMENT
First Semester**

STATISTICAL METHODS AND QUEUEING THEORY

(Candidates admitted under 2017 Regulations-CBCS)

Time: Three hours

Maximum:100 Marks

Answer **ALL** questions

PART – A (10 x 2 = 20 marks)

1. The P.D.F of a Random Variable X is $f(x)=kx$, $0 < x < 1$. Find k and $P(X > 0.5)$.
2. If X follows Poisson Distribution with parameter λ , find λ such that $P(X = 1) = P(X = 2)$
3. What is meant by Maximum Likelihood Estimator
4. Write down the normal equations in fitting a straight line trend?
5. State the procedure followed in testing of hypothesis.
6. Define Student's t-test.
7. Give the general ANOVA table for One Way Classification.
8. What are the principles in Experimental Design?
9. Write down the Kendall's notation for representing queuing models.
10. In a 3 server infinite capacity Poisson queue model if $\frac{\lambda}{\mu c} = \frac{2}{3}$, find P_0

PART – B (5 x 16 = 80 marks)

11. a) A continuous random variable X has the P.D.F $f(x) = kx^2 e^{-x}$, $x \geq 0$. Find the r^{th} moment of X about the origin. Hence find mean and variance of X .

OR

(p.t.o)

- b) (i) With mean 120 days. Find the probability that such a watch will
- Have to be set in less than 24 days
 - Not have to be reset in at least 180 days
- (ii) The time (in hours) required to repair a machine is exponentially distributed with the Parameter $\lambda = \frac{1}{2}$
- What is the probability that the repair time exceeds 2h?
 - What is the conditional probability that the repair time takes at 11h given that its direction exceeds 8h?

12.a) (i) If x_1, x_2, \dots, x_n is a random sample from a normal population $(\mu, 1)$, Show

that $\frac{1}{n} \sum_{i=1}^n X_i^2$ is an unbiased estimator of $\mu^2 + 1$

(ii) Obtain the MLE of θ in $f(x, \theta) = (1 + \theta)x^\theta$, $0 < \theta < 1$ based on the random sample of size n.

OR

(b) (i) Obtain the MLE for the density function

$$f(x, \theta) = \frac{1}{\theta} e^{-\frac{x}{\theta}}, \quad x > 0, \quad \theta > 0 \text{ given } x_1, x_2, \dots, x_n$$

(ii) Let x_1, x_2, \dots, x_n be a random sample from a Poisson distribution with

parameter $\lambda > 0$. Show that $\frac{1}{n} \sum_{i=1}^n X_i$ and $\frac{1}{n} \sum_{i=1}^n X_i^2 - \left(\frac{1}{n} \sum_{i=1}^n X_i \right)^2$ are moment estimator of λ .

(p.t.o)

Sl.No. M.E-3012

13. a) (i) A Coin was tossed 900 times and head appeared 490 times. Does the result support the hypothesis that the coin is unbiased?

(ii) A machinist is making engine parts with axle diameters of 0.700 inch. A random sample of 10 parts shows a mean diameter 0.742 inch with S.D of 0.040 inch. Compute the statistic you would use to test whether the works is meeting the specification.

OR

b) The nicotine contents in milligrams in two samples of tobacco were found to be as follows:

Sample A	24	27	26	21	25	
Sample B	27	30	28	31	22	36

Can it be said that two samples come from same normal population

14. a) Set up analysis of variance of the following data (one-way)

A	B	C
20	20	12
10	14	18
18	16	20
8	14	22

OR

b) The four samples below have been obtained from normal populations with equal variances. Test the hypothesis that the population means are equal using one-way analysis of variance.

Sample I	15	17	14	11		
Sample II	12	10	13	17	14	
Sample III	14	09	07	10	08	07
Sample IV	10	14	13	15	12	

(Table value of F for (3,16) d.f at 1% level is 5.29)

(p.t.o)

Sl.No. M.E-3012

15. a) Ships arrive at a port at the rate of one in every 4 hours with exponential distribution of interval times. The time a ship occupies a berth for unloading has exponential distribution with an average of 10 hrs. If the averages delay of ships waiting for berth is to be kept below 14 hrs. How many berths should be provided at the port?

OR

- b) At what average rate must a clerk in a super market work in order to ensure a probability of 0.90 that the customer will not wait longer than 12 minutes? It is assumed that there is only one counter at which customers arrive in a Poisson fashion at an average rate of 15 per hour and that the length of the service by the clerk has an exponential distribution.

Sl.No. M.E-3012

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)

M.E/M.TECH- DEGREE EXAMINATIONS – FEB 2022

BIOTECHNOLOGY
First Semester

BIOENGINEERING MATHEMATICS

(Candidates admitted under 2017 Regulations-CBCS)

Time: Three hours

Maximum:100Marks

Answer **ALL** questions

PART – A (10 x 2 = 20 marks)

1. Solve $x + y = 3$, $2x + 3y = 8$ by matrix inversion method.
2. Matrix A has x rows and $x + 5$ columns and matrix B has y rows and $11 - y$ columns. Both AB and BA exist. Find x and y
3. State mean value theorem
4. Find the volume of the solid generates when the region enclosed by $y = \sqrt{x}$, $y = 2$ and $x = 0$ is revolved about the y -axis
5. Define the degree of the differential equation
6. What is an integrating factor?
7. Write the formula for Regula-Falsi Method
8. What is meant by diagonally dominant?
9. The first four central moments of a distribution are 0, 2.5, 0.7 and 18.75. Test the Kurtosis of the Distribution
10. Define probability.

PART – B (5 x 16 = 80 marks)

11. a) Find the inverse of a matrix $\begin{bmatrix} 1 & 1 & -1 \\ 2 & 1 & 0 \\ -1 & 2 & 3 \end{bmatrix}$

(p.t.o)

OR

b) Solve the following equations

$$x + 2y + z = 7$$

$$2x - y + 2z = 4$$

$$x + y - 2z = -1$$

by using Cramer's rule

12. a) Find the absolute maximum and absolute minimum values of

$$f(x) = x - 2 \sin x, 0 \leq x \leq 2\pi$$

OR

b) (a) If $r^2 = x^2 + y^2$ then show that $\frac{\partial^2 r}{\partial x^2} + \frac{\partial^2 r}{\partial y^2} = \frac{1}{r} \left[\left(\frac{\partial r}{\partial x} \right)^2 + \left(\frac{\partial r}{\partial y} \right)^2 \right]$

(b) If $u = f(x - y, y - z, z - x)$ then show that $\frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} + \frac{\partial u}{\partial z} = 0$

13. a) Solve $ydx - xdy + 3x^2y^2e^{x^3} = 0$

OR

b) a) Solve $pyz + qzx = xy$

(b) Solve $x(z^2 - y^2)p + y(x^2 - z^2)q = z(y^2 - x^2)$

14. a) Find a real root of $x^3 - 9x + 1 = 0$ that lies between 2 and 3 by the method of false position, correct to 3 decimal places

OR

b) Solve the given system by Gauss-Jacobi method

$$8x - 3y + 2z = 20; 4x + 11y - z = 33; 6x + 3y + 12z = 35$$

(P.T.O)

Sl.No. M.E-30011

15. a) The following table gives the frequency distribution of 235 workers of a factory according to their average monthly income in 2000-2010. Calculate Bowley's coefficient of skewness

Income in thousands	9-11	11-13	13-15	15-17	17-19	19-21	21-23	23 & above
No of workers	58	60	46	22	15	15	9	10

OR

b) In a partially destroyed laboratory record of an analysis of correlation data, the following results only are legible. Variance of $X = 9$

Regression equations are

$$8X - 10Y + 66 = 0$$

$$40X - 18Y - 214 = 0$$

- Find
- i) the mean values of X and Y
 - ii) the correlation coefficient between X and Y
 - iii) the standard deviation of Y

Sl.No. M.E-30011