પરિપત્ર:

ભક્તકવિ નરસિંહ મહેતા યુનિવર્સિટીની સાયન્સ વિદ્યાશાખાનાં અભ્યાસક્રમ ચલાવતી તમામ સંલગ્ન કોલેજોનાં આચાર્યશ્રીઓને સવિનય જણાવવાનું કે સાયન્સ વિદ્યાશાખા હેઠળનો NEP-૨૦૨૦ અંતર્ગતનો સ્કીલ એન્હાંસમેન્ટ કોર્સનો સેમેસ્ટર-૨ નો અભ્યાસક્રમ આ સાથે સામેલ છે. આ બાસ્કેટમાં સાયન્સનાં વિષયો આપવામાં આવેલ છે.

માનનીય કુલપતિશ્રીની મંજુરી અનુસાર સદર અભ્યાસક્રમ શૈક્ષણિક વર્ષ જુન,૨૦૨૩થી અમલવારી કરવાની રહે છે. સાયન્સ વિદ્યાશાખાનાં અભ્યાસક્રમ ચલાવતી તમામ સંલગ્ન કોલેજો ધ્વારા તેની અમલવારી કરવા જણાવવામાં આવે છે.

Bhakta Kavi Narsinh Mehta University Junagadh

31/01/2024

ખાસ ફરજ પરના અધિકારી
(એકેડેમિક)

ક્રમાંક/બીકેએનએમયુ/એકેડેમિક/૨૮૫/૨૦૨૪
ભક્તકવિ નરસિંહ મહેતા યુનિવર્સિટી,
સરકારી પોલીટેકનિક કેમ્પસ,
ભક્તકવિ નરસિંહ મહેતા યુનિવર્સિટી રોડ,
ખડીયા, જૂનાગઢ-૩૬૨૨૬૩
તા.૩૧/૦૧/૨૦૨૪

પ્રતિ,

- ભક્તકવિ નરસિંહ મહેતા યુનિવર્સિટી સંલગ્ન સાયન્સ વિદ્યાશાખાનાં અભ્યાસક્રમો ચલાવતી તમામ કોલેજોના આચાર્યશ્રીઓ તરફ....

નકલ સાદર રવાના:-

- માન.કુલપતિશ્રી/કુલસચિવશ્રીનાં અંગત સચિવશ્રી.
- પરીક્ષા નિયામકશ્રી, ભક્તકવિ નરસિંહ મહેતા યુનિવર્સિટી, જુનાગઢ

નકલ રવાના જાણ તથા યોગ્ય કાર્યવાહી અર્થે:

- સીસ્ટમ મેનેજરશ્રી, આઇ.ટી.સેલ વિભાગ (વેબસાઇટ ઉપર પ્રસિદ્ધ થવા અર્થે.)

Bhakta Kavi Narsinh Mehta University
Junagadh

FACULTY OF SCIENCE
SYLLABUS FOR
SKILL ENHANCEMENT COURSE BASKET
FOR SCIENCE (HONOURS) FACULTY
(SEMESTER- II)
EFFECTIVE FROM JUNE, 2023

INDEX		
Sr. No	**Topic**	**Page No.**
1.	English for Competitive Exams-2	**01**
2.	Laboratory Analytical Techniques	**03**
3.	Separation Techniques - CHROMATOGRAPHY	**06**
4.	Natural Resource Management	**08**
5.	Aquarium Management	**11**
6.	Microbial Quality Control in Food & Pharmaceutical Industries	**14**
7.	Laboratory skills in physics	**18**
8.	Introduction to GeoGebra (FOSS)	**20**
9.	Basic concepts of Networking and Internet	**22**
10.	Basic of Computer Application	**25**

BHAKTA KAVI NARSINH MEHTA UNIVERSITY
Skill Enhancement Course (SEC)
Syllabus of English for Competitive Exams
as per NEP
Effective from June 2023
Subject: English for Competitive Exams-2
SEMESTER-2

COURSE NO : 1: ENGLISH FOR COMPETITIVE EXAMS-2

Course Level	4.5		**Course Credit**	02
Programme	UG (Arts/Com./Science)		**Teaching Hours**	30 Hrs
Semester	2		**Course Code**	
Course Type	Skill Enhancement Course-1 (SEC-1)		**Internal Marks**	25
			External Marks	25
Course Title	English for Competitive Exams-2		**Total**	50
			Exam Duration	1:00 Hrs.

Objectives of the Syllabus:

Competitive Exams aim at a basic but comprehensive understanding of English language. The present syllabus focuses on four aspects of English language.

1. Grammar Proficiency
2. Vocabulary Enhancement
3. Writing Skills

Learning Outcomes:

1. The students will develop a basic understanding of grammar, enabling them to spot and correct mistakes in sentences.
2. The syllabus will enhance the students' vocabulary, enabling them to understand words and their roots, prefixes, and suffixes.
3. Writing skills will be honed, enabling the students to effectively communicate in formal situations, which will be beneficial before and after acquiring a job.

Detailed Syllabus

UNIT	ITEMS	Teaching Hours
I	• Adjectives • Adverbs • Prepositions • Conjunctions	15
II	• Active-Passive Voice • Degree (Positive, Comparative & Superlative)	15

INTERNAL EVALUATION SCHEME		
NO	**Particulars**	**Marks**
1	**Mid Semester Exam**	**13**
2	Class Test	03
3	Open book exam/test	03
4	Open note exam/test	03
5	Self-test/ Online test	03
6	Essay/Article writing	03
7	Quizzes/Objective test	03
8	Class assignment	03
9	Home assignment	03
10	Reports Writing	03
11	Research/Dissertation	03
12	Case Studies	03
13	Viva/Oral exam	03
14	Group Discussion	03
15	Role Play	03
16	Paper presentation/Seminar	03
17	Language Lab work	03
18	Interview	03
19	Craft work	03
20	Co-curricular work	03
21	Field Assignment	03
22	Poster Presentation	03
23	Attendance	03
	Total	**25**

Note: Sr.No.1 is mandatory. Select any Four from Sr.No.2 to 23. Each Contains three marks. Student should secure 09 Marks for passing in internal Exam.

Paper Style:

EXTERNAL ASSESSMENT BY UNIVERSITY		
Ques. No.	Particulars	Marks
Q.1	**(A) Fill in the blanks (5/6)** (From Unit-1) **(B) Identify the error from the sentence (5/6)** (From Unit-1)	**(05)** **(05)**
Q.2	**(A) Do as directed (5/6)** (From Unit-2) **(B) Transformation of sentences. (5/6)** (From Unit-2)	**(05)** **(05)**
Q.3	**MCQs (5/6)** (From Unit-1 & 2)	**(05)**

Suggested Reading

1. Objective General English by S P Bakshi
2. High School Wren and Martin English Grammar and Composition
3. English Grammar in Use by Raymond Murphy
4. https://www.grammar-monster.com/
5. https://www.englishpage.com/

COURSE NO-2: LABORATORY ANALYTICAL TECHNIQUES

Course Level	U.G		**Teaching Hours**	60
Programme	B.Sc. Chemistry		**Internal Marks**	25
Semester	II		**External Marks (Practical)**	25
Course Type	Skill Enhancement Course		**Practical Marks**	
Course title	Laboratory Analytical Techniques		**Total**	50
Credit	02		**Exam Duration**	
Course Code	SECCHEM121		**Practical Exam Duration (External)**	2:00 hrs.

Course Objectives and Learning Outcome

The course will provide its learners a practical exposure to various analytical techniques like Redox titrations, pH measurement of live samples using various methods, water analysis, and analysis of some real minerals and oils.

On completion of the course the student should be able to:

- Determine the normality, molarity and gms/liter of each component in a mixture of components like of $H_2C_2O_4.2H_2O$ and H_2SO_4 / $H_2C_2O_4.2H_2O$ and $K_2C_2O_4.H_2O$/$KMnO_4$ and $FeSO_4.7H_2O$ /$FeSO_4$ $(NH_4)_2SO_4.6H_2O$ and $K_2Cr_2O_7$ using redox titrimetric methods.
- Determine pH of various real food or other samples using different handy methods.
- Carry out analysis of drinking water of samples across the region
- Learn method to carry out analysis of minerals/ores, oil.

2 CREDITS (4 Hours/Week) 50 MARKS

1-Redox titration

- To determine the normality, molarity and g/lit of each component in a mixture of $H_2C_2O_4.2H_2O$ and H_2SO_4 using 0.1N NaOH and 0.1 N $KMnO_4$ solution.
- To determine the normality, molarity and g/lit of each component in a mixture of $H_2C_2O_4.2H_2O$ and $K_2C_2O_4.H_2O$ using 0.1N NaOH and 0.1 N $KMnO_4$ solution
- To determine the normality, molarity and g/lit of $KMnO_4$ and $FeSO_4.7H_2O$ solution using 0.1 N $H_2C_2O_4.2H_2O$ solution.
- To determine the normality, molarity and g/lit of $FeSO_4$ $(NH_4)_2SO_4.6H_2O$ and $K_2Cr_2O_7$ solutions using 0.1 N $KMnO_4$ solution.

2-pH

- Concept of pH,
- pH scale,
- Determination of pH of various samples like
  - Farming soil, colleges soil…
  - water
  - Fruit
  - Milk
  - Cold drinks by pH strip, indicator [Without instrument]

3. Water analysis:

- Concept of Hardness-Total Hardness, Temporary and permanent hardness.
- Removal of Temporary hardness by boiling and filtration.
- Estimation of hardness by complexometric titration with EDTA.
- Measurement of TDS.
- Handy measurement of pH of water using various methods.

4. Analysis of real samples using titrimetric methods.

- Dolomite-Estimation of Ca^{+2}/Mg^{+2}
- Oil-Saponification value

Reference books

1. UGC Inorganic Chemistry - H. C. Khera (Pragati Prakashan)
2. Inorganic Chemistry - J. N. Gurtu & H. C. Khera
3. Principles of Inorganic chemistry- B. R. Puri, L. R. Sharma and K. C. Kalia; Vallabh publications, Delhi.
4. Concise Inorganic Chemistry - J. D. Lee
5. Basic Inorganic Chemistry – Gurdeep & Chatwal.
6. Advanced Inorganic Chemistry - Raymond Chang
7. Advanced Inorganic Chemistry- Cotton and Wilkinson
8. Undergraduate Organic Chemistry, Vol-1, Jagdamba Singh, L. D.S. Yadav, Pragati Prakashan, 8th edition-2013
9. Organic Reaction Mechanism, including Reaction Intermediates, V. K. Ahluwalia
10. Organic Chemistry, Vol-1, by Sultanat, Ane's Student Edition, Ane Book Pvt Ltd.
11. Organic Chemistry by Morrison and Boyd.
12. Organic Chemistry by Clayden.
13. Stereochemistry, conformation and mechanism by P.S. Kalsi New Age International publications ISBN:978-9393159947
14. Essentials of Physical Chemistry, B. S. Bahl, G. D. Tuli and Arun Bahl, S. Chand & Co.
15. Elements of Physical Chemistry, B. R. Puri, L. R. Sharma and Madan Pathania, Vishal Publishing

Co. Jalandhar.
16. Physical Chemistry, B. K. Sharma, Goel Publication House. Meerut.
17. Chemical Kinetics, G. R. Chatwal and Harish Mishra, Goel Publication House.
18. A text book of Physical Chemistry by Samuel Glasstone
19. Elements of Physical Chemistry by Samuel Glasstone and D lew
20. Analytical Chemistry Manual by Dr. H. S. Joshi (ISBN-978-93-90855-07-0).
21. How and why in Chemistry Practical by Dr. A. R. Parikh Himanshu Book co. ISBN978- 81-950054-0-6
22. March's Advanced Organic Chemistry Reactions, Mechanism and Structure by Michael B Smith and Jerry March.
23. Vogel's Qualitative inorganic analysis
24. A Text book of practical organic chemistry; including qualitative organic analysis.
25. Analytical Chemistry Manual by Dr. H. S. Joshi (ISBN-978-93-90855-07-0).
26. How and why in Chemistry Practical by Dr. A. R. Parikh Himanshu Book co. ISBN(78-81-950054-0-6

Practical examination mark distribution

a) Redox titration of a sample containing mixture
b) Analysis/Testing of real sample/Explanation/Demonstration of practical assignment work undertaken.
c) Continuous internal assessment may also include active participation in activities and demonstration of innovative handy analytical skills/Assignment.

COURSE NO -3: SEPARATION TECHNIQUES - CHROMATOGRAPHY

Course Level	U.G		**Teaching Hours**	30
Programme	B.Sc. Forensic Science		**Internal Marks**	25
Semester	II		**External Marks**	25
Course Type	Skill Enhancement Course		**Practical Marks (Int)**	00
Course title	Separation Techniques - CHROMATOGRAPHY		**Total**	50
Credit	02		**Exam Duration**	1:00 Hrs.
Course Code	SECFS201		**Practical Exam Duration**	-

→ Chemical separation techniques: Chromatography

→ Chromatographic techniques: General principles and function of chromatography

- Paper chromatography
- Column chromatography
- TLC
- Adsorption chromatography
- Partition chromatography
- Gas chromatography
- Gas- liquid chromatography
- Ion-exchange chromatography
- Exclusion (permeation) chromatography
- Affinity chromatography, HPLC

→ Uses of Chromatography.

REFERENCES BOOKS

1. B.B. Nanda and R.K. Tiwari, Forensic Science in India: A Vision for the Twenty First Century, Select Publishers, New Delhi (2001).
2. M.K. Bhasin and S. Nath, Role of Forensic Science in the New Millennium, University of Delhi, Delhi (2002).
3. W.G. Eckert and R.K. Wright in Introduction to Forensic Sciences, 2nd Edition, W.G. Eckert (ED.), CRC Press, Boca Raton (1997).
4. R. Saferstein, Criminalistics, 8th Edition, Prentice Hall, New Jersey (2004).

5. S.H. James and J.J. Nord by, Forensic Science: An Introduction to Scientific and Investigative Techniques, 2nd Edition, CRC Press, Boca Raton (2005).
6. David, Kauzlarich and Hugh D. Barlow. (2009) Introduction to criminology (9th ed.) Rowman & Littlefield Publishers.
7. Reid, Sue Titus. (2006). Crime and Criminology. Mc. Graw Hill.
8. Willard's; Instrumental Methods of Analysis.
9. Forensic Biology 2nd Edition Richard Li, New York USA.
10. Forensic Chemistry Handbook edited by Lawrence Kobilinsky.
11. Principles and Techniques of biochemistry and molecular biology.

COURSE NO: 4 NATURAL RESOURCE MANAGEMENT

Course Level	U.G		**Teaching Hours**	30
Programme	B.Sc. Botany		**Internal Marks**	25
Semester	II		**External Marks**	25
Course Type	Skill Enhancement Course		**Practical Marks (Ext)**	-
Course title	Natural Resource Management		**Total**	50
Credit	02		**Exam Duration**	1:00 Hr.
Course Code	SEC-201		**Practical Exam Duration**	2:00 Hrs.

Course outcomes:

After the completion of the course the students will be able:

- Understand the importance, benefits and services of biodiversity.
- To learn the strategies for the conservation of biodiversity.
- This knowledge is critical in evolving strategies for sustainable natural resource management and biodiversity conservation.

LEARNING OUTCOME: On completion of the course, the students will be able to

- Understand the concept of different natural resources and their utilization.
- Critically analyze the sustainable utilization land, water, forest and energy resources.
- Evaluate the management strategies of different natural resources.
- Reflect upon the different national and international efforts in resource management and their conservation.

UNIT: I Natural Resource Management - I

I.1 Natural Resource: Definition, types and management.

I.2 Sustainable utilization: Concept, approaches (economic,ecological and socio-cultural).

I.3 Land Utilization: (agricultural, pastoral, horticultural,silvicultural)

I.4 Soil degradation and management.

UNIT: II Natural Resource Management – II

II.1 Fresh water: rivers, lakes, groundwater, aquifers, watershed,

II.2 Marine Water; Estuarine; Wetlands.

II.3 Forests: Definition, Cover and its significance (with special reference to India).

II.4 Major and minor forest products; Depletion; Management.

UNIT: III Natural Resource Management – III

III.1 Energy: Renewable and non-renewable sources of energy.

III.2 Contemporary practices in resource management: EIA (Environmental Impact Assessment),

III.3 Resource Accounting, Waste management, National and international efforts in resource management and conservation.

Suggested Readings:

1. Rogers, P.P., Jalal, K.F. and Boyd, J.A. (2008). An Introduction to Sustainable Development. Prentice Hall of India Private Limited, New Delhi.
2. Singh, J. S., Singh, S.P. and Gupta, S. (2006). Ecology, Environment and Resource Conservation. Anamaya Publications, New Delhi.
3. Vasudevan, N. (2006). Essentials of Environmental Science. Narosa Publishing House, New Delhi.

Theory Examination Paper Style NEP 2020
SEMESTER – II

Time: 1 Hours **Total Marks: 25**

Instructions:

1. Illustrate your answer with neat and labelled diagrams.
2. Figure to the right side indicates full marks of questions.

Que. No.	Particulars	Marks
Que-1	From Unit : 1	
	(1)	**05**
	(2)	**05**
	OR	
	From Unit : 1	
	(1)	**05**
	(2)	**05**
Que-2	From Unit : 2	
	(1)	**05**
	(2)	**05**
	OR	
	From Unit : 2	
	(1)	**05**
	(2)	**05**
Que-3	From Unit : 3	
	(1)	**05**
	(2)	**05**

COURSE NO: 5 AQUARIUM MANAGEMENT

Course Level	U.G		**Teaching Hours**	60
Programme	B.Sc. Zoology		**Internal Marks**	25
Semester	II		**External Marks**	
Course Type	Skill Enhancement Course		**Practical Marks (External)**	25
Course title	Aquarium Management		**Total**	50
Credit	02		**Exam Duration**	1:00 Hrs.
Course Code	SEC-101		**Practical Exam Duration**	3:00 Hrs.

Course Objectives:

1. Student will be able to know the fundamentals of aquarium fish industry.
2. Student will understand the biological features of aquarium fishes.
3. Student will get to know the food and feeding habits of aquarium fishes.
4. Student will get aware about transportation of fishes

Course Learning Outcomes: After completing the course, the student should be able to:

1. Construct an aquarium.
2. Manage the fish diseases.
3. Prepare the proper dosage of different kinds of natural and synthetic fish feed.
4. Properly handle and maintain the aquarium fish.

COURSE CONTENT		
UNIT-1	Practical 1	Introduction to Aquarium Fish Keeping
	Practical 2	The potential scope of Aquarium Fish Industry
	Practical 3	Exotic and Endemic species of Aquarium Fishes
UNIT-2	Practical 4	Biology of Aquarium Fishes: Common Fresh water and Marine Aquarium fishes such as Guppy, Molly, Sword tail, Gold fish, Angel fish, Blue morph, Anemone fish and Butterfly fish
	Practical 5	Food and feeding of Aquarium fishes: Use of live fish feed organisms. Preparation and composition of formulated fish feeds
	Practical 6	Fish Transportation: Live fish transport - Fish handling, packing and forwarding techniques.
UNIT-3	Practical 7	General Aquarium maintenance

Reference books for Zoology Skill Enhancement Course SEC-201

1. Freshwater Aquariums: Basic Aquarium Setup and Maintenance……..…… D. Alderton
2. Ornamental Fish Culture and Aquarium Management……..… A D Dholakia
3. Home Aquarium and Ornamental Fish Culture……...… C. S. Tharadevi, K. V. Jayashree
4. Aquarium Management……A. Saxena

Theory Examination Paper Style NEP 2020
SEMESTER – II

Time: 1 Hours **Total Marks: 25**

Instructions:
1. Illustrate your answer with neat and labelled diagrams.
2. Figure to the right side indicates full marks of questions.

Que. No.	Particulars	Marks
Que-1	From Unit : 1 (1) (2)	 **05** **05**
	OR	
	From Unit : 1 (1) (2)	 **05** **05**
Que-2	From Unit : 2 (1) (2)	 **05** **05**
	OR	
	From Unit : 2 (1) (2)	 **05** **05**
Que-3	From Unit : 3 (1) (2)	 **05** **05**

PRACTICAL EXAMINATION SEMESTER – II

Time: **3** Hours Total Marks: **25**

Que. No.	Particulars	Marks
Que-1	Do as per instruction and show it to examiner (Practical-1/2).	**02**
Que-2	Do as per instruction and show it to examiner. (Practical-3)	**02**
Que-3	Do as per instruction and show it to examiner. (Practical-4)	**03**
Que-4	Do as per instruction and show it to examiner. (Practical-5)	**03**
Que-5	Do as per instruction and show it to examiner. (Practical-6)	**02**
Que-6	Do as per instruction and show it to examiner. (Practical-7)	**02**
Que-7	Certified Journal.	**01**
Que-8	Viva-voice.	**10**

COURSE No.-6: MICROBIAL QUALITY CONTROL IN FOOD & PHARMACEUTICAL INDUSTRIES

Course Level	U.G		**Teaching Hours**	15+30 =45
Programme	B.Sc. Microbiology		**Internal Marks**	25
Semester	II		**External Marks**	25
Course Type	Skill Enhancement Course		**Practical Marks (Int)**	-
Course title	Microbial Quality Control in Food & Pharmaceutical Industries		**Total**	50
Credit	02		**Exam Duration (T)**	1:00 Hrs.
Course Code	SECMBT201		**Practical Exam Duration**	3:00 Hrs.

Course Objectives: (Theory)

By completing this lesson, students will be able to:

- To study the quality control in range of industrial sector.
- To explore the standard methods and conditions necessary for the food and pharmaceutical industries.
- Courses enrich the skill of the students towards the SOP and standards practice of the industries.

Course Outcomes: (Theory)

By the completion of this course, the students will improve the skill and knowledge as:

- Have developed a very good understanding of practical aspects of microbiological safety, various detection

  methodologies and use of different microbiological media in food industries.
- Have developed a very good understanding of practical aspects of microbiological safety, various detection

  methodologies and toxicological testing of products in the pharmaceutical industries.
- Understanding and acquiring the knowledge of the food and drinking water standard.

COURSE CONTENTS		
Units	**Title of the Unit and the Topics**	**No. of Lectures**
Unit 1.	**MICROBIOLOGY LABORATORY AND PRACTICE** • Microbiological Laboratory and Safe Practices: • Good laboratory practices- Good laboratory practices, Good microbiological practices. • Biosafety cabinets: Working of biosafety cabinets, using protective clothing, specification for BSL- 1, BSL-2, BSL-3. Discarding biohazardous waste.	**8**
Unit 2.	**STANDARD MICROBIAL METHODS-I** • Determining Microbes in Food / Pharmaceutical Samples: • Culture and microscopic methods - Standard plate count, Most probable numbers, Direct microscopic counts. • Biochemical methods: Limulus lysate test for endotoxin, sterility testing for pharmaceutical products. • Enrichment culture technique, Detection of specific microorganisms - on Salmonella Shigella Agar, Mannitol salt agar, EMB agar, McConkey Agar.	**8**
Unit 3.	**STANDARD MICROBIAL METHODS-II** • Ascertaining microbial quality of milk by MBRT, Rapid detection • methods of microbiological quality of milk at milk collection centers • (COB, 10 min Resazurin assay).	**7**
Unit -4.	**FOOD SAFETY AND MICROBIAL STANDARDS** • Hazard analysis of critical control point (HACCP) - Principles, flow diagrams, limitations. • Microbial Standards for Different Foods and Water – BIS standards for common foods and drinking water.	**7**

Reference Books

1. Quality Control in the Food Industry V1, S Herschdoerfer, ISBN: 9780323152068,: Academic Press, 1967
2. Prescott L.M., Microbiology 7th Edition, The McGraw−Hill Companies
3. Principles of Sensory Evaluation of Food- 1965 MA Amerine, RM , Pangborn and EB Roessler, Elsevier.
4. Patel. R.J., Patel. K.R., Experimental Microbiology, Vol-I, Aditya Publications, Ahmedabad, India.
5. Patel. R.J., Patel. K.R., Experimental Microbiology, Vol-II, Aditya Publications, Ahmedabad, India.

INTERNAL EVALUATION SCHEME		
INTERNAL ASSESSMENT		
No.	**Particulars**	**Weightage**
1	Internal Components	15
2	Viva	10
	Total	25

Paper Style:

Time: 1 Hours **Total Marks: 25**

Instructions:

1. Illustrate your answer with neat and labelled diagrams.
2. Figure to the right side indicates full marks of questions.

Que. No.	Particulars	Marks
Que-1 (A)	From Unit : 1 (1)	**05**
	OR	
	(1)	**05**
Que-1 (B)	From Unit : 2 (1)	**05**
	OR	
	(1)	**05**
Que-2 (A)	From Unit : 3 (1)	**05**
	OR	
	(1)	**05**
Que-2 (B)	From Unit : 4 (1)	**05**
	OR	
	(1)	**05**
Que-3	Five short questions from all four units	**05**
	1 2 3 4 5	

Course Outcomes: (Practical)

By the completion of this course, the students will improve the skill and knowledge as:

- Have developed a very good understanding of practical aspects of microbiological safety, various detection methodologies and use of different microbiological media in food industries.
- Have developed a very good understanding of practical aspects of microbiological safety, various detection methodologies and toxicological testing of products in the pharmaceutical industries.
- Understanding and acquiring the knowledge of the food and drinking water standard.

COURSE CONTENTS (Practical)		
Practical	**Title of the Unit and the Topics**	**No. of Lectures**
1	Introduction to the good laboratory practices	**30**
2	Standard plate count	
3	Microscopic examination of organisms	
4	Sterility testing of pharmaceutical products	
5	Selective media preparation and cultivation	
6	MBRT test	
7	Resazurin test	
8	BIS guideline for food and water standard	

INTERNAL EVALUATION SCHEME		
INTERNAL ASSESSMENT		
No.	**Particulars**	**Weightage**
1	Practical Performance	15
2	Viva	10
	Total	25

Paper Style: External

ASSESSMENT BY UNIVERSITY		
Que. No.	**Particulars**	**Marks**
SECTION-1 EXAMINER EXTERNAL		
1	Perform any two from the given list of exercises as per the instruction of the examiner exercise	**15**
2	Viva-voce	**10**

COURSE NO: 7: LABORATORY SKILLS IN PHYSICS

Course Level	U.G		**Teaching Hours**	60
Programme	B.Sc. Microbiology		**Internal Marks**	25
Semester	II		**External Marks (Practical)**	25
Course Type	Skill Enhancement Course		**Practical Marks**	
Course title	Laboratory skills in physics		**Total**	50
Credit	02		**Exam Duration**	-
Course Code	SECPHY211(P)		**Practical Exam Duration**	-

Course Objectives

The course will provide its learners a primary practical exposure to the physics laboratory skills in terms of handling of electronic and optical instruments, various types of hazards and its safety measures including first aid and disaster management.

- To Understand the basic principles, construction, working of various measuring instruments and their applications.
- To acquire the knowledge about the basic concepts Vernier calipers, Micrometer screw, Spherometer, Wheatstone Bridge etc.
- To understand working function of Wheatstone Bridge

Learning outcome

At the end of course students will be able to

- Understands the basic knowledge about working of various instruments and their application.
- Learn and understand construction and use of various measuring instruments.

Unit-1	**RESISTOR:** Generals information, Resistor type, Wire wound resistor, Carbon composition resistor, Carbon film resistor, Cermete film resistor, Metal film resistor, Power resistor, Value tolerance, Variable resistor, Potentiometer and Rheostats, Fusibal resistor., Resistor color, resistor, Colour band, Resistor under ten ohm , Resistor. Troubles, Checking resistor with ohmmeter. **TRANSFORMER:** Introduction, Type of Transformer, Construction of Transformer, Transformer working, Transformer impedance, Can a Transformer Operate on DC ?, RF Shielding, Auto Transformer.
Unit-2	**INDUCTOR:** Inductor, Comparison of different coils, Inductance of an inductance, Another definition of inductance, Mutual inductance, Coefficient of coupling, Variables inductors, Inductor in series and parallel without M, Series combination with m, Stray inductance, Energy storage magnetic field, DC Resistance of coils **CAPACITOR:** Capacitors, Capacitor connect to battery, Capacitance, Factors controlling capacitance, Type of Capacitors, Fixed Capacitor, Variable capacitors, Voltage rating of capacitors, Stray circuit cap. Lickage resistance, Troubles Capacitor, Checking capacitor with ohm meter.

Practical Examination Style

Particulars	Marks
Perform practical and calculate parameter for given practical.	**25**
Viva/Demonstration of practical skills related to identification and handling of equipment and Explanation of practical assignment work undertaken.	**15**
Continuous internal assessment may also include active participation in activities and demonstration of skill achievement	**10**

Course Name-8: Introduction to GeoGebra (FOSS)

Course Level	U.G		**Teaching Hours**	30
Programme	B.Sc. Mathematics		**Internal Marks (P)**	25
Semester	II		**External Marks**	00
Course Type	Skill Enhancement Course		**Practical Marks**	25
Course title	Introduction to GeoGebra (FOSS) **Note: Practical based learning course**		**Total**	50
Credit	02		**Exam Duration**	-
Course Code	SEC-201		**Practical Exam Duration**	

Course Learning Outcome

- Student will learn to draw various geometric shapes using a variety of tools available in GeoGebra.
- Student will learn to use function inspector tool to analyze the given function.
- Student will be able to use slider functionality of GeoGebra.
- Student will also be able to plot various types of conics and calculate the area of the bounded region.
- Student will be equipped to find optimum solution of given LPP.

Practical No.	Title
1.	Introduction to the interface of GeoGebra.
2.	Use of tools bar to draw various geometric shapes including line, line segment, triangle, polygon, circle and conics.
3.	Drawing of graph of any function of one variable for cartesian equation using menu bar and to analyze the function using function inspector tool from tools menu and find its properties like maximum and minimum values.
4.	Drawing of graph of curve using menu bar, when equation of the curve is given.
5.	Drawing of various types of triangles including equilateral triangle, isosceles triangle, scalene triangle, right angled triangle, acute angled triangle, obtuse angled triangle, and locating concurrent points like centroid, incenter, circumcenter and orthocenter.

6.	Introduction to various circle and compass tools and practicing construction of various geometric shapes including triangles, polygons, squares, rectangle etc.
7.	Verification of some important theorems of geometry, algebra and calculus using GeoGebra.
8.	Drawing and measuring various geometric shapes using angle, distance, area and slope tools from tools bar.
9.	Use of vector tools for creating reflection, rotation and translation.
10.	Use of slider and animation.

Format of Question Paper for External Theory Examination

(Semester End Evaluation(**SEE**)-Summative-**50 Marks)**

Evaluation of 50 Marks (2 Credit Paper)

Continuous and Comprehensive Evaluation (**CCE**)-Formative- **25 Marks**	Semester End Evaluation (**SEE**)-Summative-**25 Marks**
Practical's (25 Marks) 1. Performance 15 Marks 2. Viva-voce 10 Marks	**Practical's (25 Marks)** 1. Performance 15 Marks 2. Viva-voce 05 Marks 3. Journal 05 Marks
Total 25 Marks	**Total 25 Marks**

Course No - 9: Basic concepts of Networking and Internet

Course Level	U.G		**Teaching Hours**	30
Programme	B.Sc. (IT) and BCA		**Internal Marks**	25
Semester	II		**External Marks**	25
Course Type	Skill Enhancement Course		**Practical Marks**	00
Course title	Basic concepts of Networking and Internet		**Total**	50
Credit	02		**Exam Duration**	1:00 Hr
Course Code	SEC-2		**Practical Exam Duration**	-

Course Objectives:

- To understand basic terms of computer networks and Internet
- To gain insight into the usage of internet technology

Course Outcomes:

- Gaining understanding on how computer network works and how it is implemented
- Gaining understanding on how internet works and how it is useful in today's scenario

Units	Title of the Unit and the Topics	No. of Lectures
Unit 1	**Introduction to Computer Network** • Basics of Computers • Computer Network • Type of Computer Network • Network Topology • OSI Reference Model (Introduction) • TCP/IP • Internet Terminology • ISP (Internet Service Provider) • Intranet • VSAT (very small aperture terminal)URL	10

Unit 2	**Basics of Internet**
	• Evolution of World Wide Web (WWW)
	• Types and uses of various Search Engines
	• Remote Communication
	  ○ Login
	  ○ Applications
	  ○ advantages
	  ○ disadvantages
	• Electronic Mail (Email)
		10

	• Concept and use of :
	  ○ E-Commerce
	  ○ E-Business
	  ○ E-Governance
	  ○ Mobile Commerce
	• **Website Basics**
	WebPages, Hyper Text Transfer, URL , Domain Names, Domain name server, Internet Protocol, File Transfer Protocol, Protocol Address, Website(Static, Dynamic, Responsive), Web browser, Web Servers, Web Hosting, web portal	

Unit 3	• **Network Security Concepts:**
	  ○ Cyber Law
	  ○ Firewall
	  ○ Cookies
	  ○ Hackers and Crackers
	• **Types of Payment System:**
	  ○ Digital Cash
	  ○ Electronic Cheque
	  ○ Smart Card
	  ○ Debit/Credit Card
	  ○ Net banking
	  ○ UPI
		10

References:

1. Internet the complete reference by Young.
2. Internet for every one by Leon.

Web site References:

- https://www.geeksforgeeks.org/basics-computer-networking/
- https://www.tutorialspoint.com/basics_of_computer_science/basics_of_computer_science_internet.html

INTERNAL ASSESSMENT		
Que. No.	**Particulars**	**Marks**
1	Mid term Examination.	**13**
2	Any 4 Components each of 3 Marks as per Annexure-3	**12**

Paper Style

ASSESSMENT BY UNIVERSITY		
Que. No.	**Particulars**	**Marks**
1	Questions from Unit-1 (Any Two Out Of Four) (Marks 10)	**10**
2	Questions from Unit-2 (Any Two Out Of Four) (Marks 10)	**10**
3	Questions from Unit-3 (Any one Out Of Two) (Marks 05)	**05**

Annexure-3		
Scheme for Internal Assessment (As per SOP by the Government) For 2 (Two) Credit and 50-marks Course		
Internal Evaluation Schemes		
Particular		Marks
Mid-Semester Examination		12
Any Four Components from the following List		
1.	Class Test	3
2.	Open book exam/test	3
3.	Open note exam/test	3
4.	Self-test/ Online test	3
5.	Essay/Article writing	3
6.	Quizzes/Objective test	3
7.	Class assignment	3
8.	Home assignment	3
9.	Reports Writing	3
10.	Research/Dissertation	3
11.	Case Studies	3
12.	Viva/Oral exam	3
13.	Group Discussion	3
14.	Role Play	3
15.	Paper presentation/Seminar	3
16.	Language Lab work	3
17.	Interview	3
18.	Craft work	3
19.	Co-curricular work	3
20.	Field Assignment	3
21.	Poster Presentation	3
22.	Attendance	3
	Total	50
Note: The student has to obtain 09 marks (36% marks out of total 25 marks) for passing the Internal Examination		

COURSE NAME-10: BASIC OF COMPUTER APPLICATION

Course Level	U.G		**Teaching Hours**	60
Programme	B.Sc. Home Science		**Internal Marks**	25
Semester	II		**External Marks**	00
Course Type	Skill Enhancement Course		**Practical Marks**	25
Course title	BASIC OF COMPUTER APPLICATION		**Total**	50
Credit	02		**Exam Duration**	-
Course Code	HS0FN1SEC05		**Practical Exam Duration**	4:00 Hrs

OBJECTIVES: To enable the students to

1. Know the basics of computers;

2. be able to use computers for education, information and research.

SESSION 1: LAB GUIDE Working with Windows OS

1.1 Working with Desktop

1.2 Creating Folder

1.3 Creating Text Files

1.4 Renaming and Deleting the File And Folder

1.5 Working with Recycle Bin

1.6 Shutting Down

SESSION 2: LAB GUIDE MS-Word 2007

2.1 How to Start MS-Office

2.2 Office Button - New, Open, Save, Save As, Print, Print Preview, Close

2.3 Home Menu - Clipboard, Font, Paragraph, Style, Editing

2.4 Insert Menu - Pages, Tables, Illustrations, Header & Footer

2.5 Page Layout - Themes, Page Setup, Page Background, Paragraph

SESSION 3: LAB GUIDE MS-Power Point 2007

3.1 How to Start Power Point

3.2 Office Button - New, Open, Save, Save As, Print, Send, Close

3.3 Home Menu - Clipboard, Font, Paragraph, Drawing, Editing 3.4 Insert Menu - Tables, Illustration, Header & Footer

3.5 Design Menu - Page Setup, Themes, Background,

3.6 Animations Menu - Preview, Animations, Transition

3.7 Slide Show Menu - Start Slide Show, Set Up

SESSION 4: LAB GUIDE Internet

4.1 Email- Create your E-Mail Account

4.2 Log into E-Mail Account

4.3 Read an E-Mail, Send an E-Mail

4.4 Sending Soft Copy as Attachments

4.5 Download Attachments.

4.6 Open Following Websites.

1. Your College Website
2. BKNMU Website
3. Http www.irctc.com.in
4. Http www.yatra.com

PRACTICAL-

1) Prepare an application for the post of a lecturer in College in MS- Word.

2) Prepare a resume in MS-Word.

3) Prepare your semester-2 time table in MS-Word.

4) Enlist your semester-1 and semester-2 subjects in MS-Word.

5) Prepare a bar chart of your college H.Sc. semester-6 results of last 5 years in MSWord.

6) Prepare a pie chart of your class semester-1 result in MS-Word. (Number of girls and got grade or class.)

7) Prepare a visiting card for hobby classes/tuition class/ beauty parlour in MS-Word.

8) Prepare an invitation card for inauguration of your shop in MS-Word.

9) Prepare a power point presentation to give information about home science. 10) Prepare a power point presentation for your hobby classes/ beauty parlour/ boutique.

RECOMMENDED READINGS-

1) Microsoft office 2007 2nd edition by computer world.

2) Bano computer expert 5th edition by computer world.

3) Beginner's guide 2001 by Aptech Limited 4) Computer application & I.-1 by C. Jamnadas& company.

INTERNAL MARKS BIFURCATION		
No	Particulars	Marks
1	COMPONENT	
	TOTAL	25

PRACTICALS EXAM STYLE OF SEMESTER EXAM		
Question Number	Particulars	Marks
Q.1	Answer the Following Question OR Answer the Following Question	10
Q.2	Answer the Following Question OR Answer the Following Question	10
Q.3	VIVA	05
	TOTAL	25