ಮೈಸೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

ವಿಶ್ವವಿದ್ಯಾನಿಲಯ ಕಾರ್ಯಸೌಧ
ಕ್ರಾಫರ್ಡ್‌ಭವನ, ಮೈಸೂರು-5

ಸಂಖ್ಯೆ:ಯುಎ.2/379/2016-2017 ದಿನಾಂಕ 21-01-2020

ಗೆ:

ಎಲೆಕ್ಟ್ರಾನಿಕ್ಸ್ ಅಧ್ಯಯನ ಮಂಡಳಿ(ಸ್ನಾತಕೋತ್ತರ)ಯ
ಅಧ್ಯಕ್ಷರು ಮತ್ತು ಸದಸ್ಯರುಗಳಿಗೆ.

ಮಾನ್ಯರೇ,

ವಿಷಯ: ದಿನಾಂಕ 04-01-2020ರಂದು ನಡೆದ ಎಲೆಕ್ಟ್ರಾನಿಕ್ಸ್ ಅಧ್ಯಯನ ಮಂಡಳಿ(ಸ್ನಾತಕೋತ್ತರ)ಯ ವಾರ್ಷಿಕ ಸಭೆಯ ನಡಾವಳಿಯನ್ನು ಕಳುಹಿಸುತ್ತಿರುವ ಬಗ್ಗೆ.

* * * * *

ದಿನಾಂಕ 04-01-2020ರಂದು ನಡೆದ ಎಲೆಕ್ಟ್ರಾನಿಕ್ಸ್ ಅಧ್ಯಯನ ಮಂಡಳಿ(ಸ್ನಾತಕೋತ್ತರ)ಯ ವಾರ್ಷಿಕ ಸಭೆಯ ನಡಾವಳಿಯನ್ನು ಈ ಪತ್ರದ ಜೊತೆ ಲಗತ್ತಿಸಿ ಕಳುಹಿಸಲಾಗಿದೆ.

ವಿಶೇಷಾಧಿಕಾರಿಗಳು (ಪ್ರಾಧಿಕಾರ)

ಪ್ರತಿ:

1. ನಿರ್ದೇಶಕರು, ಸ್ನಾತಕೋತ್ತರ ಕೇಂದ್ರ, ಹಾಸನ
2. ಜಿ.ವೆಂಕಟೇಶ್ ಕುಮಾರ್, ಡೀನರು, ವಿಜ್ಞಾನ ಮತ್ತು ತಂತ್ರಜ್ಞಾನ ನಿಕಾಯ, ಮನೋವಿಜ್ಞಾನ ಅಧ್ಯಯನ ವಿಭಾಗ, ಮಾನಸಗಂಗೋತ್ರಿ, ಮೈಸೂರು
3. ಕುಲಸಚಿವ(ಪರೀಕ್ಷಾಂಗ), ಮೈಸೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ, ಮೈಸೂರು.
4. **ಉಪಕುಲಸಚಿವರು (ಶೈಕ್ಷಣಿಕ), ಆಡಳಿತ ವಿಭಾಗ, ಮೈವಿವಿ ನಿಲಯ, ಮೈಸೂರು-ಅಧ್ಯಯನ ಮಂಡಳಿಯು ಶಿಫಾರಸ್ಸು ಮಾಡಿರುವಂತೆ ಸೂಕ್ತ ಕ್ರಮಕೈಗೊಳ್ಳಬೇಕಾಗಿ ಕೋರಿದೆ.**
5. ಸಹಾಯಕ ಕುಲಸಚಿವರು/ಅಧೀಕ್ಷಕರು (ಶೈಕ್ಷಣಿಕ), ಆಡಳಿತವಿಭಾಗ, ಮೈಸೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ, ಮೈಸೂರು
6. ಕುಲಪತಿ/ಕುಲಸಚಿವ/ಕುಲಸಚಿವ(ಪರೀಕ್ಷಾಂಗ) ಅವರ ಆಪ್ತ ಸಹಾಯಕರು, ಮೈವಿವಿ ನಿಲಯ, ಮೈಸೂರು.
7. ಕಾರ್ಯನಿರ್ವಾಹಕರು, ಎಸಿ2(ಎಸ್), ಆಡಳಿತ ವಿಭಾಗ, ಮೈವಿವಿ ನಿಲಯ, ಮೈಸೂರು.

UNIVERSITY OF MYSORE

Department of Electronics, Post Graduate Centre, Hassan – 573 226

Proceedings of the BoS Meeting of Electronics (PG)

As per the directions of the Registrar, University of Mysore, Mysuru, Board of Studies Meeting of Electronics (PG) of University of Mysore is conducted on 04-01-2020 at Academic Council Hall, Crawford Hall, University of Mysore, Mysuru. The information about the discussion carried out in the meeting is enclosed with this letter. The details of the BoS members who participated in the meeting are given below.

Sl. No.	Name of the BoS Member	Designation	Signature
1.	Dr. M. Mahadeva Prasad	Chairman	4/1/2020
2.	Prof. A. P. Gnanaprakash	Member	
3.	Prof. Shankaraiah	Member	
4.	Prof. Mahesh Rao	Member	Not Present
5.	Prof. J. T. Devaraju	Member	
6.	Prof. H. S. Nagendra Swamy	Member	
7.	Prof. S. K. Naveen Kumar	Member	Not Present
8.	Prof. Manjaiah D H	Member	Not Present

Dr. M. Mahadeva Prasad
Chairman, BoS in Electronics
University of Mysore
P.G. Centre, Hemagangotri
HASSAN-573 226

Details of the Discussion & Decisions Taken at BoS Meeting of Electronics (PG)

1. The Chairman, BoS in Electronics welcomed the BoS members and placed the BoS Meeting Agenda before the members.

2. **Department of Studies status to Electronics Department, P G Centre, Hassan**

   The BoS Chairman sought the opinion of the BoS members on obtaining the Department of Studies status to Department of Electronics, P G Centre, Hassan. All the BoS members strongly recommended for this and they felt that the Department of Studies status is very much essential for the progress of the Department of Electronics. The BoS members suggested that the members of the Department Council of Electronics Department have to act immediately in this regard and discuss with the Administrative Authorities of University of Mysore to obtain the Department of Studies status to Electronics Department.

3. **Opening of Department of Electronics at Manasagangotri, Mysuru**

   The BoS chairman placed before the members the appeal of the of UG faculty members of Electronics to commence the MSc (Electronics) programme at Manasagangotri, Mysuru. The reason for their appeal is that the students around Mysore, Chamarajanagar, and Mandya, one who are interested to study the MSc(Electronics) programme get benefitted if the MSc(Electronics) programme/Department of Electronics is commenced at Manasagangotri, Mysuru.

   After discussing this in the meeting, all BoS members understood the importance of commencing the MSc (Electronics) programme at Manasagangotri, Mysuru and favored the opinion of the UG faculty members. The BoS members concluded that the Administrative Authorities of University of Mysore has to take necessary steps to commence the MSc (Electronics) programme at Manasagangotri Campus, Mysuru and help the student community.

4. The members discussed in detail about the anomalies associated with the Research Article publications of PhD Scholars. The members strongly insisted that the Research Scholar and the Guide should follow the PhD Regulations of University of Mysore and UGC Guidelines. In the research article, the first author should be the Research Scholar and the Research Guide should be the Second/Corresponding Author. In addition, the members suggested that the inclusion of additional authors in the publications should have proper justification and inclusion of too many authors should be avoided.

5. The BoS members approved the Pre-Registration Synopsis format for the PhD Programme of University of Mysore. The synopsis format is given in Annexure I.

6. The Thesis Submission Synopsis format for the PhD Programme of University of Mysore is approved by the BoS members. The synopsis format is given in Annexure II.

7. Decided to continue with the existing PhD Course Work Syllabus with the Credit Pattern of L : T : P : : 4 : 1 : 0. The copy of the PhD Course Work syllabus is given in Annexure III.

8. Decided to use the existing Syllabus for MSc Admission and PhD Entrance Examinations in Electronics for the academic year 2020-21. The copies of the syllabi are given in Annexures IV and V.

9. The Panel of Examiners for M.Sc. (Electronics) Examinations for the academic year 2020-21 is approved. The BoS chairman will submit the BoS approved Panel of Examiners to Registrar (Evaluation), University of Mysore, Mysuru.

10. The members discussed on the present MSc (Electronics) Syllabus. The members felt that there is a need for the revision in the exiting syllabus. The members insisted that the Department Council of Electronics (PG) shall initiate the process of revising the syllabus. The revised syllabus shall be placed in the next BoS meeting for the approval so that the new syllabus can be implemented for the 2021-22 Batch students.

11. In order to speed up the BoS approval process of documents and to implement the paper-less e-governance process, all BoS members agreed to respond to the communicated letters through e-email and give approval for documents via e-mail.

12. The BoS meeting is concluded with the vote of thanks by the Chairman.

Dr. M. Mahadeva Prasad
Chairman, BoS in Electronics
University of Mysore
P.G. Centre, Hemagangotri
HASSAN-573 226

Annexure I

Title of the Thesis

Synopsis submitted to the PhD registration colloquium for the award of Ph.D. degree in Electronics from University of Mysore

By

Name of the Research Scholar

(Ph.D. Enrollment Number)

Under the Guidance of

(Name & Address of the Guide & Co-Guide)

Research Centre Address

Month and Year

Contents (with page numbers)

1. Introduction
2. Literature Review
3. Research Gap/Problem Statement
4. Objectives
5. Proposed Methodology
6. Expected Outcome
7. Conclusion

Reference

Title (Should correlate to the Proposed Research Work)

1. Introduction (Preferably one or one and half page length)

   (Brief overview, Current status of Research in the field, Importance of the R & D Work to the field, Outcome based on the present research work, etc.)

2. Literature Review (Preferably one or two page length)

   (Specific to the Proposed Research Work & related to the title of the Synopsis)

3. Research Gap/Problem Statement
   (Based on Literature Review. Should address the drawbacks/ improvements needed in the existing system)

4. Objectives
   (Based on the Literature Review to fulfill the Research Gap)

5. Proposed Methodology

6. Expected Outcome

7. Conclusion

Reference (In standard format and specific to the proposed research work)

Signature of the Guide & Co-Guide **Signature of the Research Scholar**

Note:

1. The total number of pages of a Synopsis should be restricted to less than 10 pages
2. Reference be made from Refereed Journals (SCI/Scopus Indexed) and International Conference Proceedings
3. Copy and paste from Thesis chapters/Papers/Online Resources should be avoided

Annexure II

Title of the Thesis

Synopsis submitted to the Pre-PhD Thesis submission colloquium for the award of Ph.D. degree in Electronics from University of Mysore

By

Name of the Research Scholar

(Ph.D. Registration Number)

Under the Guidance of

(Name & Address of the Guide & Co-Guide)

Research Centre Address

Month and Year

Contents (with page numbers)

1. Introduction
2. Literature Review
3. Problem Statement
4. Objectives
5. Organization of the Thesis
6. Conclusion and Discussion

Reference

Title (Should correlate to the Work/Contents of the Thesis)

1. Introduction (Preferably one or two page length)

   (Indicating the importance of research work in the field, current status, and research outcome based on the present work)

2. Literature Review (Preferably one page length)

   (Specific to the Contribution to the filed & Contents of the Thesis and Reference to the recent research work in the field)

3. Problem Statement/Existing Research Gap (Framed at the initial stage of the research and subsequent modifications during the research progress. Should correlate to the Literature Review)

4. Objectives (Framed at the initial stage of the research and subsequent modifications during the research progress. The objectives should correlate to the title & contents of the thesis)

5. Organization of the Thesis (Preferably less than two Pages)
   (Chapter-wise brief note on the Adopted Methodology, Experiments, Performance Evaluation with the research work of others, Results, etc. that reflects the research work carried out to meet the intended objectives)

6. Conclusion and Discussion (Preferably one page length)

   (Statement about the realization of the objectives, limitations of the work, scope for the future work, etc.)

Reference (In standard format and specific to the contributions to the research work)

List of Publications (Separate List for Journals and Conference Proceedings)

Full research papers or Facing sheets of research articles has to be enclosed

Signature of the Guide & Co-guide **Signature of the Research Scholar**

Note:

1. Copy and paste of chapters/contents from the Thesis should be avoided
2. The total number of pages of a Synopsis should be restricted to less than 10 pages.
3. Synopsis should indicate the contribution of the candidate to fill the research gap in the already existing work

Annexure III

UNIVERSITY OF MYSORE

Syllabus of the PhD Programme in Electronics

Title of the Paper: **Research Methodology**

L : T : P : : 4 : 1 : 0

Unit 1: Introduction

Meaning of Research. Objectives of Research. Motivation in Research. Types of Research. Research Approaches. Significance of Research. Research Methods versus Methodology. Research and Scientific Method. Importance of Knowing How Research is Done. Research Process. Criteria of Good Research, Problems Encountered by Researchers in India.

Unit 2: Defining the Research Problem

What is a Research Problem? Selecting the Problem. Necessity of Defining the Problem. Technique Involved in Defining a Problem. An Illustration.

Unit 3: Research Design

Meaning of Research Design. Need for Research Design. Features of a Good Design. Important Concepts Relating to Research Design. Different Research Designs. Basic Principles of Experimental Designs.

Unit 4: Publishing a Scientific Paper

Publication & Peer Review: Deciding to Publish, Submitting Your Paper After Submission, Overview of Peer Review, Purpose of Peer Review How It Works The Role of Editor Limitations and Issues. Writing a Scientific Manuscript: The Scientific: The Abstract, Introduction, The Methods & Materials Section, The Results Section The Discussion Section Figures, Tables, Equations, and References, Writing a Literature Review

Unit 5: Interpretation and Report Writing

Meaning of Interpretation, Why Interpretation? Technique of Interpretation: Precaution in Interpretation Significance of Report Writing. Different Steps in Writing Report. Layout of the Research Report. Types of Reports. Oral Presentation. Mechanics of Writing a Research Report. Precautions for Writing Research Reports. Conclusions.

Unit 6: MATLAB

Matrix algebra, Data analysis, data interpolation, Polynomials, cubic splines, Fourier analysis, optimization, Integration and differentiation, Differential equations, Two dimensional graphics, three dimensional graphics, using color and light, images movies and sounds, printing and exporting graphics, handling graphics, graphical user interface(GUI).

Unit 7: Lab VIEW

Visual instruments. Graphical environment. Building front panel. Building a block diagram. Math Script, Grouping data: Array & Cluster. Debugging and Profiling, VIs.

Unit 8: Instruments

Working principle and types of measurements from SEM, TEM, AFM, EDAX, HRTEM, and XRD. Block diagram, working principle and types of measurements from Digital Storage Oscilloscope, Spectrum analyzer, Logic Analyzer, Vector Network Analyzer.

Reference:

(1) C.R.Kothari, "*Research Methodology: Methods and Techniques*", New Age International Publishers, 1st Edition, 2004.
(2) B.S. Murthy, P Shankar, Baldev Raj, B.B Rath, James Murday "*Textbook of and Nanotechnology*". University Press (India) Private Limited, 1st edition, 2012.
(3) http://www.jyi.org/resources/320/Guide%20to%20Science%20Writing.pdf
(4) Duane Hanselman, Brauce Littlefield "Mastering MATLAB 7", Pearson, 2008
(5) Nasser Ketharnavaz, "*Digital Signal Processing System Design*: *LabVIEW Based Hybrid Programming*" Academic press, 2nd edition, 2008.

Annexure IV

UNIVERSITY OF MYSORE

Syllabus for the Entrance Examination to PG Admissions
Program: M.Sc. in Electronics

Unit 1 - Analog Electronics

PN junction diode and its characteristics, half-wave and full-wave rectifiers, Zener diode and its characteristics, Zener voltage regulators, power supplies, BJT and its characteristics, fixed and voltage divider biasing of BJT, h-parameters, single stage CE amplifier, RC and transformer coupled CE amplifiers, class A and class B power amplifiers, junction FET and its characteristics, feedback amplifiers, Barkhausen criterion, RC phase shift, wein bridge, Hartley and Colpits oscillators.

Unit 2 - Digital Electronics

Laws of Boolean algebra, De-Morgan's theorems, simplification of Boolean expressions, NAND and NOR gates, simplification of Boolean expression using Karnaugh maps, multiplexers, de-multiplexers, encoders, decoders, Flip flops – RS, D, T, JK flip flops, race around condition, shift registers-SISO, SIPO, PISO, PIPO, counters – binary, mod 3, mod 5 and decade counters, 8421 and 2421, Gray and excess 3 codes.

Unit 3 - Linear ICs

The ideal op-amp, equivalent circuit and parameters of an op-amp, inverting and non-inverting amplifiers, summing, subtracting, scaling, averaging and instrumentation amplifiers, voltage to current and current to voltage converters, integrator, differentiator, first and second order Butterworth filters, comparators, Schmitt trigger, square and triangular wave generators, R-2R DAC, successive approximation ADC, 555 Timer and its applications, clippers and clampers.

Unit 4 - Transducers and Instrumentation

Transducers - Resistive, capacitive, magnetic, Hall effect, piezoelectric, piezo-resistive, optical, ultrasonic, nuclear and thermoelectric effect transducers; strain gauges, measurement of temperature, pressure, mass flow rate and volume flow rate, radiation thermometers, diaphragms, capacitive and optical fiber pressure sensors, low and high pressure measurements, manometers, resonant wire devices.

Unit 5 - Microcontroller – 8051

Salient features of RISC, CISC, Harvard and Van-Neumann architecture. The 8051 architecture, its I/O pins and ports, addressing modes, logical, arithmetic and jump operations, programming timers/counters, 8051 interrupts.

Unit 6 - Transmission Lines and Antennas

Basic principles of transmission lines, losses in transmission lines, standing waves, quarter and half wavelength lines, electromagnetic radiations, EM waves, propagation of ground, sky and

space waves, resonant and non-resonant antennas, antenna gain, effective radiated power, field intensity, antenna resistance, band width, beam width, polarization.

Unit 7 - Analog Communication Systems

Need for modulation, principles of modulation system, principles of amplitude modulation (AM), spectrum of AM wave, AM power and current relations, principles of single side band AM, suppression of carrier and sideband, balanced modulator, vestigial sideband modulation, principles of frequency modulation (FM), spectrum and bandwidth of FM, principles of phase modulation.

Unit 8 - Pulse Modulation and Satellite Communications

Principles of PAM, PWM, PPM and PCM, noises in PCM, advantages and applications of PCM, principles of satellite communication system, orbits, station keeping, transmission paths, path loss and noise in satellite communication, multiple access methods, SPADE, TDMA.

Unit 9 - Signals and Systems

Basic continuous- and discrete-time signals, operations on signals, discrete-time systems, convolution sum; the Z transform, ROC and its properties, Z transform of sequences, inverse Z transform using partial fraction expansion method; DFT and its properties, IDFT.

Unit 10 - VHDL and Memory

Basic language elements, behavioural modelling, dataflow modelling, structural modelling; diode matrix ROM, RAM, memory addressing, programmable logic devices- PROM, PAL, PLA, PLD.

Annexure V

UNIVERSITY OF MYSORE

Syllabus for the Entrance Examination to PhD Programme in Electronics

Unit 1: Analog Circuit Design

Transport phenomena in semiconductors, intrinsic and extrinsic semiconductors, direct band-gap semiconductors, pn- junction, zener, tunnel diodes, BJT, JFET, MOSFET and their character. AC and DC load lines, Transistor Biasing, Single stage and multi-stage amplifiers and their frequency response, feedback in amplifiers, oscillators.

Unit 2: Digital Circuit Design

Logic Gates, Logic Families, Simplification of Boolean Algebra and minimization Techniques, Karnaugh maps, Combinational and Sequential Logic Circuits, Encoder, Decoder, MUX and DEMUX, Memories, A/D and D/A Converter.

Op-amp Characteristics, Inverting and non-inverting configuration, Comparator, Schmitt Trigger, Integrator, Differentiator, 1st and 2nd order active filters, VCO, 555 Timer, PLL.

Unit 3: Network Theorems and Control Systems

KVL, KCL, Mesh and Node Analysis, Thevenin, Norton, Supeposition, Maximum Power Transfer Theorems. h- parameters.

Classification of Control Systems, Transfer function and Impulse Response of Control System, Block Diagram Representation, Signal Flow Graph, Stability Analysis, Routh's Stability Criteria, Root Locus Diagram, Bode Plot, Polar Plot.

Unit 4: Microprocessor and Microcontroller

Architecture and features of 8085, 8086 microprocessors and 8051 microcontroller, Programming, Addressing Modes, Interrupts, Memory and I/O Interfacing, Interfacing 8255, 8257, Serial Communication Protocols.

Unit 5: Analog and Digital Communication

Introduction, Need of Modulation, Analog Modulation and Demodulation Schemes- AM, FM, PM. Noise in Analog Communication, Transmission Lines, Wave Guides, Antennas, Channels of Digital Communication System, Source and Channel Coding, Sampling Theorem, Waveform Coding – PCM, DPCM, Delta Modulation. Digital Modulation Techniques- ASK, FSK, PSK, DPSK, QPSK, M-ary modulation and Demodulation, TDM and FDM Schemes.

Unit 6: Power Electronics

Semiconductor power diodes, transistors, SCR, Triacs, Diacs, GTOs, MOSFETs, IGBTs and their characteristics and principles of operation, triggering circuits, phase controlled rectifiers, Converters, Inverters, Choppers.

Unit 7: Computer Organization and Programming in C

Basic Structure of Computer Hardware and Software, Memory and I/O organization and Pipelining. Overview of C, Constants, Variables and Data types, Operators and Expressions, I/O operations, Decision making, branching, looping, Arrays, Structures, User defined functions, Pointers, File management in C.

Unit 8: Signals and Systems

Classification of Signals, Concept of Frequency in Continuous-time and Discrete-time signals. Discrete-time signals and systems, Analysis of discrete-time linear time-invariant systems, Correlation and autocorrelation, Z-transforms, Inverse Z-Transforms, Fourier Series, Fourier Transform and their properties.

Unit 9: VLSI Technology

Introduction to IC Technology, IC fabrication, n-MOS, C-MOS, Bi-CMOS Fabrication, Latch up in CMOS, Stick Diagrams, Lambda based Designing rules and Layout Diagrams, Scaling Model and Scaling Factors, Sub-system Design.

Unit 10: Optical Fibre Communication

Optical Sources- LED, Spontaneous and Stimulated emission, Semiconductor Diode LASER, Photodetectors, PIN photo diodes, Phototransistors, Optocouplers, Optical Fibre, Light propogation in fibre, types of fibre, Characteristic parameters, Modes, Fibre splicing.