HINDI MAHAVIDYALAYA

(AUTONOMOUS)

NALLAKUNTA, HYDERABAD - 44.

NAAC RE-ACCREDITED

B.Sc II[nd] YEAR

DEPARTMENT OF BIOTECHNOLOGY

2017-2018

4 Pages

HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
BOARD OF STUDIES
DEPARTMENT OF BIOTECHNOLOGY

Chairperson
Mrs. Nita Kulkarni
Head – Department of Biotechnology
Hindi Mahavidyalaya
Nallakunta, Hyderabad.

University Nominee
Dr. Surekha Rani
Chairperson – BOS
Department of Biotechnology and Genetics
Osmania University, Hyderabad.

Members of BOS

1 Dr. Chaithri
Asst. Prof. Department of Biotechnology and Genetics
Osmania University, Hyderabad

2. Ms. Sandhya Rani
Department of Biotechnology
Andhra Mahila Sabha Arts & Science College (Autonomous)
Osmania University Campus, Hyderabad

PRINCIPAL
HINDI MAHAVIDYALAYA
Arts, Commerce & Science
(Autonomous)
NALLAKUNTA, HYD-44

HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
DEPARTMENT OF BIOTECHNOLOGY
BOARD OF STUDIES
Academic Year – 2017-18

Minutes of BOS Meeting

BOS meeting of the Department of Biotechnology was held on 13/07/2017, Thursday at 11.30 A.M

The following members were present

Dr. Surekha Rani	-	University Nominee	
Mrs. Nita Kulkarni	-	Chairperson	
Dr. Chaithri	-	Member	
Mrs. Sandhya Rani	-	Member	

2.1 Welcome address by the chair

The chair welcomed the University Nominee, Ex-officio Member BOS, O.U Department of Biotechnology and Members of B.O.S.

2.2 Details of choice based credit system.

Members were informed that TSCHE has referred that from the academic year 2016-17 autonomous institutions have to follow CBCS i.e. From the Academic Year 2016-17 Osmania University has instructed all the Degree colleges including Autonomous Degree colleges to follow CBCS under which after passing the exam student will get the Grade in the Final Result. 4 Credits are given for theory paper and 1 credit is given for practical in each semester.

2.3 Discussion and Distribution of Common Core Syllabus.

i. Members were informed by the chair that Department of Biotechnology, Hindi Mahavidyalaya is following common core syllabus prescribed by Osmania University for B.Sc II[nd] Year for Semester III and IV.

ii. We are adopting Osmania University same syllabus of each Semester as it is with minor changes in theory papers of semester III & IV.

Syllabus copy for both the semesters is enclosed.
Syllabus was approved by the Members of BOS.

PRINCIPAL
HINDI MAHAVIDYALAYA

2.4 **Marks allotted for Internal and End Semester exams**

1. Internal assessment is of 20 marks. (15M for Internal + 5 M for assignment).In each Semester two internal assessment of 15 Marks will be conducted and an average of both the internal assessments will be added in the marks of Theory exam.
2. Theory Question paper is of 80 marks.
3. Total allotted marks are 100.
4. Internal assessment is of 10 marks for SEC. One internal assessment of 10 Marks will be conducted and added in the marks of Theory exam.
5. Theory Question paper for SEC is of 40 marks.
6. Total allotted marks are 50 for each SEC.

The distribution of marks was approved by the Members of BOS.

2.5 **Discussion on Pattern and Model Paper of Semester exam and Model Paper of Internal Exam**

1. It was informed by the department that in each Semester Two Internal exams will be conducted for 15 marks. The internal assessment will have three sections.
   Section –A 10 Multiple choice questions each carries ½ marks (10* ½ = 5M).
   Section – B 10 Fill in the blanks each carries ½ marks (10* ½ = 5M) and
   Section – C 5 short notes each 1mark (5*1=5)
   Average of marks of these two internal exams will be taken. 5 marks will be allotted for assignment.
2. Semester exam will be conducted as per the Almanac which will be provided by the exam branch. Internal exam duration will be 30Mts and Semester exam duration will be of 3 hrs.
3. Model Question paper for Semester III and Semester IV was discussed. Theory paper for each Semester will have 2 sections.
   i) Section A contains 8 short Questions. The student has to answer four questions. Each Question carries 5 Marks (4X5=20 Marks)
   ii) Section B contains 4 Essay type Questions with internal choice. Each Question carries 15 Marks (4X15=60 Marks)
4. Model Question paper for SEC Semester III and Semester IV was discussed. Theory paper for each SEC will have 2 sections.
   i) Section A contains 2 short Questions. The student has to answer TWO questions. Each Question carries 5 Marks (2X5=10 Marks)
   ii) Section B contains 2 Essay type Questions with internal choice. Each Question carries 15 Marks (2X15=30 Marks)

- Pattern of Model Theory Question Papers for DSC and SEC Paper III and Paper IV are enclosed.

- Pattern of Model Theory Question Papers for DSC and SEC was approved by Member of BOS.

Dr. H. SURENDRA RAO

PRINCIPAL
HINDI MAHAVIDYALAYA

2.6 Discussion on Practical Exam Model paper.

It was decided in BOS meeting that 50 Marks Practical Exam of 3 hrs will be held in each Semester and 1 credit will be given for Practical in each Semester.

- It is decided that the practical examinations held for B.Sc first years (Semester I & II) from the academic year 2017-18 onwards will have the pattern of 25 marks scheme and the credits will remain the same i.e. 1 credit. The duration of the exam will be 2 hours.
- Pattern of Model Practical Question Papers for Paper I, II, III and Paper IV are enclosed.
- Pattern of Model Practical Question Papers was approved by Members of BOS.

2.7 Panel of Examiners

The panel of examiners was approved by the members.

- List is enclosed

2.8 Any other matter.

2.9 Vote of Thanks

Meeting concluded with the Vote of Thanks by Mrs.Nita Kulkarni

Chairperson	University Nominee	Members	Principal
		1.	
		2.	

HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)

COMPOSITION OF THE BOARD OF STUDIES IN AN AUTONOMOUS COLLEGE

I. **Composition: Department of Biotechnology**

1. Head of the department concerned (Chairman)

II. Mrs. Nita Kulkarni – Department of Biotechnology

2. The entire faculty of each specialization.

Mrs. Nita Kulkarni

3 One expert to be nominated by the vice-chancellor from a panel if six recommended by the College Principal.

III. Dr. Surekha Rani, Chairman, BOS, Dept. of Biotechnology

4. Two experts in the subject from outside the college to be nominated by the Academic Council.

1. Dr. Chaithri, Asst. Prof, Department of Biotechnology, Osmania University, Hyd.
2. Ms. Sandhya Rani, Department of Biotechnology, Andhra Mahila Sabha Arts & Science College, Hyd.

(a) Experts from outside the College whenever special courses of studies are to be formulated-To be nominated.

(b) Other members of staff of the same faculty.

PRINCIPAL
HINDI MAHAVIDYALAYA
Arts, Commerce & Science
(Autonomous)

DEPARTMENT OF BIOTECHNOLOGY
AGENDA OF THE MEETING
Thursday – 13-7-2017

2.1 Welcome address by the chair.

2.2 Details of credit based choice system.

2.3 Discussion on Common Core Syllabus

2.4 Marks allotted for Internal and end Semester exams.

2.5 Discussion on Semester Exam Model Paper & Internal Exam Model Paper

2.6 Discussion on Practical Exam Model Paper

2.7 Panel of Examiners

2.8 Any other matter

2.9 Vote of Thanks

PRINCIPAL
HINDI MAHAVIDYALAYA
Arts, Commerce & Science
(Autonomous)
NALLAKUNTA, HYD-44

HINDI MAHAVIDYALAYA

(AUTONOMOUS)
Affiliated to Osmania University
Nallakunta, Hyderabad-44

2017-18 CBCS STRUCTURE

SCHEME OF INSTRUCTIONS & EVALUATION

B.SC. BT MB CH /BC MB CH

SECOND YEAR SEMESTER-III					Semester End exam		Continuous Internal Evaluation		Total	Practical 3 HRS
Code	Course Title	Course Type	HPW	Credits	Duration in HRS	Marks	Exam Duration	Marks		
BS301	A/B	SEC-1	2	2	2	40	30 min	10	50	-
BS302	English	CC-1C	5	5	3	80	30 min	20	100	-
BS303	Second Language	CC-2C	5	5	3	80	30 min	20	100	-
BS304	BIO-CHEMISTRY / BIO- TECHNOLOGY	DSC-1C	4 T + 2P = 6	4+1=5	3	80	30 min	20	100	50
BS305	MICROBIOLOGY	DSC-2C	4 T + 2P = 6	4+1=5	3	80	30 min	20	100	50
BS306	CHEMISTRY	DSC-3C	4 T + 2P = 6	4+1=5	3	80	30 min	20	100	50
	TOTAL NO. OF CREDITS			27		440		110	700	

PRINCIPAL
HINDI MAHAVIDYALAYA

HINDI MAHAVIDYALAYA

(AUTONOMOUS)
Affiliated to Osmania University
Nallakunta, Hyderabad-44

2017-18 CBCS STRUCTURE

SCHEME OF INSTRUCTIONS & EVALUATION

B.SC. BT MB CH /BC MB CH

SECOND YEAR SEMESTER-IV					Semester End exam		Continuous Internal Evaluation		Total	Practical 3 HRS
Code	Course Title	Course Type	HPW	Credits	Duration in HRS	Marks	Exam Duration	Marks		
BS401	A/B	SEC-1	2	2	2	40	30 min	10	50	-
BS402	English	CC-1C	5	5	3	80	30 min	20	100	-
BS403	Second Language (H/ S/ T)	CC-2C	5	5	3	80	30 min	20	100	-
BS404	BIO-CHEMISTRY / BIO- TECHNOLOGY	DSC-1C	4 T + 2P = 6	4+1=5	3	80	30 min	20	100	50
BS405	MICROBIOLOGY	DSC-2C	4 T + 2P = 6	4+1=5	3	80	30 min	20	100	50
BS406	CHEMISTRY	DSC-3C	4 T + 2P = 6	4+1=5	3	80	30 min	20	100	50
	TOTAL NO. OF CREDITS			27		440		110	700	
	TOTAL NO. OF CREDITS			54						

PRINCIPAL
HINDI MAHAVIDYALAYA
Nallakunta, Hyderabad-44

HINDI MAHAVIDYALAYA

(AUTONOMOUS)

Affiliated to Osmania University

Nallakunta, Hyderabad-44

2017-18 CBCS STRUCTURE

SEC: Skill Enhancement Course for Semester III & IV

Code	Course Title	Course	Course Type	Department	HPW	Credits	Semester End exam		Continuous Internal Evaluation		Total Marks
							Duration in HRS	Marks	Exam Duration	Marks	
BA301	Legislative Practices and Procedures	B.A	SEC-1	Political Science	2	2	2	40	30 Min	10	50
BA401	Laws, Duties and Rights of Citizens	B.A	SEC-2	Political Science	2	2	2	40	30 Min	10	50
BA301	Historical and Cultural Tourism in India	B.A	SEC-1	History	2	2	2	40	30 Min	10	50
BA401	Archives and Museums	B.A	SEC-2	History	2	2	2	40	30 Min	10	50
BC301	Principles of Insurance	B.Com.	SEC-1	Commerce	2	2	2	40	30 Min	10	50
BC401	Practice of life insurance	B.Com.	SEC-2	Commerce	2	2	2	40	30 Min	10	50
BS301	Computational Biochemistry	B.Sc. (LS)	SEC-1	Biochemistry	2	2	2	40	30 Min	10	50
BS401	Medical Lab Technology	B.Sc. (LS)	SEC-2	Biochemistry	2	2	2	40	30 Min	10	50
BS301	Haematology	B.Sc. (LS)	SEC-1	Microbiology	2	2	2	40	30 Min	10	50
BS401	Food Adulteration	B.Sc. (LS)	SEC-2	Microbiology	2	2	2	40	30 Min	10	50
BS301	Enzyme Technology	B.Sc. (LS)	SEC-1	Biotechnology	2	2	2	40	30 Min	10	50
BS401	Immunotechnology	B.Sc. (LS)	SEC-2	Biotechnology	2	2	2	40	30 Min	10	50
BS301	A: SciLab – 1	B.Sc. (PS)	SEC–1	Computer Science	2	2	2	40	30 Min	10	50
	B: Boolean Algebra	B.Sc. (PS)	SEC–1	Computer Science	2	2	2	40	30 Min	10	50
BS401	C: SciLab – 2	B.Sc. (PS)	SEC–2	Computer Science	2	2	2	40	30 Min	10	50
	D: Digital Logic	B.Sc. (PS)	SEC–2	Computer Science	2	2	2	40	30 Min	10	50
BS301	Logic and Sets	B.Sc. (PS)	SEC-1A	Mathematics	2	2	2	40	30 Min	10	50
	Theory of Equations	B.Sc. (PS)	SEC-1B	Mathematics	2	2	2	40	30 Min	10	50
BS401	Transportation and Game Theory	B.Sc. (PS)	SEC-2C	Mathematics	2	2	2	40	30 Min	10	50
	Number Theory	B.Sc. (PS)	SEC-2D	Mathematics	2	2	2	40	30 Min	10	50
BS301	Concepts of Sequences of Random Variables	B.Sc. (PS)	SEC–1	Statistics	2	2	2	40	30 Min	10	50
BS401	Statistics for Psychology and Education	B.Sc. (PS)	SEC–2	Statistics	2	2	2	40	30 Min	10	50

HINDI MAHAVIDYALAYA

(Autonomous & NAAC –Re-Accredited)
(Affiliated to Osmania University)
2-1-569, O.U Road, Nallakunta Hyderabad – 44

B.Sc. BIOTECHNOLOGY II YEAR SEMESTER III

(DSC-1C) BS304
No. of Credits: 4T+1P HPW: 4T+2P

BIOCHEMISTRY AND BIOSTATISTICS

Objective: The course is aimed at exposing the students to some basic knowledge in Biochemistry and Biostatistics.

Unit 1: Biomolecules **15h**

1.1 Carbohydrates- importance, classification; structure and functions of monosaccharides (glucose & fructose), disaccharides (sucrose, lactose & maltose) and polysachharides – homoploysachharides (starch & inulin), heteropolysachharides (hyaluronic acid, chondroitin)

1.2 Amino acids - importance, classification, structure, physical and chemical properties of amino acids; peptide bond formation

1.3 Proteins- importance, structure of proteins- primary, secondary, tertiary and quaternary, prions

1.4 Lipids - importance, classification- simple lipids (triacylglycerides & waxes), complex lipids (phospholipids & glycolipids), derived lipids (steroids, terpenes& carotenoids)

1.5 Fatty acids - importance, classification- saturated (palmitic acid, arachidic acid) and unsaturated fatty acids (oleic acid & linoleic acid)

1.6 Enzymes - importance, classification and nomenclature; Michaelis-Menton Equation, factors influencing the enzyme reactions; enzyme inhibition (competitive, uncompetitive & mixed), co-enzymes

Unit 2: Bioenergetics and Bioanalytical techniques **15h**

2.1 Glycolysis, tricarboxylic acid (TCA) cycle, electron transport in mitochondria, oxidative phosphorylation

2.2 Gluconeogenesis and its significance

2.3 Transamination and oxidative deamination reactions of amino acids and β-oxidation of fatty acids

2.4 Colorimetry: Beer and Lambert's laws and UV- vis spectrophotometry

2.5 Principle and applications of chromatography (paper, thin layer & HPLC), Electrophoresis (Agarose& SDS-PAGE)

2.6 Principle and applications of centrifugation (preparative & analytical)

PRINCIPAL
HINDI MAHAVIDYALAYA
(Autonomous)

Unit 3: Biostatistics-Basic concepts 15h

3.1 Introduction to Biostatistics; methods of sampling-random & non-random, merits and demerits of sampling.

3.2 Diagrammatic (line diagram, bar diagram & pie diagram) and graphic representation of data (histogram, frequency polygon & frequency curve; cumulative frequency curve)

3.3 Measures of central tendency- arithmetic mean (individual, discrete & continuous) merits and demerits

3.4 Measures of central tendency - median (individual, discrete & continuous); merits and demerits

3.5 Measures of central tendency - mode (individual, discrete & continuous); merits and demerits

3.6 Measures of dispersion - range, mean deviation, variance and standard deviation

Unit 4: Biostatistics-Applications 15h

4.1 Probability, probability distribution-Binomial, Poisson and Normal distributions, applications of probability.

4.2 Test of significance - Null hypothesis and Alternate hypothesis

4.3 Comparisons of means of two samples by t-test (paired & un-paired)

4.4 Chi-square test - degrees of freedom and their applications to biology (goodness of fit)

4.5 Correlation and regression analysis and their applications to biology

4.6 Analysis of variance (One-way ANOVA) and their applications to biology

REFERENCE BOOKS

1. Lehninger Principles of Biochemistry By: David L. Nelson and Cox
2. Biochemistry By: Rex Montgomery
3. Harper's Biochemistry By: Robert K. Myrray
4. Enzymes By: Trevor Palmer
5. Enzyme structure and mechanism By: AlanFersht
6. Principles of Biochemistry By: Donald J. Voet, Judith G.Voet, Charlotte W.Pratt
7. Analytical Biochemistry By: Cooper
8. Principles and techniques of Biochemistry and Molecular Biology Edited By: Keith Wilson and John Walker
9. Experimental Biochemistry: A Student Companion by: SashidharBeedu et al.
10. Fundamentals of Biostatistics: Khan and Khanum. Ukaaz publications, India
11. Biometry by: Sokal and Rohlf W.H. Freeman
12. Biostatistics by: N.T.J. Bailey
13. Biostatistics; Jayasree publishers by: VishweswaraRao K
14. Biostatistics; Himalaya publishing house by: Arora, P.N & Mashan P.K.
15. Biostatistics by :S.Prasad
16. Fundamentals of Biochemistry: by Dr J.L Jain, Dr Sanjay Jain, Nitin Jain

PRINCIPAL
HINDI MAHAVIDYALAYA
Arts, Commerce & Science
(Autonomous)

HINDI MAHAVIDYALAYA

(Autonomous & NAAC –Re-Accredited)
(Affiliated to Osmania University)
2-1-569, O.U Road, Nallakunta Hyderabad – 44

B.Sc. BIOTECHNOLOGY II YEAR SEMESTER III

(DSC-1C)
No. of Credits: 1

BS304P
HPW: 2P

BIOCHEMISTRY AND BIOSTATISTICS PRACTICALS

1. Qualitative tests of sugars, amino acids and lipids
2. Estimation of total sugars by anthrone method
3. Reducing sugars by DNS method
4. Separation of amino acids by paper chromatography
5. Estimation of proteins by biuret method
6. Amylase activity assay
7. Graphical representation of data (histogram, frequency polygon & pie-diagram)
8. Measures of central tendency- mean, median & mode
9. Measures of dispersion- mean deviation & standard deviation
10. Chi-square test for goodness of fit
11. Correlation and regression analysis
12. One-way ANOVA analysis

REFERENCE BOOKS

1. Practical Biochemistry By: Plummer

2. Experimental biochemistry: A Student Companion by: Beedu Shashidar Rao

PRINCIPAL
HINDI MAHAVIDYALAYA
Arts, Commerce & Science
(Autonomous)

HINDI MAHAVIDYALAYA

(Autonomous & NAAC –Re-Accredited)
(Affiliated to Osmania University)
2-1-569, O.U Road, Nallakunta Hyderabad – 44

B.Sc. BIOTECHNOLOGY II YEAR SEMESTER III

SKILL ENHANCEMENT COURSE - 1 (SEC- 1)

BS301: ENZYME TECHNOLOGY

Credits – 2

HPW : 2h

Objective: The course is designed to enhance the knowledge of students about the applications of enzymes in industrial and clinical field.

Unit 1: Enzymes for Industrial use

1.1.Sources of production, isolation and purification of enzymes for industrial use

1.2.Applications of isolated enzymes in food and beverage industry

1.3.Applications of isolated enzymes in detergents and leather industry

1.4.Applications of isolated enzymes in production of organic chemicals

1.5.Immobilization of Enzymes- Methods of Enzyme immobilization and advantages

1.6.Applications of immobilized enzymes

Unit 2: Enzymes for Clinical diagnosis

2.1.Determination of enzyme activity for clinical diagnosis of Liver disease

2.2.Determination of enzyme activity for clinical diagnosis of Heart disease

2.3.Determination of enzyme activity for clinical diagnosis of other diseases (Pancreatitis and skeletal muscle disorder)

2.4.Detection and significance of enzyme deficiencies (Phenylketonuria & Galactosaemia)

2.5.Enzymes in determination of metabolites of clinical importance (Blood glucose, Uric acid & Cholesterol)

2.6.Therapeutic use of enzymes- Treatment of Genetic deficiency diseases, Cancer

PRINCIPAL
HINDI MAHAVIDYALAYA
Arts, Commerce & Science
(Autonomous)
NALLAKUNTA, HYD.-44

REFERNCE BOOKS

1. Biochemistry, Lubert Stryer, 6th Edition, WH Freeman, 2006.

2. Harper's illustrated Biochemistry by Robert K. Murray, David A Bender, Kathleen M. Botham,Peter J. Kennelly,Victor W. Rodwell, P.Anthony Weil.28th Edition, McGrawHill, 2009.

3. Biochemistry, Donald Voet and Judith Voet, 2nd Edition, Publisher: John Wiley and Sons, 1995.

4. Biochemistry by Mary K.Campbell & Shawn O.Farrell, 5th Edition, Cenage Learning,2005.

5. Fundamentals of Enzymology Nicholas Price and Lewis Stevens Oxford University Press, 1999

6. Fundamentals of Enzyme Kinetics Athel Cornish-Bowden Portland Press 2004

7. Practical Enzymology Hans Bisswanger Wiley–VCH 2004

8. The Organic Chemistry of Enzyme-catalyzed Reactions Richard B. Silverman Academic Press, 2002.

DR. SUREKHA RANI
Assistant Professor
Chairperson BOS Biotechnology
Department of Genetics & Biotechnology
Osmania University, Hyderabad-07

PRINCIPAL
HINDI MAHAVIDYALAYA
Arts, Commerce & Science
(Autonomous)
HYDERABAD-500 001

HINDI MAHAVIDYALAYA

(Autonomous & NAAC –Re-Accredited)
(Affiliated to Osmania University)
2-1-569, O.U Road, Nallakunta Hyderabad – 44

B.Sc. BIOTECHNOLOGY II YEAR SEMESTER IV

(DSC-1D)

No. of Credits: 4T+1P

BS404

HPW: 4T+2P

MICROBIOLOGY AND IMMUNOLOGY

Objective: The course is aimed at exposing the students to some basic knowledge in Microbiology and Immunology.

Unit 1: 15h

Fundamentals of Microbiology

1.1 Historical development of microbiology and contributors of microbiology

1.2 Microscopy: Compound microscope, Bright field microscopy, Dark field microscopy, Fluorescent microscopy, Scanning and Transmission electron microscopy

1.3 Outlines of classification of microorganisms

1.4 Structure and general characteristics of bacteria and virus

1.5 Disease causing pathogens and symptoms (Eg: Mycobacterium, Hepatitis)

1.6 Structure and general characteristics of micro-algae and fungi

Unit 2: 15h

Culture and identification of microorganisms

2.1 Methods of sterilization- physical and chemical methods, Types of Media

2.2 Bacteriological media: LB media, EMB agar; Identification of bacteria by staining methods

2.3 Bacterial growth curve and factors affecting bacterial growth

2.4 Identification of viruses by plaque assay method

2.5 Algal media: Bristols media, Pringsteins media; Identification of algae by Benecks broth

2.6 Fungal media- PDA, Czapek-dox agar, Sabourauds agar; Identification of fungi by lactophenol test

Unit 3: 15h

Basics of immunology

3.1 Types of immunity- innate and adaptive immunity

3.2 Cells of the immune system: T-cells (helper and cytotoxic cells), B-cells, Natural killer cells, Macrophages, Basophils and Dendritic cells

3.3 Primary organs of immune system- Thymus and Bone marrow

3.4 Secondary organs of immune system- Spleen and Lymph nodes

3.5 Antigens - immunogenicity vs antigenecity, factors affecting antigenecity, epitopes, paratopes

3.6 Haptens& types of adjuvants

PRINCIPAL
HINDI MAHAVIDYALAYA

Unit 4: 15h

Humoral and Cell mediated immunity

4.1 Structure of immunoglobulin; types and functions of immunoglobulins (IgG, IgA, IgM, IgE & IgD)

4.2 Monoclonal antibody (MAbs) production and its applications

4.3 Major Histocompatibility Complex (MHC) & Human Leukocyte Antigen (HLA)- role in organ transplantation

4.4 Cell mediated immunity- T-cell receptor (TCR), Antigen Presenting Cells (APCs), ternary complex (TCR, peptide & MHC); cytokines

4.5 Hypersensitivity- types (I, II, III & IV)

4.6 Autoimmunity - Mechanisms of autoimmunity; Autoimmune diseases- Systemic lupus erythematosus, Rheumatoid arthritis

REFERENCE BOOKS

1. Biology of Microorganisms by: Brock, T.D. and Madigan, M.T.

2. Microbiology by: Prescott, L.M., Harley, J.P. Klein, D.A.

3. Microbiology by: Pelczar, M.J, Chan, E.C.S., Ereig, N.R.

4. Microbiological applications by: Benson

5. Essential Immunology. Publ: Blackwell by: Roitt I.

6. Immunology. Publ: Blackwell by: Reever G. & Todd I.

7. Cellular and Molecular Immunology. Saunders Publication, Philadelphia by: Abbas A.K., Lichtman A.H., Pillai S.

8. Kuby's Immunology. W.H. Freeman and Company by: Golds R.A., Kindt T.J., Osborne B.A

PRINCIPAL
HINDI MAHAVIDYALAYA

HINDI MAHAVIDYALAYA

(Autonomous & NAAC –Re-Accredited)
(Affiliated to Osmania University)
2-1-569, O.U Road, Nallakunta Hyderabad – 44

BSc BIOTECHNOLOGY II YEAR SEMESTER IV

(DSC-1D) BS404P

No. of Credits: 1P HPW: 2P

MICROBIOLOGY AND IMMUNOLOGY PRACTICALS

1. Sterilization methods
2. Preparation of microbiological media (bacterial, algal & fungal)
3. Isolation of bacteria by streak, spread and pour plate methods
4. Isolation of bacteria from soil
5. Simple staining and differential staining (Gram's staining)
6. Bacterial growth curve
7. Microhaemagglutination (eg. ABO & Rh blood grouping)
8. Viability tests of cells (trypan blue test)
9. Differential leukocyte count
10. Single radial immunodiffusion
11. ELISA

REFERENCE BOOKS

1. Biology of Microorganisms by: Brock, T.D. and Madigan, M.T.
2. Microbiology by: Prescott, L.M., Harley, J.P. Klein, D.A.
3. Microbiology by: Pelczar, M.J, Chan, E.C.S., Ereig, N.R.
4. Microbiological applications by: Benson
5. Essential Immunology. Publ: Blackwell by: Roitt I.
6. Immunology. Publ: Blackwell by: Reever G. & Todd I.
7. Cellular and Molecular Immunology. Saunders Publication, Philadelphia by: Abbas A.K., Lichtman A.H., Pillai S.
8. Kuby's Immunology. W.H. Freeman and Company by: Golds R.A., Kindt T.J., Osborne B.A

PRINCIPAL
HINDI MAHAVIDYALAYA

HINDI MAHAVIDYALAYA

(Autonomous & NAAC –Re-Accredited)
(Affiliated to Osmania University)
2-1-569, O.U Road, Nallakunta Hyderabad – 44

B.Sc. BIOTECHNOLOGY II YEAR SEMESTER IV

SKILL ENHANCEMENT COURSE -2 (SEC- 2)

BS401: IMMUNOTECHNOLOGY

Credits – 2 **HPW: 2h**

Objective: The course is designed to enhance the knowledge of students about the different techniques applied in Immunology.

Unit 1: Antibody assays- Principle, Methodology & Applications

1.1 Precipitation & Agglutination reactions
1.2 Immuno diffusion & Radial diffusion
1.3 Immunoelectrophoresis
1.4 Western blotting & ELISA
1.5 RIA & Immunofluorescent assay
1.6 Immunohistohemistry

Unit 2: Cellular Assays- Principle, Methodology & Applications

2.1 Total and differential count in human peripheral blood
2.2 Separation of mononuclear cells from human peripheral blood
2.3 Lymphocyte transformation assay
2.4 Micro cytotoxicity assay for HLA typing
2.5 Enumeration of T & B-cells from human peripheral blood
2.6 Cell mediated cytotoxicity

REFERENCE BOOKS

1. Essential Immunology - By I. Roitt, Publ: Blackwell

2. Immunology - By G. Reever & I. Todd, Publ: Blackwell

3. Abbas AK, Lichtman AH, Pillai S. Cellular and Molecular Immunology. Saunders Publication, Philadelphia

4. Golds by RA, Kindt TJ, Osborne BA. Kuby's Immunology. W.H. Freeman and Company, New York

PRINCIPAL
HINDI MAHAVIDYALA

HINDI MAHAVIDYALAYA

(Autonomous & NAAC –Re-Accredited)
(Affiliated to Osmania University)
2-1-569, O.U Road, Nallakunta Hyderabad – 44

B.Sc. II year Semester – III / IV

BIOTECHNOLOGY

DSC - INTERNAL MODEL PAPER

TIME: 1/2 HOURS **MAX MARKS: 15**

SECTION-A

MULTIPLE CHOICE QUESTIONS **5 x ½ = 5 marks**

TEN (10) MCQ ½ MARK EACH

SECTION-B

FILL IN THE BLANKS: **5 x ½ = 5 marks**

TEN (10) FIB ½ MARK EACH

SECTION-C

SHORT NOTE QUESTIONS: **5 x 1 = 5 marks**

FIVE (5) 1(ONE) MARK EACH

.....

PRINCIPAL
HINDI MAHAVIDYALAYA

HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
B.Sc II[nd] Year Biotechology
Semester – III & IV
Theory Question Paper Pattern

Max. Marks: 80

Time: 3 hrs

SECTION A

I Attempt any Four of the following (Short Answer Questions) 4 X 5 = 20 Marks

1. A Question from Unit I
2. A Question from Unit I
3. A Question from Unit II
4. A Question from Unit II
5. A Question from Unit III
6. A Question from Unit III
7. A Question from Unit IV
8. A Question from Unit IV

SECTION B

II Attempt all the Questions (Long Answer Questions) 4 X 15= 60 Marks

9 (a) Unit I

(OR)

(b) Unit I

10 (a) Unit II

(OR)

(b) Unit II

11 (a) Unit III

(OR)

(b) Unit III

12 (a) Unit IV

(OR)

(b) Unit IV

Chairperson University Nominee Members Principal

PRINCIPAL
HINDI MAHAVIDYALAYA
Arts, Commerce & Science
(Autonomous)
NALLAKUNTA, HYD.

HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
B.Sc Biotechnology II[nd] Year
Semester - III
Paper - III
Practical Model Question Paper

Time – 3 Hrs | Total Marks: 50 Marks.

I Perform the qualitative tests for given sugar sample. 24 Marks

II Estimate the protein sample by biuret method 10 Marks

III Spotting

A B C 06 Marks

IV Record and Viva voce 10 Marks

PK Charitha

H Surekha Rani

Dr. H. SURERKHA RANI

PRINCIPAL
HINDI MAHAVIDYALAYA

HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
B.Sc Biotechnology II[nd] Year
Semester - IV
Paper - IV
Practical Model Question Paper

Time - 3 Hrs | Total Marks: 50 Marks

I. Isolate the given bacterial sample in pure culture by pour plate method — 24 Marks

II Write down the principle and procedure for Gram staining. — 10 Marks

III Spotting — 06 Marks

A) B) c)

IV Record & Viva voce — 10 Marks

PRINCIPAL
HINDI MAHAVIDYALAYA

HINDI MAHAVIDYALAYA

(Autonomous & NAAC –Re-Accredited)
(Affiliated to Osmania University)
2-1-569, O.U Road, Nallakunta Hyderabad – 44

B.Sc. II year Semester – III / IV

SEC 1 & 2 - INTERNAL MODEL PAPER

TIME: 1/2 HOURS

MAX MARKS: 10

SECTION-A

5 x ½ =5 marks

FILL IN THE BLANKS:

TEN (10) FIB ½ MARK EACH

SECTION-B

5 x ½ =5 marks

MULTIPLE CHOICE QUESTIONS

TEN (10) MCQ ½ MARK EACH

*****

Dr. H. SUREKHA RANI
Assistant Professor
Chairperson BOS Biotechnology
Department of Genetics & Biotechnology
Osmania University, Hyderabad-07

PRINCIPAL
HINDI MAHAVIDYALAYA
Arts, Commerce & Science
(Autonomous)
NALLAKUNTA, HYDERABAD

HINDI MAHAVIDYALAYA

(Autonomous & NAAC –Re-Accredited)
(Affiliated to Osmania University)
2-1-569, O.U Road, Nallakunta Hyderabad – 44

B.Sc. II year Semester – III / IV

SEC-1/2 Credits – 2

SEC - THEORY MODEL PAPER

TIME: 2 HOURS MAX MARKS: 40

SECTION-A

Answer the following Questions in short: 5 x 2 = 10 marks

1.

2.

SECTION-B

Answer the following essay type questions: 2 x 15 = 30 marks

1 (a)

OR

(b)

2 (a)

OR

(b)

*****

Dr. H. SUREKHA RANI
Assistant Professor
Chairperson BOS Biotechnology
Department of Genetics & Biotechnology
Osmania University, Hyderabad-07

PRINCIPAL
HINDI MAHAVIDYALAYA
Affl. Osmania University
(Autonomous)
NALLAKUNTA, HYDERABAD

Hindi Mahavidyalaya

(Autonomous)

Biotechnology Department

Panel of Examiners

S.No.	Name and Designation	Mobile No.
1	Ms. Sandhya Rani Andhra Mahila Sabha Arts & Science College (Autonomous) Hyderabad	9390405439
2	Smt. G. Y. Kavitha A. V Degree College Domalguda, Hyderabad	9395321541
3	Ms. Jayasree Govt Women's Degree College Begumpet, Hyderabad	9959652621
4	Smt. C. H Pradyutha Reddy Women's College Mehdipatnam, Hyderabad	9705335025
5	Dr. Chaithri Osmania University, Hyderabad	9550008070
6	Dr. Surekha Rani Department of Biotechnology Osmania University, Hyderabad	9866620067

PRINCIPAL
HINDI MAHAVIDYALAYA