B.Sc. Part-II (2014-15)
(Semester-III & IV)

Prospectus No. 2015122

संत गाडगेबाबा अमरावती विद्यापीठ
SANT GADGE BABA AMRAVATI UNIVERSITY

विज्ञान विद्याशाखा
(FACULTY OF SCIENCE)

अभ्यासक्रमिका

विज्ञान स्नातक भाग-२

सत्र-३ व ४, परीक्षा

PROSPECTUS
OF
B.Sc. Part-II
Semester-III Examination Winter-2014, and
Semester-IV Examination Summer-2015

2014

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(Price-Rs.   /-)

Unit- V : SQL: Components of SQL, Data types, DDL Commands : create, Alter, Drop, for tables and Views, DML Commands : Select, Insert, Update, Delete, DCL Command : Commit, Rollback. ORDER By, GROUP By and Having clause.

Unit- VI : Functions : Numeric Functions, Character Functions, Conversion Functions, Group Functions.

Joins : Equi-join, Non-equijoin, Selfjoin, Outerjoin, Unions.

Data Integrity : Types of Integrity Constrains, Displaying integrity Constraints:

Books
i) Guide to VB - Peternorton-Techmedia
ii) Mastering VB - Evangelous Petroutsos
iii) Visual Programming 6.0 -Microsoft press programming guide.
iv) Introduction to DBMS : Majumdar & Bhattacharya
v) Database Concepts and : Ivon Bayross
System for students.
vi) Programming with SQL : Ivon Bayross
vii) Understanding Oracle : James Perry, J.Q. Lateer.

Practicals : Minumum 08 practicals on Unit I to Unit III and Minimum 08 practicals on Unit IV to VI.

4S : COMPUTER APPLICATIONS (Vocational)
Advance VB and RDBMS

Unit-I : VB Programms : Programme structure, procedure & Functions, priavate and public procedure, virables Code, Passing data by reference and value, passing control as argument, design time and runtime properties.

Unit-II : Interacting with Data; Database and Visual basic, data Control, advance data Control usage, advanced database control using VB application Wizard.

Unit-III : Printing output in VB : Printing information using print collection, controlling output, scalling output, formatting with fonts, simple VB programs, connection with database.

Unit-IV : PL SQL PL SQL block, architecture, data types, type declarations, Control Structure.

Cursor : Types of Cursors, Creating, Opening and fetching cursors, cursor attributes, closing cursors.

Transaction : SET TRANSACTION Command, Savepoint and Rollback segments.

Unit-V : Secutiry concepts, Types of Security, User ID, Security Object, Previleges : types of previleges : GRANT, REVOKE previleges, column passing privelege, Database triggers, procedures.

Unit-VI : Dynamic SQL : Limitations of Static SQL, Basic concept of Dynamic SQL, Dynamic statement execution, Dynamic Queries.

SQL *Forms; creating forms, entering data, running forms, editing forms, creating and running reports.

Books Recommended :
i) Introduction to DBMS : Mujumdar & Bhattacharya.
ii) Database Concepts and: Ivan Bayros
Systems for students
iii) Programming with SQL: Ivon Bayros
iv) Understanding oracle : James Perry, J.Q. Lateer.
v) Visual Programming 6.0 : Microsoft press
Programming guide.
vi) Guide to VB : Peternorton (Techmedia)
vii) Mastering VB : Evangelous Petroutsos - BPB.

Practicals : Minimum 08 practicals on Unit I to Unit III and Minimum 08 practicals on Unit IV to Unit VI.

16. ELECTRONICS
General Provisions/Instructions

Part A
(i) The Examination in Electronics of each semester shall comprise of one theory paper of 80 marks of three hours duration and internal assessment of 20 marks.
(ii) Theory paper of each semester shall comprise of six units. Each unit shall be completed in maximum 15 teaching periods of 48 minutes duration.

(iii) There shall six questions of twelve marks on each unit with alternate choice and One compulsory question (08 subquestions of 01 mark each) of 08 marks covering syllabi of all units (short answer type).

Part B

(i) The Practical examination of each semester of the B. Sc. (Electronics subject) shall be of 50 marks of 4 hours duration and shall be held at the end of each semester at the places as decided by the university.

(ii) Distribution of 50 marks assigned to practical for (Semester I to V) is as under-

1. Experiment (Construction, testing and performance)	:	30 Marks
2. Practical record	:	10 Marks
3. Viva-voce	:	10 Marks

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Total : 50 Marks

(iii) Project will be given to a group of not more than four students.

(iv) Teacher may adopt any innovative practice for demonstration of practicals on the aspects given.

(v) College/ Department may prepare laboratory manuals of experiments

3S-Electronics
Electronic Devices and Circuits

Unit I : Hybrid-parameters & Cascaded amplifiers:
Hybrid-parameters, transistor equivalent circuit of CE,CB, Analysis of small signal CE amplifiers. Concept of cascaded amplifier, Types of coupling, RC Coupled Amplifier, Single Tuned amplifiers,

Unit II : Power Amplifier:
Classification of power amplifier, Class A, Class B, Class C and Class AB amplifiers, Class A - transformer coupled amplifier, Class-B push-pull amplifier (Construction, working and efficiency of each). Distortion, complementary symmetry Class-B push-pull amplifier.

UNIT III: Feedback amplifiers and Oscillators:
Concept of feedback, feedback theory, positive and negative feedback, advantage of negative feedback, physical idea of feedback,(Block diagram only),concept

of oscillator, basic elements of oscillator, Barkhausen Criteria of oscillation, concept of tank circuit. RC oscillator-Phase shift and Wein bridge oscillator, LC oscillator- Colpitts and Hartley oscillator, Crystal oscillator.

UNIT IV: Operational amplifier and applications:
Difference amplifier(concept, construction and working), block diagram of operational amplifier, characteristics of ideal op amp, concept of virtual ground, parameter of op amp (input impedance, output impedance, open loop gain, close loop gain, CMRR, slew rate, input offset voltage and current, input bias current). Applications: Op amp as inverting and non inverting amplifier, adder, Subtractor, Differentiator and Integrator.

UNIT V : Advance applications of Op- Amp:
Solution to simultaneous equation, differential equation for harmonic, damped harmonic oscillator, regenerative comparator, logarithmic amplifier, Astable, Monostable and Bistable multivibrator and its time period (construction and working).

UNIT VI: A/D and D/A converter:
Need of A/D and D/A converter.
D/A converter: R-2R ladder type, Weighted resistor, sample and hold circuit, IC ADC, DAC specification.
A/D converter: Single and Dual slope, counter type, successive approximation type, specification, Numerical based on A/D and D/A Converter

Books Recommended:
1. Integrated Electronics by Millman Halkias
2. Principle of electronics by V.K.Mehta
3. Element of electronics by Bagde and Singh
4. Linear integrated Circuits by Ramakant Gaikwad
5. Digital principle and application by Malvino and Leach
6. Basic electronics by B.L.Thereja (S.Chand and Company)
7. Op-Amp Theory and application by Ramakant Gaikwad

Practicals: Minimum Ten experiments at least one on each of the following aspects.
1. CE, CB and CC amplifiers, cascaded amplifiers.
2. Power amplifiers.
3. Oscillators.
4. Op-Amp applications.

5. Op-Amp in Astable, Monostable and Bistable mode.
6. ADC and DAC converter

4S-Electronics
Communication Electronics & Microprocessor 8085

Unit I : **Modulation and Demodulation:**
Need for modulation, AM theory, Power relation, Theory of FM ,Numerical on AM and AM Systems , frequency spectrum of FM . Generation of AM and FM . Collector modulator , diode reactance modulator . Demodulator: diode detector , slope detector.
Transmitter and receiver :Block diagram and working of AM and FM transmitter and receiver.

UNIT II : **Fiber Optic Communication :**
Introduction ,advantages of OFC , types of fibers ,internal reflections ,numerical aperature. Optical Sources : Semiconductor injection LASER , LED ,(power and efficiency chacteristics). Optical detectors : Photodiode , PIN diode , Phototransistor .
Optical fiber connection : Jointer and coupler ,fiber alignment and joint losses ,connector couplers.

UNIT III : **Pulse Modulation and Digital Communication**
Pulse Modulation, Sampling Theorem PAM ,PWM ,PPM and PCM (Bandwith of PCM ,Quantizing Noise) , application of PCM , Multiplexing Principles : TDM and FDM , Comparison of FDM and TDM .

UNIT IV : **Architecture and timings of 8085:**
Evolution of microprocessor, microcomputer (Block diagram with function of each block),architecture of Intel 8085 microprocessor, function of each block of 8085, Functional pin diagram and function of all pins of 8085, instruction format. Instruction cycle, fetch and execute operation, machine cycle and state, timing diagram of MOV and MVI instructions.

UNIT V : **Instruction and programming of 8085:**
Addressing mode, classification of instruction set of 8085 with examples, concept of stack and stack pointer, PUSH and POP instruction, Concept of subroutine: CALL and RET instruction, Delay subroutine (using one register and register pair).

Programming: Algorithm, Flowchart, Assembly and machine language, assembly language program such as programme for addition, subtraction, multiplication, division, finding maximum and minimum numbers etc.

UNIT VI : **Interfacing:**
Basic interfacing concept, memory mapped I/O and I/O mapped I/O Schemes, data transfer schemes. 8255PPI: block diagram, function of each block, Functional pin diagram, , function of each pin, operating modes of 8255PPI, control word format in I/O and BSR mode, illustrative example.

Books recommended:
1. A Text Book of Communication Engineering by A.Kumar
2. Electronics communication by Roddy and Coolean
3. Telecommunication principle circuit and system S.Rambhadran
4. Modern digital and analog communication system by B.P.Rathi
5. Communication electronics by N.D.Deshpande
6. Microprocessor and microcomputer By B.Ram
7. Microprocessor architecture, programming and application by Ramesh Gaonkar
8. Introduction to Microprocessor by A.P. Mathur

Practicals: Minimum Ten experiments at least one on each of the following aspects.
1. AM and FM (Transmitters and Receivers) TRF and superheterodyne receivers, collector modulator
2. OFC system.
3. Pulse Modulation and Digital Communication.
4. Microprocessor 8085 and its study.
5. Programming on microprocessor 8085.
6. Interfacing techniques.

17. BIOCHEMISTRY
Semester-III
Biochemistry

The examination in Biochemistry will comprise of two theory papers, one in each semester and one practical in each semester. Each theory paper will be of 3 hours duration and shall carry 80 marks each. The internal assessment will carry 20 marks. The practical examination will be of 6 to 8 hrs duration in one day & shall carry 50 mks.

The following syllabus is prescribed on the basis of six lectures per paper per week and six practical periods per batch per week. Each theory paper has been divided into 6 units. There shall be one question on every unit with internal choice for each of 12 mks & 1 compulsory question covering all the syllabus of semester I (8 marks).

3S-Biochemistry
(Intermediary Metabolism)

UNIT-I : a) Glycogen synthesis in liver and muscles, Glycolysis and its regulation, Glycogenolysis, TCA and its regulation.
    b) HMP pathway, Gluconeogenesis, Glyoxalate bypass.
    c) Mitochondrial ETC, Oxidative phosphorylation.

UNIT-II : a) Introduction to lipid metabolism, hydrolysis of triacylglycerols, transport of fatty acid into mitochondria.
    b) B- Oxidation of saturated fatty acids, ATP yields from fatty acid oxidation, biosynthesis of saturated and unsaturated fatty acid.
    c) Metabolism of Ketone bodies, biosynthesis of triglycerides.

UNIT-III: a) Biosynthesis of Phospholipids, glycolipids, sphingolipids.
    b) Cholesterol; regulation of cholesterol metabolism.

UNIT-IV: a) General reactions of amino acid metabolism such as transamination, oxidation deamination and decarboxylation.
    b) Urea cycle and its regulation.
    c) Degradation and biosynthesis of amino acids- Glycine, serine, Cysteine, Methionine, Phenylalanine and Tyrosine.

UNIT-V: a) Sources of atoms in purines and pyrimidine molecules.
    Biosynthesis and degradation of purines and pyrimidines.
    b) Regulation of purines and pyrimidine biosynthesis.

UNIT-VI: a) Biosynthesis and degradation of porphyrins.
    b) Production of bile pigments.

PRACTICALS: 3S Biochemistry
1) Estimation of blood glucose by GOD/POD Method.
2) Isolations of glycogen from liver and estimation by GOD/POD method.
3) Determination of achromic point of salivary amylase.
4) Demonstration of effect of temperature on enzyme catalysed reaction.
5) Demonstration of urease activity on urea.
6) Demonstration of immobilization of enzyme.
7) Estimations of vitamin c by dye method.

Distribution of Marks : Semester III Biochemistry Practicals
1. Long experiment(One) : 15 marks
2. Short experiment : 10 marks
3. Short experiment : 10 marks
4. Viva voce : 8 marks
5. Class work and Practical Record : 7 marks

    Total : 50 marks

Semester-IV
Biochemistry

The examination in Biochemistry will comprise of two theory papers, one in each semester and one practical in each semester. Each theory paper will be of 3 hours duration and shall carry 80 marks each. The internal assessment will carry 20 marks. The practical examination will be of 6 to 8 hrs duration in one day & shall carry 50 mks.

The following syllabus is prescribed on the basis of six lectures per paper per week and six practical periods per batch per week. Each theory paper has been divided into 6 units. There shall be one question on every unit with internal choice for each of 12 mks & 1 compulsory question covering all the syllabus of semester I (8 marks).