KALINGA COLLEGE OF COMMERCE, BHUBANESWAR

SYLLABUS for AECC, SECC, GE

(Compiled with reference to Odisha State Model Syllabus

(+3 Arts, Science &Commerce Examination)

Ability Enhancement Compulsory Course (AECC)

AECC-1 Environmental Science(ES): 1st Semester;

AECC-2 MIL (O/AE/Sans): 2nd Semester;

Skill Enhancement Compulsory Course (SECC)

SECC-1 (Communicative English): 3rd Semester

SECC-2 (Quantitative & Logical Thinking):4th Semester

Generic Elective (GE)

GE-A-1: 1st Semester;

GE-B-1: 2nd Semester;

GE-A-2: 3rd Semester;

GE-B-2: 4th Semester

OFFICE OF THE CONTROLLER OF EXAMINATIONS
NORTH ORISSA UNIVERSITY
SRIRAM CHANDRA VIHAR, TAKATPUR, BARIPADA, MAYURBHANJ-757003

No. NOU/EC/2019/ 5737(90) / Date: 31.8.2019

To

The Principals,
All the Affiliated Degree Colleges under North Orissa University.

Sub: Clarification regarding GE, MIL and SEC papers in newly introduced CBCS syllabus from the academic session 2019-20.

Sir,

Inviting a reference to the subject cited above, it is to inform you that in addition to the core subject a student has to appear 02 (Two) Generic Elective (GE) subjects, each having 02 (Two) papers out of which 01 (One) paper from each is to be taught in 1st Year and another paper from each will be taught in the 2nd Year.

SEC-1 paper is **Communicative English** and **SEC-2** paper is **Quantitative and Logical Thinking** to be taught in 2nd Year students.

Further, a student may opt **SANTALI as MIL** in addition to the existing options mentioned in the regulation

This is for your information with a request to circulate among all the students and staffs for the benefit of all.

Yours faithfully,

31/8/19
Controller of Examinations
North Orissa University
Date: 31.8.2019

Memo No. 5738(6) /NOU

Copy forwarded for information and necessary action to:

1. The SPD & Joint Secretary to Government, Higher Education Department, Government of Odisha, Bhubaneswar.
2. The Chairman, P.G. Council, North Orissa University.
3. The Director, College Development Council, North Orissa University.
4. The Director, DDCE, North Orissa University.
5. The Professor- in- charge, University web-site with request to uploading it in the official web-site of the University.
6. OIC to Vice-Chancellor/ P.A to Registrar/ Steno to Controller of Examination, North Orissa University.

31/8/19
Controller of Examinations
North Orissa University

Ability Enhancement Compulsory Course (AECC-I): Semester-I

ENVIRONMENTAL STUDIES: (AECC-I)
SEMESTER – I
FOR UG ARTS, SCIENCE & COMMERCE – 2019-20 onwards
FULL MARKS: 100

TIME: 3 HOURS **END SEMESTER: 80**
TIME: 1 HOUR **MID SEMESTER: 20**

Unit – I

The Environment: The Atmosphere, Hydrosphere, Lithosphere, Biosphere, Ecology, Ecosystem, Biogeochemical Cycle (Carbon Cycle, Nitrogen Cycle), Environment Pollution: Air Pollution, Water Pollution, Soil Pollution, Radiation Pollution.

Unit – II

Population Ecology: Individuals, Species, Pollution, Community, Control Methods of Population, Urbanization and its effects on Society, Communicable Diseases and its Transmission, Non-Communicable Diseases.

Unit- III

Environmental Movements in India: Grass root Environmental movements in India, Role of women, Environmental Movements in Odisha, State Pollution Control Board, Central Pollution Control Board.

Unit –IV

Natural Resources: Conservation of Natural Resources, Management and Conservation of Wildlife, Soil Erosion and Conservation, Environmental Laws: Water Act, 1974, Air Act, 1981, The Wildlife (Protection) Act, 1972, Environment Protection, 1986, Natural Disasters and their Management.

Books Recommended:

1. Dash MC and Mishrs PC, Man and Environment, McMillan, London.

2. Mishra PC and Das MC, Environment and Society, McMillan, London.

3. Odeem EP, Fundamentals of Ecology, Natraj Publication.

4. Mishra DD, Fundamental Concept in Environmental Studies, S.Chand, New Delhi.

5. Asthana DK and Asthana Meera, A Testbook of Environmental Studies, S. Chand, New Delhi.

6. Bharucah Erach, Textbook for Environmental Studies, Universities Press India Pvt. Ltd., Hyderabad.

Ability Enhancement Compulsory Course (AECC II): Semester-II

MIL (odia, Alternative English, Sanskrit) **

**** The Detailed course is available in the respective language courses.**
For Example, MIL(Odia) is available in the Model Syllabus for Odia

AECC-II : Semester-II

MIL(Odia)

ଦକ୍ଷତାବର୍ଦ୍ଧକ ବାଧ୍ୟତାମୂଳକ ପାଠ୍ୟକ୍ରମ

Ability Enhancement Compulsory Course (AECC)

ଯୋଗାଯୋଗମୂଳକ ମାତୃଭାଷା – ଓଡ଼ିଆ

(2019-20)

MIL (Communications) – Odia

ଦ୍ୱିତୀୟ ପର୍ଯ୍ୟାୟ **(2nd Semester)** କଳା, ବିଜ୍ଞାନ ଓ ବାଣିଜ୍ୟ ସାଧାରଣ **(Pass)** / ସମ୍ମାନ **(Hons)** ଶ୍ରେଣୀ ପାଇଁ ଉଦ୍ଦିଷ୍ଟ

ମୋଟ୍ କ୍ରେଡିଟ୍ସ-୪, ମୋଟ ଶ୍ରେଣୀ ପାଠଦାନ ନିର୍ଘଣ୍ଟ -୪୦, ଗୋଟିଏ ଶ୍ରେଣୀ ପାଠଦାନର (ପିରିୟଡ୍) ସମୟ ଅବଧି -୪୫ ମିନିଟ୍, ପାଠ୍ୟକ୍ରମ – ୨, ପୂର୍ଣ୍ଣସଂଖ୍ୟା – ୧୦୦

(Credits – 4) Total Classes - 40, One Period - 45 Minutes, Course - II, Full Marks - 100

ପାଠ୍ୟକ୍ରମର ଭୂମିକା :

ଏହି ପାଠ୍ୟଖସଡ଼ାଟି ପସନ୍ଦ ଓ ଆସ୍ଥାଭତ୍ତିକ (CBCS / ସିବିସିଏସ୍) ପାଠ୍ୟ ପ୍ରଣାଳୀ ଅନୁସାରେ ପ୍ରସ୍ତୁତ ହୋଇଛି । ବିଭିନ୍ନ ସ୍ତରରେ ଆବଶ୍ୟକ ଅନୁସାରେ ସମସାମୟିକ ପରିସ୍ଥିତିକୁ ନେଇ ଭାବବିନିମୟ ଓ ପାରସ୍ପରିକ ଯୋଗାଯୋଗ ସ୍ଥାପନ ଜିପରି ଓଡ଼ିଆ ଭାଷାରେ ସହଜରେ, ସରଳରେ ହୋଇପାରିବ – ଏ ଦିଗ ପ୍ରତି ଏଥିରେ ଧ୍ୟାନ ଦିଆଯାଇଛି । ଓଡ଼ିଆ ଭାଷା ଓ ସାହିତ୍ୟର ପ୍ରାୟୋଗିକ ଜ୍ଞାନର ବିକାଶ ନିମିତ୍ତ +୩ ସ୍ତରୀୟ ବିଦ୍ୟାର୍ଥୀଙ୍କୁ ଏହି ପାଠ୍ୟକ୍ରମର ଖସଡ଼ାଟି ସାହାଯ୍ୟ କରିବ । ସେଥିପାଇଁ ପ୍ରଚଳିତ ଭାଷାର ବୈୟାକରଣିକ, ବ୍ୟାବହାରିକ ଓ ପ୍ରାୟୋଗିକ ଦିଗ ପ୍ରତି ଏଥିରେ ଧ୍ୟାନ ଦିଆଯାଇଛି । ଏଥିରେ ସଂଯୋଗ ପ୍ରକ୍ରିୟାର ଅନୁବିଧ୍ର, ଯୋଗାଯୋଗର ତଥ୍ୟ ଓ ତତ୍ତ୍ୱ ପ୍ରତି ଗୁରୁତ୍ୱ ଦିଆଯାଇଛି । ସରକାରୀ କାର୍ଯ୍ୟାଳୟରେ ଓଡ଼ିଆ ଭାଷାର ବ୍ୟବହାରରେ ଏହା ଦକ୍ଷତା ବୃଦ୍ଧି କରିବ । ଓଡ଼ିଆ ଭାଷାର ପ୍ରୟୋଗରେ ସେମାନେ ଶୁଦ୍ଧ ଓ ପରିଚ୍ଛନ୍ନ ଭାବରେ ଯେକୌଣସି ପ୍ରକାର ଜ୍ଞାନର ସୂଚନା ତଥ୍ୟ ଓ ସିଦ୍ଧାନ୍ତକୁ ମୌଖିକ ଓ ଲିଖିତ ସ୍ତରରେ ସହଜରେ ପ୍ରକାଶ କରିପାରିବେ ଏବଂ ସେମାନଙ୍କ ମାତୃଭାଷା ପ୍ରୟୋଗର ବିକାଶ ଘଟିପାରିବ ।

ମୂଲ୍ୟ ବିଭାଜନ ପଦ୍ଧତି : (ସବୁଥିରୁ ବିକଳ୍ପ ପଡ଼ିବ)

କ) ନିର୍ଦ୍ଧାରିତ ପାଠ୍ୟର ସବୁ ଏକକ (ୟୁନିଟ୍) ରୁ ବିକଳ୍ପସହ ଦୁଇଟି ଲେଖାଏଁ ମୋଟ ୮ଟି ୧୫ନମ୍ବର ବିଶିଷ୍ଟ ଦୀର୍ଘପ୍ରଶ୍ନ ପଚିବ । ବିଦ୍ୟାର୍ଥୀଙ୍କୁ ୪ଟି ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବାକୁ ହେବ ।(୧୫ x ୪ = ୬୦)

ଖ) ନିର୍ଦ୍ଧାରିତ ପାଠ୍ୟର ସବୁ ଏକକରୁ ୧୨ଟି ଅତିସଂକ୍ଷିପ୍ତ ପ୍ରଶ୍ନ ପଡ଼ିବ । ସେଥିରୁ ୧୦ଟି ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବାକୁ ହେବ । (୧୦ x ୨ = ୨୦)

ଗ) ମହାବିଦ୍ୟାଳୟସ୍ତରୀୟ ଅନ୍ତଃ ପରୀକ୍ଷା (୨୦)

ମୋଟ ମୂଲ୍ୟାଙ୍କ - ୧୦୦

ସବିଶେଷ ପାଠ୍ୟ

ଯୋଗାଯୋଗମୂଳକ ମାତୃଭାଷା – ଓଡ଼ିଆ **(AECC)**

ପାଠ୍ୟ-୧ / **Course – 1** : ଯୋଗାଯୋଗ ଅନୁବିଧ୍ର, ରୀତି ଓ ମାଧ୍ୟମ

୧ମ ଏକକ : ଯୋଗାଯୋଗର ପରିଭାଷା, ଅନୁବିଧ୍ର, ପରିସର ଓ ପ୍ରକାରଭେଦ

୨ୟ ଏକକ : ସାକ୍ଷାତକାର, ଭାଷଣ କଳା

୩ୟ ଏକକ : ସମ୍ବାଦର ପରିଭାଷା, ପରିସର ଓ ସମ୍ବାଦ ପ୍ରସ୍ତୁତି

୪ର୍ଥ ଏକକ : ଓଡ଼ିଆ ଭାଷାର ବର୍ଣ୍ଣମାଳା, ବର୍ଣ୍ଣାଶୁଦ୍ଧିର ନିରାକରଣ । (ବନାନ ତ୍ରୁଟି - ସାଦୃଶ୍ୟଜନିତ ଅଶୁଦ୍ଧି, ଲିଙ୍ଗଗତ ଅଶୁଦ୍ଧି, ସନ୍ଧିଗତ ଅଶୁଦ୍ଧି, ସମାସଗତ ଅଶୁଦ୍ଧି, ବଚନ ଓ ବିଭକ୍ତିଗତ ଅଶୁଦ୍ଧି, ବାଚ୍ୟ ବିଧ୍ରଜନିତ ଅଶୁଦ୍ଧି, ସମାର୍ଥବୋଧକ ଶବ୍ଦାଶୁଦ୍ଧି, ପ୍ରତ୍ୟୟ ଜନିତ ଅଶୁଦ୍ଧି, ଶବ୍ଦ ସଂଯୋଗାତ୍ମକ ଓ ସ୍ୱରସଙ୍ଗତି ଜନିତ ଅଶୁଦ୍ଧି)

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ (ପାଠ୍ୟ-୧ / **Course – 1**)

୧. ଯୋଗାଯୋଗ ମୂଳକ ମାତୃଭାଷା (ଓଡ଼ିଆ) ସାମଲ ବିରଞ୍ଚି ନାରାୟଣ, ସତ୍ୟନାରାୟଣ ବୁକ ଷ୍ଟୋର, କଟକ ।

୨. ସଂଯୋଗ ଅନୁବିଧି, ସନ୍ତୋଷ କୁମାର ତ୍ରିପାଠୀ, ନାଳନ୍ଦା, କଟକ

୩. ଭାଷଣ କଳା ଓ ଅନ୍ୟାନ୍ୟ ପ୍ରସଙ୍ଗ - କୃଷ୍ଣଚନ୍ଦ୍ର ପ୍ରଧାନ, ସତ୍ୟନାରାୟଣ ବୁକ୍ ଷ୍ଟୋର,କଟକ

୪. ପ୍ରାୟୋଗିକ ଓଡ଼ିଆ ଭାଷା – ଓଡ଼ିଶା ରାଜ୍ୟପାଠ୍ୟ ପୁସ୍ତକ ପ୍ରଣୟନ ଓ ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର

୧. ସମ୍ବାଦ ଓ ସାମ୍ବାଦିକତା – ଚନ୍ଦ୍ରଶେଖର ମହାପାତ୍ର, ଓଡ଼ିଶା ରାଜ୍ୟ ପାଠ୍ୟପୁସ୍ତକ ପ୍ରଣୟନ ଓ ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର

୧. ନିର୍ଭୁଲ ଲେଖାର ମୂଳସୂତ୍ର, ନୀଳାଦ୍ରିଭୂଷଣ ହରିଚନ୍ଦନ, ପି.ସି.ଆର ପବ୍ଲିକେସନ, ଭୁବନେଶ୍ୱର

୨. ସର୍ବସାର ବ୍ୟାକରଣ - ନାରାୟଣ ମହାପାତ୍ର ଓ ଶ୍ରୀଧର ଦାସ, ନିଉ ଷ୍ଟୁଡେଣ୍ଟସ୍ ଷ୍ଟୋର, କଟକ

AECC-II : SEMESTER-II

MIL (ALTERNATIVE ENGLISH)

Introduction:

The paper is focused upon developing one fundamental skills of Language learning; reading which needs a thorough rethink and revision. In order to build a strong base for acquisition of the communication skills, suitable reading content is selected from diverse areas in prose form. This would boost the learner's competence in expressive and comprehension skills. The well researched language exercises in the form of usage, vocabulary and grammar is the other area that should attract the teacher and learner to work out for giving decent shape to the mastery of English language.

UNIT 1: Short Story

(i) Jim Corbett-The Fight between Leopards
(ii) Dash Benhur- The Bicycle
(iii) Dinanath Pathy- George V High School
(iv)Alexander Baron- The Man who knew too much
(v) Will f Jenkins- Uneasy Homecoming

UNIT 2: Prose

(i) Mahatma Gandhi- The way to Equal Distribution
(ii) S Radhakrishnan- A Call to Youth
(iii) C V Raman-Water- The Elixir of Life
(iv)Harold Nicolson- An Educated Person
(v) Claire Needell Hollander- No Learning without Feeling

UNIT 3:

(i) Comprehension of a passage and answering the questions

UNIT 4:

(i) Language exercises-test of vocabulary, usage and grammar

Text Books

All Stories and Prose pieces

Reference Books

- *The Widening Arc: A Selection of Prose and Stories*, Ed. A R Parhi, S Deepika, P Jani, Kitab Bhavan, Bh ubaneswar.
- *A Communicative Grammar of English*, Geoffrey Leech.
- *A University Grammar of English,* Randolph Quirk and Sidney Greenbaum
- *Developing Reading Skills*. F. Grellet. Cambridge: Cambridge University Press

Scheme of examination:

Midterm: 20 marks (to be conducted by the respective college)
Final examination: 80 marks
(A) 5 short questions of 4 marks each to be set from unit 1-2 covering all prescribed stories and prose pieces [10x4=40]
(B) An unknown passage to be set with 5 questions carrying 4 marks each [5x4=20]
(C) 10 bit questions carrying 2 marks each from grammar/vocabulary and usage [10x2=20]

AECC-II: Semester-II
M.I.L. (SANSKRIT)

Full Marks- End Term: 80 + Mid Term: 20 = 100Marks

1. SANSKRIT PROSE 40 Marks
2. **SANSKRIT POETRY 40 Marks**

Unit- I & II SANSKRIT PROSE 40 Marks
1. Aparīksitakārakam
2. Pitṛbhaktih
3. Jimutavahanakatha

Unit- I & II: Two Long Questions – (About 150 words each) 12x2= 24Marks
Four Short Questions - (About 50 words each) 4×4 = 16Marks

Unit- III & IV SANSKRIT POETRY 40 Marks
1. Mahabharata Santi Parva (Ch. 70 on Qualities of Ruler)
2. Mahabharata Santi Parva (Ch. 107 on Democracy)
3. Mahabharata, Santiparva, (Ch. 120 on Duties of Ruler)

Unit- III & IV: Two Long Questions (About 150 words each) 12x2= 24 Marks
Four Short Questions - (About 50 words each) 4×4 = 16 Marks

Core Reading:
1. *Samskrta-pravesa*, Utkal University, Vanivihar, Bhubaneswar
2. *Mahabharata Santi Parva*, Gita Press, Gorakhpur

Suggested Reading:
1. *Mahabharata Santi Parva*, Rastriya Sanskrit Sansthan, New Delhi

Skill Enhancement Compulsory Course (SECC)

SECC-1 (Communicative English): 3rd Semester

Download the text book of SECC-1 complied by Odisha State Higher Education Council (OSHEC), Higher education department, Odisha uploaded in the following link.

or

http://dheodisha.gov.in/DocPath.ashx?clsid=9&id=SPECIALCOURSE.pdf

SECC-2 (Quantitative & Logical Thinking):4th Semester

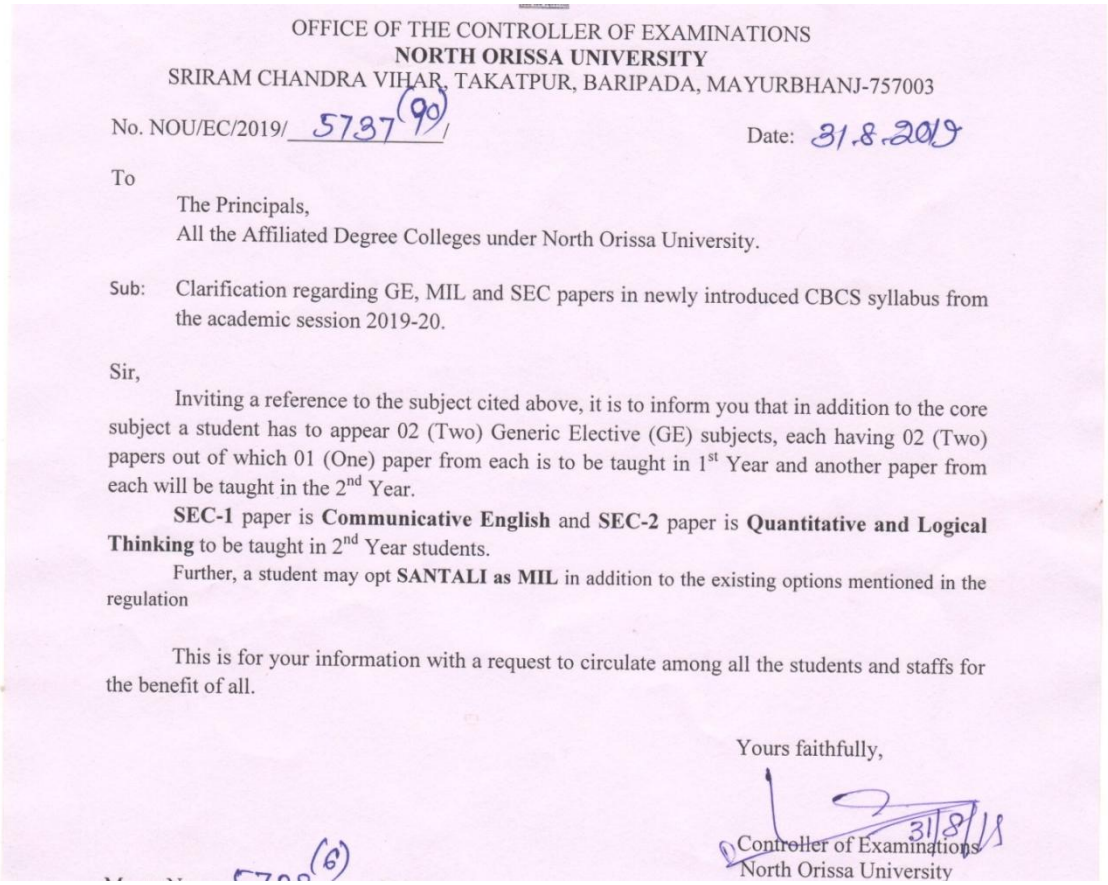
Download the text book of SECC-2 complied by Odisha State Higher Education Council (OSHEC), Higher education department, Odisha uploaded in the following link.

or

http://dheodisha.gov.in/DocPath.ashx?clsid=9&id=SECCIISPECIALCOURSE.pdf

GENERIC ELECTIVE (GE): (Total 4 papers)

An elective course chosen from an unrelated discipline/subject, with an intention to seek exposure beyond discipline/s of choice is called a Generic Elective. The purpose of this category of papers is to offer the students the option to explore disciplines of interest beyond the choices they make in Core and Discipline Specific Elective papers. **Universities can offer two papers each in two subjects as GE or four papers one subject. The BA pass course also offers 2 GE papers. Depending on the subject, GE1 and GE2 listed in each Honours syllabus may be used as models for the purpose.**



OFFICE OF THE CONTROLLER OF EXAMINATIONS
NORTH ORISSA UNIVERSITY
SRIRAM CHANDRA VIHAR, TAKATPUR, BARIPADA, MAYURBHANJ-757003

No. NOU/EC/2019/ 5737 (90) / Date: 31.8.2019

To

The Principals,
All the Affiliated Degree Colleges under North Orissa University.

Sub: Clarification regarding GE, MIL and SEC papers in newly introduced CBCS syllabus from the academic session 2019-20.

Sir,

Inviting a reference to the subject cited above, it is to inform you that in addition to the core subject a student has to appear 02 (Two) Generic Elective (GE) subjects, each having 02 (Two) papers out of which 01 (One) paper from each is to be taught in 1st Year and another paper from each will be taught in the 2nd Year.

SEC-1 paper is **Communicative English** and **SEC-2** paper is **Quantitative and Logical Thinking** to be taught in 2nd Year students.

Further, a student may opt **SANTALI as MIL** in addition to the existing options mentioned in the regulation

This is for your information with a request to circulate among all the students and staffs for the benefit of all.

Yours faithfully,

31/8/19
Controller of Examinations
North Orissa University

(6)

GE subjects at GWC Keonjhar:

Arts: Economics, Education, History, Home Science, Odia, Political Science, Sanskrit and Sociology. (A student needs to opt two subjects (A & B) of two papers each such as GE-A-1 (1st Sem); GE-B-1 (2nd Sem); GE-A-2 (3rd Sem) and GE-B-2 (4th Sem)

Science: For Biological science: Chemistry, Botany, Zoology

For physical Science: Chemistry, Mathematics, Physics

(A student needs to opt two subjects (A & B) from their respective physical science or biological science group of two papers each such as GE-A-1 (1st Sem); GE-B-1 (2nd Sem); GE-A-2 (3rd Sem) and GE-B-2 (4th Sem))

Commerce: mentioned in **Commerce** syllabus. (Four papers as GE-1, GE-2, GE-3 GE-4 one paper in each semester up to 4th Sem**)**

MIDTERM SEMESTER EXAMINATION IN GENERIC ELECTICE WILL BE FROM UNIT-II ONLY.

(as per HED letter no 20119/dt 19.06.2020)

Sub: - Introducing 25% Guided Student Self-Study (Blended Learning) at UG and PG levels

2. For Under-Graduate courses (Honours as well as Pass), following revised CBCS syllabus effective from 2019-20(i.e. students taking admission in 2019-20 academic year and thereafter), the entire **second unit (i.e. 25% of total four Units) of each subject and paper** is hereby earmarked for student self-study, except AECC (Ability Enhancement Compulsory Course) and SEC (Skill Enhancement Course) papers. **However, for**

7. To ensure that the self-study is taken seriously by students, mid-term internal assessment in all subjects/papers shall be primarily based on the self-study portion of the syllabus. This should be clearly told to the students in the first doubt clearing class.

GE: ARTS

GE Subject: ECONOMICS (ECO)

[Incase University offers 2 subjects as GE, then papers 1 and 2 will be the GE paper.]
(copied from page 28 to 30 of Economics model syllabus)

1 st year: (Semester- I & II) : Paper: GE-Eco-A-1 & GE-Eco-B-1

Generic Elective Paper I
INDIAN ECONOMY

Introduction: This paper introduces the students to the essentials of Indian economy with an intention of understanding the basic feature of the Indian economy and its planning process. It also aids in developing an insight into the agricultural and industrial development of India. The students will understand the problems and policies relating to the agricultural and industrial sectors of India and current challenges of Indian economy.

Unit I: Introduction to Indian Economy and Current Challenges
Colonialism & British Rule: Exploitation and under-development in India; Basic features of India Economy; Indian Economy as a developing economy; Demographic trends in India - Size and growth of population, Occupational structure, Sex composition, Age structure and demographic dividend; Causes of population growth and population policy; The problem of unemployment and recent policies for employment generation; The problem of inequality in income distribution and its causes, Policies to address inequality.

Unit II: Indian Agriculture
Role of Agriculture in Indian Economy; Cause of low productivity, Green Revolution and Land Reforms, Agricultural Finance-Sources and Problems; Agricultural Marketing in India.

Unit III: Industrial Development in India
Role of Industrialization in Indian Economy; Small Scale & Cottage Industries: Meaning, Role, Problems and Remedies; Industrial Policies of 1948, 1956, 1977 and1991; Problems of Industrial Development in India; Industrial Sickness.

Unit IV: Service Sector in India
Growth & Contribution to GDP; Composition and relative importance of service sector; Factors determining growth of the sector; ICT and IT – Spread and Policy; Sustainability of services led growth.

Text Book:

- Misra, S. K. and Puri V. K. Indian Economy — Its Development Experience. Himalaya Publishing House, Mumbai

Reference Book:

- Dutt R. and Sundharam K. P. M. *Indian Economy*. S. Chand & Company Ltd., New Delhi.

2nd Year: (Semester- III & IV) : Paper: GE-ECO-A-2 & GE-ECO-B-2

Generic Elective Paper II
INDIAN ECONOMY II

Introduction: : This paper is the part II of Indian economy deals with the external sector, financial markets in India, Indian Public Finances and Economic Reforms. This paper also throws some light on current challenges of Indian Economy.

Unit I: External Sector in India

Trends, Composition & Direction in exports from and imports of India; Problems of Balance of Payment: Causes of deficit in BOP & measures to correct it; Trade Policy- Export Promotion Vs Import Substitution; Foreign Trade Policy of India; WTO and India.

Unit II: Financial Markets in India

Commercial Banking in India- Nationalization of Banks; Lead bank scheme and branch expansion; RBI - Functions, Monetary Policy; Development Banking- IFCI,IDBI, SIDBI and NABARD

Unit III: Indian Public Finance

Public Expenditure-Growth and Composition, Causes of Growth of Public Expenditure in India: Tax Revenue of Central and State Governments; Concept of VAT; Deficit Financing in India-Revenue, Budget, Fiscal and Primary Deficits; Purpose and Effects of Deficit Financing; India's Fiscal Policy-Objectives.

Unit IV: Current Challenges Facing Indian Economy

Inflation – Causes, Consequences and Anti-inflationary Policy; Poverty – Poverty line and Estimates, Major Poverty Alleviation Programmes; Environmental Degradation – Growth and Environment; Population Growth and Environment; Environment Policy; Economic Reforms-Globalization, Macroeconomic Stabilization, Structural Reforms, and their impact on the Indian Economy; Foreign capital and MNCs-Role and consequences.

Text Book:

- Misra, S. K. and Puri V. K. Indian Economy — Its Development Experience. Himalaya Publishing House, Mumbai.

Reference Book

- Dutt R. and Sundharam K. P. M. *Indian Economy*. S. Chand & Company Ltd., New Delhi.
- Basu, Kaushik (2016): An Economist in the Real World: The Art of Policy Making in India, Penguin.

GE: Subject: EDUCATION (EDN)

[Universities where 2 subjects of two papers each are offered can offer GE1 and GE2.]
(copied from page 48 to 52 of Education model syllabus)

1st Year: (Semester- I & II) : Paper: GE-EDN-A-1 & GE-EDN-B-1

Generic Elective Paper I
EDUCATIONAL PHILOSOPHY

Learning Objectives

On completion of this course, the learners shall be able to:

- State and analyse the meaning of education and form own concept on education
- Explain philosophy as the foundation of education
- Analyse aims of education
- Describe the essence of different formal philosophies and draw educational implications
- Compare and contrast Indian and western philosophies of education.

UNIT 1: Education in Philosophical Perspective

(i) Etymological meaning of education
(ii) Narrower and broader meaning of education, lifelong education
(iii) Aims of Education- Individual and Social aims of education
(iv)Meaning and nature of philosophy
(v) Branches of Philosophy- Metaphysics, epistemology and axiology, and its educational implications
(vi)Functions of Philosophy in relation to education

UNIT 2: Formal Schools of Philosophy and their Educational Implications

(i) Idealism, Naturalism, Pragmatism with reference to: Aims of Education, curriculum, methods of teaching, role of teacher, discipline

UNIT 3: Indian Schools of Philosophy and their Educational Implications

(i) Common characteristics of Indian philosophy
(ii) Sankhya, Vedanta, , Buddhism, Jainism with reference to: Philosophical tenets, Aims of education, curriculum, methods of teaching, role of teacher.

UNIT 4: Educational Thought of Western and Indian Thinkers

(i) Plato; (ii) Dewey; (iii) Gopabandhu Das
(iv) Gandhi; (v) Tagore; (vi) Aurobindo

PRACTICAL

- Field visit to a seat of learning in the locality and prepare report.
  NB: It will be evaluated by both the internal and External examiners.

Text Books

- Safaya, R.N. & Shaida, B.D. (2010). *Modern Theory and Principles of Education*. New Delhi: Dhanpatrai Publishing Company Pvt. Ltd.
- Ravi, Samuel.S. (2015). *A Comprehensive Study of Education*. Delhi: PHI Learning Pvt. Ltd.

- Nayak, B.K . . *Text Book of Foundation of Education.* Cuttack, Odisha: Kitab Mahal.

Reference Books

1. Aggrawal, J.C. (2013). Theory and principle of education. New Delhi: Vikash Publishing House Pvt Ltd.
2. Anand, C.L. *et.al*. (1983). Teacher and education in emerging in Indian society, New Delhi: NCERT.
3. Brubacher, John.S.(1969). Modern philosophies of education. New York: McGraw Hill Co.
4. Clarke, P. (2001). Teaching and learning: The Culture of pedagogy. New Delhi: Sage Publication.
5. Dash, B.N. (2011) Foundation of education, New Delhi; Kalyani Publishers.
6. Dewey, John (1956). The Child and the curriculum, school and society. Chicago, Illinois: University of Chicago Press.
7. Dewey, John (1997). Experience and education. New York: Touchstone.
8. Ganesh, Kamala & Thakkar, Usha (Ed.) (2005). Culture and making of identity in India. New Delhi: Sage Publications.
9. Krishnamurthy, J. (1953). Education and significance of life. New Delhi: B.I. Publications
10. Kumar Krishna (1996). Learning from conflict. New Delhi: Orient Longman.
11. Ministry of Education (1966). Education and national development. New Delhi: Ministry of Education, Government of India.
12. Ornstein, Allan C. & Levine, Daniel U. (1989).Foundations of education (4^{th} Edn.). Boston: Houghton Mifflin Co.
13. Pathak, R. P. (2012). Philosophical and sociological principles of education. Delhi: Pearson.
14. Pathak, Avijit (2002). Social implications of schooling. New Delhi: Rainbow Publishers.
15. Peters, R.S. (1967). The Concept of education. London: Routledge Kegan & Paul.
16. Radhakrishnan, S. Indian philosophy Vol. I and Vol. II
17. Ross, James S.(1981). Ground work of educational theory.Delhi: Oxford University Press
18. Rusk, Robert R., Philosophical bases of education, London: Oxford University Press.
19. Salamatullah, (1979). Education in social context. New Delhi: NCERT.
20. Srinivas, M.N., (1986). Social changes in modern India. Bombay: Allied Publishers.
21. Taneja, V.R. (2000). Educational thought and practice, New Delhi: Sterling Publishers Pvt. Limited.
22. Wingo, G. Max (1975). Philosophies of education. New Delhi: Sterling Publisher Pvt. Limited.

2nd Year: (Semester- III & IV) : Paper: GE-EDN-A-2 & GE-EDN-B-2

Generic Elective Paper II
EDUCATIONAL PSYCHOLOGY

Learning Objectives

On completion of this course, the students will:

- Explain the concept of educational psychology and its relationship with psychology.
- Understand different methods of educational psychology.
- Explain the concepts of growth and development of child and adolescence, and underlined general principles of growth and development.
- Describe briefly the periods and the typical characteristics of growth and development during childhood and adolescence.
- Explain the theory of cognitive development and its educational implications.
- State the different forms and characteristics of individual differences and the ways of meeting the classroom issues arising out of the differences.
- Identify the learning needs during the different stages of development and adopt appropriate strategies in and out of school to meet the learning needs.

UNIT 1: Educational Psychology in Developmental Perspective

(i) Meaning, nature, scope and relevance of educational psychology

(ii) Methods of educational psychology- observation, experimentation, and case study

(iii) Application of educational psychology in understanding learner

(iv)Growth and Development-Concept, difference between growth and development, and principles of growth and development

(v) Characteristics of development during adolescence in different areas:

(vi)Physical, social, emotional and intellectual (with reference to Piaget)

UNIT 2: Intelligence, Creativity and Individual difference

(i) Individual difference-concept, nature, factors and role of education

(ii) Intelligence- meaning and nature of intelligence, concept of I.Q, theories of intelligence- Two factor theories, Guildford's structure of intelligence (SI) model, Gardner's multiple theory of intelligence.

(iii) Measurement of intelligence- individual and group test, verbal, non-verbal test

(iv)Creativity- meaning, nature and stages of creative thinking, strategies for fostering Creativity

UNIT 3: Learning and Motivation

(i) Learning- meaning, nature and factors of learning

(ii) Theories of learning with experiment and educational implications-

(iii) Classical conditioning, operant conditioning, insightful learning and constructivist approach to learning

(iv)Motivation – concepts, types, and techniques of motivation

UNIT 4: Personality and Mental health

(i) Personality- meaning and nature of personality

(ii) Theories- type theory(Jung), trait theory(Allport)

(iii) Assessment of personality- subjective, objective and projective techniques

(iv)Mental health-concept, factors affecting mental health and role of teacher, mental health of teacher.

(v) Adjustment mechanism: concept and types

PRACTICAL

- Case study of an exceptional child and reporting

  N.B: It will be evaluated by both the Internal and External examiners**.**

Text Books

- Chauhan, S.S. (1978). *Advanced educational psychology*. New Delhi: Vikas Publishing House Pvt. Ltd.
- Mangal, S.K. (2002). *Advanced educational psychology*. New Delhi: Prentice Hall of India.
- Woolfolk, A. (2015). *Educational psychology (9th Ed.).* New Delhi: Pearson Publication

Reference Books

1. Aggarwal, J.C. (2014). Essentials of Educational Psychology. New Delhi: Vikas Publishing House Pvt. Ltd.
2. Attri, A.K. (2015). *Psychology of development and learning*. New Delhi: APH Publishing Corporation.
3. Bernard, P.H. (1970). *Mental Health in the class room*. New York: McGraw Hill.
4. Biehier, R.F. & Snowman, J., (1997). *Psychology applied to teaching*. New York: Houghton MIflin.
5. Bigge, M.L., *Psychological foundations of education*, Harper and Row, New York, 1985.
6. Chandraiah,K.(2011). *Emotional intelligence*. New Delhi: APH Publishing Corporation.
7. Dececco, J.P. & Crawford, W.R. (1997). *Psychology of learning and institution*. New Delhi: Prentice Half of India.
8. Good T., (1990). *Educational psychology*. Longman, New York, 1990.
9. Lindgren, H.C. (1980). *Educational psychology in the classroom*. New York: Oxford University Press.
10. Mouly, G.J. (1982). *Psychology for teaching*. Allyn & Bacon, Boston.
11. Rothstein, P.R. (1990). *Educational psychology*. New York: McGraw Hill.
12. Salvin, R, (1990). *Educational psychology: theory into practice*, N.J.: Prentice hall,
13. Englewood Cliffs, Snowman and Biehler **(---).** *Psychology applied to teaching*…….
14. Sprint hall, RC. & Sprint hall, NA, (1990). *Educational psychology, development approach*, New York: McGraw Hill.

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GE: Subject: History (HIST)

[In case University offers 2 subjects as GE, then paper 1 and 2 will be the GE papers.](page-5)
(copied from page 19 to 21 of History model syllabus)

1st Year: (Semester- I & II) : Paper: GE-Hist-A-1 & GE-Hist-B-1

Generic Elective Paper I
History of India - I (Early Times to 1750)

Unit – I : Reconstructing Ancient Indian History
1.Sources of Historical Writings.
2.Vedic Age : Society, Polity and Culture
3.Buddhism and Jainism : Principles and Impact

Unit – II : Polity and Administration
1.The Mauryan Empire : Conquest and Administration
2.Gupta Society : Land Grants, Peasantry and beginning of Feudal Society
3.Gupta Polity : Conquests and Administration
4.Harshavardhan : Achievements

Unit – III: Early Medieval Society, Economy and Culture
1.Post Gupta Trade and Commerce
2.Delhi Sultanate : Conquests and Administration
3.Bhakti and Sufi Movements in India
4.Development of Regional Language and Literature

Unit – IV: India on the Eve of the Advent of the Mughals
1.Sher Shah : Administration and Reforms
2.Mughal Administrative Institutions : Zabti, Mansab and Jagir
3.Religious Tolerance Sulh-i- Kul
4.Mughal Art and Architecture

Suggested Text Books:
1.Upinder Singh, History of Ancient & Early Medieval India.
2. Romila Thappar, The Early India

Reference Reading:
1. Irfan Habib, Medieval India, NBT, New Delhi
2. R.S. Sharma, India's Ancient Past
3. S.A.A. Rizri, Wonder that was India, Vol.II, Rupa
4. Cultural Heritage of India, Bharatiya Vidyabhaban Series, Vol-1-IV
5. A.L. Basheon (ed), Cultural History of India, OUP, New Delhi, 2011

2nd Year: (Semester- III & IV) : Paper: GE-Hist-A-2 & GE-Hist-B-2

Generic Elective Paper II
History of India - II (1750-1950)

Unit – I: Foundation and Expansion of British Rule
1.Battle of Plessey (1757) and Conquest of Bengal
2.Conquest of Mysore and Maharashtra
3.Expansion through Diplomacy : Subsidiary Alliance and Doctrine of Lapse

Unit – II Consolidation of British Rule and Indian Responses
1.Peasant & Tribal Resistance against British Rule: Sanyasi Reballion (1763); Kondh Rebellion in Ghumusar, Santal Rebellion
2.Revolt of 1857 : Nature and Significance
3.Land Revenue Settlements : Permanent Settlement, Ryotwari and Mahalwari Settlement

Unit – III – Social and Cultural Policies
1.Socio-Religious Reform Movements: Brahmo Samaj, Arya Samaj, Theosophical Society, Aligarh Movement.
2.Growth of Press and Education
3.Issues of Caste and Gender : Jyotiba Phule- Women Question and Issues, Depressed Class.

Unit – IV – Indian National Movement
1.Politics of Moderates and Extremists (1885-1920)
2.Gandhian Mass Movements (Non-Cooperation, Civil Disobedience and Quit India Movements), (1920-1940)
3.Communal Politics and Partition
4.Making of the Democratic Constitution

Suggested Text Books:
1.A.R. Desai, Social Background of Indian Nationalism, Popular, Mumbai
2. Priyadarshi Kar, Comprehensive History of Modern India.

Reference Reading:
1. Sumit Sarkar, Modern India : 1885-1947, Mac Millon.
2. B.R.Mani, Debrahminising History: Dominance and Resistance in Indian Society, Manohar, New Delhi, First Published 2005.
3. Chandra Bharil, Social and Political Ideas of B.R. Ambedkar, Aalekh Publishers, Jaipur, 1977.
4. Sumit Sarkar, Modern India (1885-1947), Mac Millan, Delhi, First Published 1983.
5. Hirendra N.Mukherjee, Gandhi, Ambedkar and the Extirpation of Untouchablility, PPT, New Delhi.

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GE: Subject: Home Science (HSC)

[Universities where 2 subjects of two papers each are offered can offer GE1 and GE2.]
(copied from page 37 to 40 of Home Science model syllabus)

1st Year: (Semester- I & II) : Paper: GE-HSC-A-1 & GE-HSC-B-1

Generic Elective Paper I
HUMAN NUTRITION

Objectives:
To gain knowledge about different nutrients, their classification, function, sources, requirement and deficiency diseases.

UNIT-1 :
Basic Concepts of Nutrition:

- Meaning and definition of Nutrients& Nutrition.
- Guidelines for good health.
- Food: Definition, Classification.
- Functions of Food- Physiological, psychological and socio-cultural.
- Understanding relationship between food, nutrition and health.
- Basic Food Groups: Basic four, Basic five, Basic seven and their importance.

UNIT-II:
Study of Macro Nutrients

- Classification, functions, sources, requirement and
- Deficiency diseases of Carbohydrates, proteins & fats.

UNIT-III: Study of Micro-Nutrients:

- Vitamins- Classification, functions, sources, daily requirement & deficiency
- diseases of Fat-soluble & Water -Soluble Vitamins – B Complex Vitamins and Vitamin C.
- Minerals: Functions, sources, daily requirement & deficiency of Iron, calcium, phosphorous, sodium & Iodine.
- Water & roughage- Functions, sources & deficiency.

UNIT IV: Nutrition during different stages of lifecycle:

- Infants,
- Preschool children,
- School going children,
- Adolescent boys and girls,
- Adult man and woman,
- Pregnant Woman and Lactating Mother.

Text Book:

1. Food & Nutrition- Educational Planning Group, Arya Publication,New Delhi.

Reference Books:

• Fundamental of food and Nutrition- by S.R.Mudambi.
• Srilakshmi B (2012) Nutrtion Science 4th Revised Edition, New Age International Publishers.
• Khann K. Gupta , S. Seth R. Passi, SJ, Mahna , R. Puri S(2013) Textbook of Nutrition and Dietetics, Phonenix Publishing House Pvt Ltd.
• ICMR (2010) Recommended Dietary Allowances for Indias, Published by National Institute of Nutrition, Hyderabad
• Chadha R and Mathur P. cds (2015) Nutrition: A lifecycle Approach, Orient Blackwan, New Delhi.
• Seet V and Singh K (2006) Diet Planning through the life Cycle : Part 1 Normal Nutrition A Practical Manual, Elite Publishing House Pvt. Ltd. New Delhi.
- Gopalan C. Rama Sastri BV. Balasubramanian SC (1989) Nutritive Value of Indian Foods, National Institute of Nutrition, ICMR , Hyderabad.
• Wardlaw and Insle, MG, Insel PM (2004) , Perspectives in Nutrition, Six Edition, Mr. Graw Hill

2nd Year: (Semester- III & IV) : Paper: GE-HSC-A-2 & GE-HSC-B-2

Generic Elective Paper II
Human Development & Family Studies

Objectives:

- To know the importance of child study and about pre-natal Development.
- To understand the importance of Breast feeding and artificial feeding.
- To know the causes and consequences of infant and maternal mortality in India.

UNIT-I:

- Study of Human Development – Meaning and importance of studying human development,
- Stages of Human Development – Infancy, early childhood, late childhood, adolescence, adulthood & old age.

UNIT-II:

- Pre-natal development-
- Conception,
- Symptoms
- Complication of pregnancy.
- Different stages of pre- natal development-period of ovum, embryo & foetus.
- Factors affecting pre-natal Development –Age of the Mother, Nutrition, Drugs and Smoking, X-ray, Infection and chronic diseases of mother, Rh-incompatibility, Maternal emotional state.

UNIT-III:

- Neonatal Care – Immediate baby cleaning ,diet, temperature regulation ,
- Daily Care of the new born baby, care of umbilicus ,care of the tongue and mouth ,massaging and exercise .
- Weaning, and care of the feeding equipment.
- Common childhood aliments -Vomiting, fever, thrush, Diarrhea, constipation Flatulence (wind), nappy rash.
- Maternal and Infant mortality - Causes and prevention

UNIT – IV:

- Family: Meaning, definition, characteristics and functions of family.
- Types of family: Nuclear and joint family, their merits and demerits, causes of disintegration of joint family.

Text Book:

1. Marriage and Family in India-K.M.Kapadia

Reference Books:

2. Child Development –E.B. Hurlock
3. Child Development – by K.C. Panda
4. Family-Goode
5. Principles of sociology – R.N. Sahrma

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GE: Subject: ODIA

ଅନ୍ତର୍ବିଷୟ ଇଚ୍ଛାଧୀନ ପାଠ - ଓଡ଼ିଆ

Generic Electives (GE) - Course - Odia

[Universities where 2 subjects of two papers each are offered can offer GE1 and GE2.]

ସୂଚନା : ଅନ୍ୟ ସଜ୍ଞାନର ବିଦ୍ୟାର୍ଥୀ ଏଥିମଧ୍ୟରୁ ୨ଗୋଟି କିମ୍ବା ୪ଗୋଟି ପତ୍ର ଅଧ୍ୟୟନ କରିପପାରିବେ ;

(copied from page 22 to 23 of Odia Model CBCS syllabus)

ନମ୍ବର ବିଭାଜନ ବିଧି :

କ) ପ୍ରତ୍ୟେକ ପତ୍ରର ମୋଟ ନମ୍ବର – ୧୦୦

ଖ) ଅନ୍ତଃପରୀକ୍ଷା – ୨୦ ଓ ମୁଖ୍ୟ ପରୀକ୍ଷା – ୮୦

(ଗ) ମୁଖ୍ୟ ପରୀକ୍ଷାରେ ପ୍ରତ୍ୟେକ ଏକକରୁ ଦୁଇଟି ଲେଖାଏଁ ୧୫ ନମ୍ବର ବିଶିଷ୍ଟ ପସନ୍ଦମୂଳକ ବୋଧଜ୍ଞାନମାପକ ୮ଟି ଦୀର୍ଘ ପ୍ରଶ୍ନ ପଡ଼ିବ । ୮ ଟି ଦୀର୍ଘ ପ୍ରଶ୍ନରୁ ୪ଟିର ଉତ୍ତର ଦେବାକୁ ହେବ ।

(୧୫ x ୪ = ୬୦)

(ଘ) ସମସ୍ତ ଏକକରୁ ୨ ନମ୍ବର ବିଶିଷ୍ଟ ଲଘୁଜ୍ଞାନମୂଳକ ୧୫ଟି ସଂକ୍ଷିପ୍ତ ପ୍ରଶ୍ନ ପଡ଼ିବ । ମୋଟ ୧୫ ଗୋଟି ପ୍ରଶ୍ନରୁ ୧୦ ଗୋଟି ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବାକୁ ହେବ ।

(୨ x ୧୦ = ୨୦)

1st Year: (Semester- I & II) : Paper: GE-Odia-A-1 & GE-Odia-B-1

ପ୍ରଥମ ପର୍ଯ୍ୟାୟ **(Semester – I)**

ପାଠ୍ୟ – ୧ / ପତ୍ର - ୧ (Core Course - 1): ଗଣମାଧ୍ୟମ, ବେତାର କଳା ଓ ବିଜ୍ଞାପନ କଳା ।

୧ମ ଏକକ : ଗଣମାଧ୍ୟମ ଓ ତା'ର ପ୍ରକାରଭେଦ

୨ୟ ଏକକ : ବିଜ୍ଞାପନର ପରିଭାଷା, ପରିସର ଓ ଉଦ୍ଦେଶ୍ୟ

୩ୟ ଏକକ : ସ୍ରମ୍ଭ ଲିଖନ ଓ ଫିଚର ଲିଖନ

୪ର୍ଥ ଏକକ : ପତ୍ରଲିଖନ (ବାଣିଜ୍ୟିକ, କାର୍ଯ୍ୟାଳୟ ଭିତ୍ତିକ, ବ୍ୟକ୍ତିଗତ ଓ ସମ୍ପାଦକଙ୍କୁ ପତ୍ର)

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ଓଡ଼ିଆ ସାହିତ୍ୟକୁ ଆକାଶବାଣୀର ଦାନ - ବ୍ରଜମୋହନ ମହାନ୍ତି, ଓଡ଼ିଶା ବୁକ୍ ଷ୍ଟୋର

୨. ସମ୍ବାଦପତ୍ର ଓ ଗଣମାଧ୍ୟମ -ମୃଣାଳ ଚାଟାର୍ଜୀ, ଶେଫାଳୀ କମ୍ୟୁନିକେଶନ, ଢେଙ୍କାନାଳ

୩. ସମ୍ବାଦ ଓ ସାମ୍ବାଦିକତା – ଚନ୍ଦ୍ରଶେଖର ମହାପାତ୍ର, ଓ.ରା.ପା.ପ୍ର. ଓ ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର

୪. ସଂଯୋଗ ଅନୁବିଧି,-ସନ୍ତୋଷ କୁମାର ତ୍ରିପାଠୀ, ନାଳନ୍ଦା, କଟକ

୫. ଯୋଗାଯୋଗମୂଳକ ମାତୃଭାଷା – ବିରଞ୍ଚି ନାରାୟଣ ସାମଲ, ସତ୍ୟନାରାୟଣ ବୁକ୍ ଷ୍ଟୋର୍

୬. ଯୋଗାଯୋଗର ଭାଷା – ସୁଧୀର ଚନ୍ଦ୍ର ମହାନ୍ତି, ପ୍ରାଚୀ ପ୍ରକାଶନ, କଟକ

2nd Year: (Semester- III & IV) : Paper: GE-Odia-A-2 & GE-Odia-B-2

ଦ୍ୱିତୀୟ ପର୍ଯ୍ୟାୟ (Semester – II)

ପାଠ୍ୟ – ୨ / ପତ୍ର - ୨ (Core Course -2) : ସାହିତ୍ୟ ଅଧ୍ୟୟନ

୧ମ ଏକକ : ଗଳ୍ପ ସାହିତ୍ୟ

ବୁଢ଼ା ଶଙ୍ଖାରି - ଲକ୍ଷ୍ମୀକାନ୍ତ ମହାପାତ୍ର

ମାଗୁଣୀର ଶଗଡ଼ - ଗୋଦାବରୀଶ ମହାପାତ୍ର

ଶିକାର - ଭଗବତୀ ଚରଣ ପାଣିଗ୍ରାହୀ

୨ୟ ଏକକ : ଉପନ୍ୟାସ ସାହିତ୍ୟ

ଶାସ୍ତି - କାହ୍ନୁଚରଣ ମହାନ୍ତି, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ

୩ୟ ଏକକ : ନାଟକ

ଶେଷ କଥା - ଡକ୍ଟର ନାରାୟଣ ସାହୁ, ସତ୍ୟନାରାୟଣ ବୁକ୍ ଷ୍ଟୋର୍, କଟକ

୪ର୍ଥ ଏକକ : ରମ୍ୟ ରଚନା

ବାଇ ମହାନ୍ତି ପାଞ୍ଜି (ପ୍ରଥମ ବିଡ଼ା) - ଗୋପାଳ ଚନ୍ଦ୍ର ପ୍ରହରାଜ

ବଟୁଆ - ଗୋବିନ୍ଦ ତ୍ରିପାଠୀ

ସାଧୁ ସଙ୍ଗ - ଚୌଧୁରୀ ହେମକାନ୍ତ ମିଶ୍ର

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. କାହ୍ନୁଚରଣ ବିଶେଷାଙ୍କ, କୋଣାର୍କ, ଓଡିଶା ସାହିତ୍ୟ ଏକାଡେମୀ

୨. ଓଡିଆ କ୍ଷୁଦ୍ରଗଳ୍ପର ଇତିହାସ, ବୈଷ୍ଣବ ଚରଣ ସାମଲ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ

୩. ଓଡିଆ କଥାସାହିତ୍ୟର କଥା ଓ ରମ୍ୟରଚନା, ମହାପାତ୍ର ନୀଳମଣି ସାହୁ, ଓଡଶା ବୁକ୍ ଷ୍ଟୋର୍, କଟକ

୪. ଶାସ୍ତି - କାହ୍ନୁଚରଣ ମହାନ୍ତି, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ

୫. ଉତ୍ତର ସତୁରୀ ଓଡିଆ ନାଟକ, ହେମନ୍ତ କୁମାର ଦାସ, ଗ୍ରନ୍ଥମନ୍ଦିର, କଟକ

୬. ଶେଷ କଥା - ନାରାୟଣ ସାହୁ, ସତ୍ୟନାରାୟଣ ବୁକ୍ ଷ୍ଟୋର୍, କଟକ

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GE: Subject: POLITICAL SCIENCE (PSC)

[Universities where 2 subjects of two papers each are offered can offer GE1 and GE2.]
(copied from page 29 to 32 of Political Science model CBCS syllabus)

1st Year: (Semester- I & II) : Paper: GE-PSC-A-1 & GE-PSC-B-1

Generic Elective Paper I
FEMINISM: THEORY AND PRACTICE

Introduction: The aim of the course is to introduce students to contemporary debates on feminism and the history of feminist struggles. The course begins with a discussion on construction of gender and an understanding of complexity of patriarchy and goes on to analyze theoretical debates within feminism. It offers a gendered analysis of Indian society, economy and polity with a view to understanding the structures of gender inequalities. And the last section aims to understand the issues with which contemporary Indian women's movements are engaged with.

UNIT-I: Understanding Feminism
(i) Feminist theorizing of the sex/gender distinction; Public Man and Private Woman
(ii) Understanding Patriarchy and Feminism

UNIT-II: Theories of Feminism
(i) Liberal and Socialist,
(ii) Radical feminism and Eco-feminism

UNIT-III: Feminist issues and women's participation: The Indian Experience
(i) Women's participation in anti-colonial and national liberation movements with special focus on India
(ii) Traditional Historiography and Feminist critiques; Social Reforms Movement and position of women in India, History of Women's struggle in Post- Independent India

UNIT-IV: Family in contemporary India and Understanding Woman's Work and Labour
(i) Family in contemporary India - patrilineal and matrilineal practices. Gender Relations in the Family, Patterns of Consumption: Intra Household Divisions, entitlements and bargaining, Property Rights
(ii) Understanding Woman's Work and Labour – Sexual Division of Labour, Productive and Reproductive labour, Visible - invisible work – Unpaid (reproductive and care), Underpaid and Paid work,- Methods of computing women's work , Female headed households

Text Books

1. Bina Agarwal, (2013) 'Gender And Green Governance', Oxford University Press, Oxford,
2. Forbes, Geraldine (1998) 'Women in Modern India'. Cambridge, Cambridge University Press
3. Geetha, V. (2002) 'Gender'. Calcutta, Stree Publications.
4. Geetha, V. (2007) 'Patriarchy'. Calcutta, Stree Publications.
5. Jagger, Alison. (1983) 'Feminist Politics and Human Nature'. U.K, Harvester Press.
6. John, Mary(2008) 'Women studies in India: A Reader', Peguin, New Delhi
7. Lerner, Gerda. (1986) 'Creation of Patriarchy'. New York. Oxford University Press.

Reference Books:

1. Banarjee, Sikata. (2007) 'Ghadially, Rehana. (ed.) 'Urban Women in Contemporary India: A Reader'. New Delhi, Sage.
2. Chakravarti, Uma. (1988) 'Beyond the Altekarian Paradigm: Towards a New Understanding of Gender Relations in Early Indian History', Social Scientist, Volume 16, No. 8.
3. Desai, Neera & Thakkar, Usha. (2001) 'Women in Indian Society'. New Delhi: National Book Trust.
4. Gandhi, Nandita & Shah, Nandita. (1991) 'Contemporary Women's Movement in India'. Delhi, Zubaan.
5. Gupta, A and Sinha Smita, (2005) 'Empowerment of women: Language and Other Facets', Mangal Deep, New Delhi.
6. Jayawardene, Kumari. (1986) 'Feminism and Nationalism in the Third World'. London, Zed Books and Conclusion.
7. Nayak, Smita (2016) (eds.) ' Combating Violence Against Women: A Reality in the Making', Kalpaz, Gyan Books Pvt, Ltd, New Delhi
8. Nayak, Smita (2016) (eds.) 'Gender Dynamics: The Emerging Frontiers', Research India Publications, New Delhi.
9. Nayak, Smita, (2016), 'Whither Women: A Shift from Endowment to Empowerment', Edupedia, New Delhi.
10. Rege, Sharmila. (2003) (ed.) 'The Sociology of Gender: The Challenge of Feminist Sociological Knowledge'. New Delhi, Sage.
11. Rowbotham, Shiela. (1993) 'Women in Movements', New York and London, Routledge.
12. Sangari, Kumkum & Chakravarty, Uma.(1999) (eds.) 'From Myths to Markets: Essays on Gender'. Delhi, Manohar.
13. Sarkar, Tanika & Butalia, Urvashi. (1995) (eds.) 'Women and the Hindu Right'. Delhi, Kali for Women.

2nd Year: (Semester- III & IV) : Paper: GE-PSC-A-2 & GE-PSC-B-2

Generic Elective Paper II
GOVERNANCE: ISSUES AND CHALLENGES

Objectives: This paper deals with concepts and different dimensions of governance highlighting the major debates in the contemporary times. There is a need to understand the importance of the concept of governance in the context of a globalizing world, environment, administration, development. The essence of governance is explored through the various good governance initiatives introduced in India.

UNIT-I: Government and governance: concepts

(i) Governance: Meaning, Nature and Types

(ii) Role of State in the Era of Globalisation: State, Market and Civil Society

UNIT-II : Good Governance

i) Good Governance

ii) Sustainable Development and Governance

UNIT-III: Local Governance

(i) Democratic Decentralization: Institutions of Local Governance (PRIs),

(ii) People' Participation in Local Governance & Deepening Democracy

UNIT-IV : Good Governance Initiatives In India

i) Public Service Guarantee Acts & Electronic Governance

ii) Citizens Charter & Right to Information, Corporate Social Responsibility

Text Books

1. A Baviskar, ((1995) The Belly of the River: Tribal Conflict Over Development in the Narmada Valley', Delhi, Oxford University Press.
2. A. Parel (2000) (ed) 'Gandhi, Freedom and Self-Rule', New Delhi, Lexington Books.
3. B. Parekh, (1997) 'Gandhi: A Brief Insight', Delhi, Sterling Publishing Company.
4. B. Parekh, (1999) 'Colonialism, Tradition and Reform: An Analysis of Gandhi's Political Discourse', New Delhi, Sage Publication.
5. D. Hardiman, (2003) 'Gandhi in his Time and Ours'. Delhi, Oxford University Press.

Reference Books

1. R Iyer, (ed) (1993) 'The Essential Writings of Mahatma Gandhi', New Delhi, Oxford University Press.
2. R. Ramashray, (1984) 'Self and Society: A Study in Gandhian Thought', New Delhi, Sage Publication.

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GE: Subject: SANSKRIT (SANS)

[Universities where 2 subjects of two papers each are offered can offer GE1 and GE2.]

(copied from page 6, 10, 13 of Sanskrit model syllabus)

GENERIC ELECTIVE (GE)

04 Papers in Generic Elective such as 1, 2, 3 & 4
(One examinee may choose SANSKRIT as GE- A or GE-B)

GE- 1 KHANDAKAVYA & DARSANA -KAVYA	**80+20 = 100 Marks**
1. *Meghadutam- (Purvamegha)*	60
2. *Bhagavatagita(Ch.XV)*	20

GE-2 MORAL TEACHING AND BASICS OF SANSKRIT	**80+20 = 100 Marks**
1. *Hitopadesa*	32
2. *Yaksaprasna of Mahabharata (Aranyakaparva, ch.313)*	32
3. *Sabdarupa &Dhaturupa*	16

1st Year: (Semester- I & II) : Paper: GE-SANS-A-1 & GE-SANS-B-1

GENERIC ELECTIVE -1

KHANDAKAVYA & DARSANAKAVYA **80 +20 = 100 Marks**

1. *Meghadutam* (Purvamegha) **60 Marks**

2. Gita (Chapter.XV) **20 Marks**

1. *Meghadutam- (Purvamegha)* **60 Marks**

Unit-I	Long Question – 2 (About 150 words each)	12 x 2= 24 Marks
Unit- II	Short Questions - 4(About 50 words each)	5 x 4 = 20Marks
Unit-III	i) Explanation of One Verse (About 150 words)	10 Marks
	ii) Translation of One Verse into Odia/ English	06 marks

***2.Bhagavadgita* (Chap.XV)** **20 Marks**

Unit-IV	Long Question - 1(About 150 words)	12Marks
	Explanation of One Verse (About 150 words)	08 Marks

Core Reading:

1. *Meghadutam* (Ed.) M.R. Kale, Motilal Banarsidass, Delhi
2. *Shrimad-bhagavad-gita*, Gita Press, Gorakhpur

Suggested Reading:

1. *Meghadutam* (Ed.) B.S. Mishra, Vidyapuri, Cuttack, 1st Edn-1999
2. *Meghadutam* (Ed.) Radhamohan Mahapatra, Books and Books, Vinodvihari, Cuttack, 1984
3. *Shrimad-bhagavad-gita* (Ed.) S. Radhakrishnan, Bharatiya Vidya Bhavan
4. *Shrimad-bhagavad-gita* (Ed.) Gambhirananda, Ramakrishna Mission

2nd Year: (Semester- III & IV) : Paper: GE-SANS-A-2 & GE-SANS-B-2

GENERIC ELECTIVE -2

MORAL TEACHINGS AND BASICS OF SANSKRIT **80+20 = 100 Marks**

1. ***Hitopodeśa Mitralabha (Prastavana, Kathāmukha, Brddhavyaghrapathiakakatha, Mrgajambukakatha & Gṛdhravidalakatha)*** **32 Marks**
2. ***Yaksaprasna of Mahabharata(Aranyakaparva, ch.313 from Verses no. 41 to 133)*** **32 Marks**
3. ***Śabdarupa & Dhaturupa*** **16 Marks**

('a' *karanta*, 'i' *karanta*, 'ī'*karanta*, 'u'*karanta*, 'ū' *karanta*, 'in' *bhaganta*, *Mātṛ*, *Pitṛ*, *Asmad*, *Yusmad*, *Tad*(***Sabdarupas***).

Lat, *Laṅ*, *Vidhiliṅ*, *Lṛt*, *Lot* and *Litlakaras path*,*Ni*, *Kṛ*, *Sev*, *Han*, *Pā*, *Dā*, *Śru*, *Śī* and *Krīṇ* in the form of *Ātmanepada*, *Parasmaipada* or *Ubhayapada* whichever is applicable. (*Dhaturupas*)

Unit-I & II *Hitopodeśa Mitralabha and Sabdarupa* **40 Marks**

Long Question -1 (About 300 words)	16 Marks
Short Questions -2 (About 50 words each)	5×2=10 Marks
Translation of a textual verse	6 Marks
Sabdarupa – 4	2 x 4 = 8 Marks

Unit-III & IV *Yaksaprasna* of *Mahabharata and Dhaturupa* **40 Marks**

Long Question-1 (About 300 words)	16 Marks
Explanation - 1(About 150 words)	10 Marks
Translation of a textual verse	6 Marks
Dhaturupa – 4	2 x 4 = 8 Marks

Core Readings :

1. *Hitopadesah* (*Mitralabhah*) (Ed.) Kapildev Giri, Chaukhamba Publications, Varanasi.
2. *Mahabharata*, Gitapress, Gorakhpur (Prescribed Text)
3. *Vyakaranadarpana*, The Odisha State Bureau of Text Book Preparation andProduction, Bhubaneswar, 2013

Suggested Readings :

1. *Hitopadesah* (*Mitralabhah*) (Ed.) N.P. Dash and N.S. Mishra, Kalyani Publishers,New Delhi
2. *Hitopadesah* (*Mitralabhah*) (Ed.) B.S. Mishra, Vidyapuri, Cuttack
3. *Yaksaprasna, T. K. Ramaayiyar, R. S. Vadhyar & Sons. Palkad, Kerala*
4. *Yaksaprasna, Ed. Dr. Nirmal Sundar Mishra, A.K. Mishra Agency, Cuttack, 2016*

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GE: Subject: SOCIOLOGY (SOC)

[Universities where 2 subjects of two papers each are offered can offer GE1 and GE2.] (page-3)
(copied from page 3, 29, 30, 31 of Sociology model CBCS syllabus)

1st Year: (Semester- I & II) : Paper: GE-SOC-A-1 & GE-SOC-B-1

GENERIC ELECTIVE PAPER I
INTRODUCTION TO SOCIOLOGY

This **introductory paper** intends to acquaint the students with Sociology as a Social Science and the basic concepts used in the discipline. It also focuses on the social processes and the social institutions that man encounters as a member of the society.

Objectives: After studying these two papers, the student can

- Get to know the convergence and divergence of Sociology with other social science disciplines in terms of the subject matter, nature and scope of the discipline and its approach.
- Develop knowledge about its historicity.
- Can get acquainted with the basic concepts used in the subject.
- Can generate ideas about the social processes and social institutions man encounters as a member of the society.

Learning Outcomes: This paper is expected to clarify and broaden the student's notion about the subject, the basic concepts used and some universal societal processes. This will provide a wholesome picture about what the subject is all about.

Unit-1: Discipline and Perspective
1.1 Meaning, Emergence of Sociology
1.2 Definition, Subject Matter
1.3 Nature and Scope of Sociology
1.4 Relationship of Sociology with Anthropology, Political Science, History and Economics

Unit-2: Basic Concepts
2.1 Society and Community
2.2 Associations and Institutions
2.3 Social Groups and Culture
2.4 Role and Status

Unit-3: Social Stratification
3.1 Meaning, Definition, Characteristics
3.2 Forms of Stratification-Caste, class & gender
3.3 Functionalist Theorists of stratification (Parsons, Davis & Moore)
3.4 Marxian & Weberian Theories of stratification

Unit-4: Socialization and Social Control

4.1 Meaning, Definitions, Stages of Socialization Process.

4.2. Agencies of Socialization

4.3 Social Control: Meaning, Definitions, importance of social control

4.4 Agencies of Social Control: Formal and Informal

Suggested Text Books:

1. Rao ,C.N.Shankar, Principles of Sociology: With an Introduction to Social Thought, S.Chand & Co. Pvt. Ltd.(Revised edt.), 2006
2. Haralambos &Holborn , Sociology: Themes and Perspectives Harper Collins; Eighth edition, 2014

Reference Readings:

1. Mills, C.W.,*The Sociological Imagination*, Oxford: Oxford University Press, 1959.
2. Giddens ,Anthony, Introduction to Sociology, 1991
3. Rawat, H.K. Contemporary Sociology, Rawat Publication, Jaipur, 2013
4 Johnson, Harry M. Sociology: A Systematic Introduction, New Delhi, Allied Publishers, 1995
5. Smelser Neil J. *Hand Book of Sociology*, Sage Publications, Inc. 1998
6. Dasgupta,Samir and Saha,Paulomi An Introduction to Sociology,Pearson,2014

2nd Year: (Semester- III & IV) : Paper: GE-SOC-A-2 & GE-SOC-B-2

GENERIC ELECTIVE PAPER II
INDIAN SOCIETY

Every society has its own peculiar structure and there are some institutions universal to every society, but with their unique manifestations in each society. There are some change agents and initiatives that enable the society to change with the passage of time. This paper focuses on the structure of the Indian society and the changing aspects with the processes operating, change agents and initiatives.

Objectives: After studying these two papers on Indian society, the student can

- Get an impression about the basic composition of Indian society, its historical moorings, basic philosophical foundations of the society and the institutions.
- Learn about the changing institutions, the processes, the agents and the interventions that bring about change in the Indian society.

Learning Outcomes: This paper is expected to bring familiarity in a student about Indian society. It will present a comprehensive, integrated and empirically –based profile of Indian society. It is hoped that the structure and processes operative in the society, the change agents operating in Indian society presented in this course will also enable students to gain a better understanding of their own situation and region.

Unit-1: Composition of Indian Society and Approaches to the study of Indian society:

1.1 Composition of Indian Society: Religious, Linguistic and Racial

1.2 Unity in diversity

1.3 National Integration--Meaning & Threats (Communalism, linguism, regionalism)

1.4 Approaches to the study of Indian society: Structural-Functional, Marxian and Subaltern

Unit-2: Historical Moorings and Bases of Hindu Social Organization

2.1 Varna Vyavastha and relevance

2.2 Ashrama and relevance

2.3 Purusartha and relationship with Ashramas

2.4 Doctrine of Karma

Unit-3: Marriage and Family in India

3.1 Hindu Marriage as Sacrament, Aims of Hindu marriage, Forms of Hindu Marriage

3.2 Hindu Joint Family-Meaning & disintegration

3.3 Marriage among the Muslims & Tribes

3.4 Changes in Marriage and Family in India

Unit-4: The Caste System in India

4.1 Meaning, Definitions & features of Caste

4.2 Functions & Dysfunctions of Caste

4.3 Factors affecting caste system

4.4 Recent Changes in Caste System

Suggested Text Book:

1. Rao ,C.N.Shankar, Sociology of Indian Society, S.Chand & Co. Pvt. Ltd.(Revised edt.), 2004

Reference Readings:

1. Shah, A.M., The Household Dimension of the Family in India: A Field Study in a Gujarat Village and a Review of Other Studies, Delhi: Orient Longman, 1973.

2. Uberoi, P. (ed.), Family, Kinship and Marriage in India, New Delhi: Oxford University Press, 1993.

3.. Y. Singh , Modernisation of Indian Tradition, Jaipur: Rawat Publications, 1986

4..Ram Ahuja, Indian Social System, Rawat Publications, 1993

5. Sharma, KL. Indian Social Structure and Change, Rawat Publication, 2008

6. Srinivas, M.N. India: Social Structure. New Delhi: Hindustan Publishing Corporation, 1980

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GE: SCIENCE

GE Subject: BOTANY (BOT)

[Incase University offers 2 subjects as GE, then papers 1 and 2 will be the GE paper.] (page-5)
(copied from page 5, 33, 34, 35, 36 of Botany model CBCS syllabus)

1st year: (Semester- I & II) : Paper: GE-BOT-A-1 & GE-BOT-B-1

Generic Elective Paper I
BIODIVERSITY (MICROBES, ALGAE, FUNGI AND ARCHEGONIATES)

Unit-I

Microbes :Viruses – Discovery, general structure, replication (general account), DNA virus (T-phage); Lytic and lysogenic **cycle**, RNA virus (TMV); Economic importance; Bacteria – Discovery, General characteristics and cell structure; Reproduction – vegetative, asexual and recombination (conjugation, transformation and transduction); Economic importance.

Unit-II

(i) Algae: General characteristics; Ecology and distribution; Range of thallus organization and reproduction; Morphology and life- cycles of the following: *Chlamydomonas,Oedogonium, Nostoc and Fucus, Vaucheria, Polysiphonia,* Economic importance of algae.
(ii) Fungi : Introduction- General characteristics, ecology and significance, range of thallus organization, cell wall composition , nutrition, reproduction and classification; True Fungi- General characteristics, ecology and significance, life cycle of *Rhizopus* (Zygomycota) *Penicillium* (Ascomycota), *Puccnia, Agaricus* Basidiomycota); Symbiotic Associations-Lichens:

Unit-III

(i) **Bryophytes:** General characteristics, adaptations to land habit, Classification, Range of thallus organization, Classification (up to family), morphology, anatomy and reproduction of *Marchantia* and *Funaria* (Developmental details not to be included).
(ii) **Pteridophytes:** General characteristics, classification, early land plants (*Rhynia*). Classification (up to family), morphology, anatomy and reproduction of *Selaginella*, *Equisetum* and *Pteris* (Developmental details not to be included).Heterospory and seed habit, stellar evolution. Ecological and economical importance of Pteridophytes.

Unit-IV

Gymnosperms: General characteristics, classification. Classification (up to family), morphology, anatomy and reproduction of *Cycas*, *Pinus* and *Gnetum*. (Developmental details not to be included).Ecological and economical importance.

PRACTICAL

1. Gram staining
2. Study of vegetative and reproductive structures of *Nostoc, Chlamydomonas,Oedogonium, Vaucheria, Fucus* and *Polysiphonia* through temporary preparations and permanent slides.
3. *Rhizopus and Penicillium*: Asexual stage from temporary ounts and sexual structures through permanent slides.
4. *Puccinia* and *Agaricus*: Specimens of button stage and full grown mushroom; Sectioning of gills of *Agaricus*.
5. Marchantia and Funaria- morphology of thallus, w.m. rhizoids and scales, v.s. thallus through gemma cup, w.m. gemmae (all temporary slides), v.s. antheridiophore, archegoniophore, l.s. sporophyte (all permanent slides).
6. *Selaginella*- morphology, w.m. leaf with ligule, t.s. stem, w.m. strobilus, w.m.microsporophyll and megasporophyll (temporary slides), l.s. strobilus (permanent slide).
7. *Equisetum*- morphology, t.s. internode, l.s. strobilus, t.s. strobilus, w.m. sporangiophore, w.m. spores (wet and dry)(temporary slides); t.s rhizome (permanent slide).
8. *Cycas*- morphology (coralloid roots, bulbil, leaf), t.s. coralloid root, t.s. rachis, v.s. leaflet, v.s. microsporophyll, w.m. spores (temporary slides), l.s. ovule, t.s. root (permanent slide).
9. *Pinus*- morphology (long and dwarf shoots, w.m. dwarf shoot, male and female), w.m. dwarf shoot, t.s. needle, t.s. stem, , l.s./t.s. male cone, w.m. microsporophyll, w.m. microspores (temporary slides), l.s. female cone, t.l.s. & r.l.s. stem (permanent slide).

Text Books:

1. Mitra, J.N., Mitra, D. and Choudhury, S.K. Studies in Botany Volume 1. Moulik Publisher, Kolkata. Ninth Revised Edition

Reference Books:

1.Kumar, H.D. (1999). Introductory Phycology. Affiliated East-West. Press Pvt. Ltd. Delhi.2nd edition.
2.Tortora, G.J., Funke, B.R., Case, C.L. (2010). Microbiology: An Introduction, Pearson Benjamin Cummings, U.S.A. 10th edition.
3.Sethi, I.K. and Walia, S.K. (2011). Text book of Fungi & Their Allies, Mac Millan Publishers Pvt. Ltd., Delhi.
4.Alexopoulos, C.J., Mims, C.W., Blackwell, M. (1996). Introductory Mycology, John Wiley and Sons (Asia), Singapore. 4th edition.
5.Raven, P.H., Johnson, G.B., Losos, J.B., Singer, S.R., (2005). Biology. Tata McGraw Hill, Delhi, India.
6.Vashishta, P.C., Sinha, A.K., Kumar, A., (2010). Pteridophyta, S. Chand. Delhi, India.
7.Bhatnagar, S.P. and Moitra, A. (1996). Gymnosperms. New Age International (P) Ltd Publishers, New Delhi, India.
8.Parihar, N.S. (1991). An introduction to Embryophyta. Vol. I. Bryophyta. Central Book Depot, Allahabad.
9.Pandey, B. P. (2017), Botany for degree studies (as per CBCS). S. Chand
10. Acharya, B. S. and Mishra, B. K. (2018). Plant Biodiversity, Kalyani Publishers, New Delhi.

2nd Year: (Semester- III & IV) : Paper: GE-BOT-A-2 & GE-BOT-B-2

Generic Elective Paper II
PLANT PHYSIOLOGY AND METABOLISM

Unit-I

(i) Plant-water relations: Importance of water, water potential and its components; Transpiration and its significance; Factors affecting transpiration; Root pressure and guttation.

(ii) Mineral nutrition: Essential elements, macro and micronutrients; Criteria of essentiality of elements; Role of essential elements; Transport of ions across cell membrane, active and passive transport, carriers, channels and pumps.

(iii) Translocation in phloem.: Composition of phloem sap, girdling experiment; Pressure flow model; Phloem loading and unloading.

Unit-II

(i) Photosynthesis: Photosynthetic Pigments (*Chl* a, b, xanthophylls, carotene); Photosystem I and II, reaction center, antenna molecules; Electron transport and mechanism of ATP synthesis; C3, C4 and CAM pathways of carbon fixation.

(ii) Respiration: Glycolysis, anaerobic respiration, TCA cycle; Oxidative Phosphorylation.

Unit-III

(i) Enzymes: Structure and properties; Mechanism of enzyme catalysis and enzyme inhibition.

(ii) Nitrogen metabolism: Biological nitrogen fixation; Nitrate and ammonia assimilation.

Unit-IV

(i) Plant growth regulators: Discovery and physiological roles of auxins, gibberellins, cytokinins, ABA, ethylene.

(ii) Plant response to light and temperature: Photoperiodism (SDP, LDP, Day neutral plants); Phytochrome (discovery and structure), red and far red light responses on hotomorphogenesis; Vernalization.

PRACTICAL

1. Determination of osmotic potential of plant cell sap by plasmolytic method.
2. To study the effect of two environmental factors (light and wind) on transpiration by excised twig.
3. Calculation of stomatal index and stomatal frequency of a mesophyte and a xerophyte.
4. Demonstration of Hill reaction.
5. Demonstrate the activity of catalase and study the effect of pH and enzyme concentration.
6. To study the effect of light intensity and bicarbonate concentration on O2 evolution in photosynthesis.
7. Comparison of the rate of respiration in any two parts of a plant.

Text Books:

1. A. C. Sahu (2018). Plant Physiology and Metabolism. Kalyani Publishers, New Delhi.

Reference Books:

1. Taiz, L., Zeiger, E., MOller, I.M. and Murphy, A (2015). Plant Physiology and Development. Sinauer Associates Inc. USA. 6th edition.
2. Hopkins, W.G., Huner, N.P., (2009). Introduction to Plant Physiology. John Wiley & Sons, U.S.A. 4th Edition.
3. Bajracharya, D., (1999). Experiments in Plant Physiology- A Laboratory Manual. Narosa Publishing House, New Delhi.
4. H. S. Srivatava. Plant Physiology, Rastogi Publications, New Delhi

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GE: Subject: CHEMISTRY (CHEM)

[Universities where 2 subjects of two papers each are offered can offer GE1 and GE2.](page-4)
(copied from page 4, 57 to 63 of Chemistry Model CBCS syllabus)

1st year: (Semester- I & II) : Paper: GE-CHEM-A-1 & GE-CHEM-B-1

Generic Elective Paper I (Theory)
ATOMIC STRUCTURE, BONDING, GENERAL ORGANIC CHEMISTRY & ALIPHATIC HYDROCARBONS

Section A: Inorganic Chemistry-I

Unit-I: Atomic Structure

Review of: Bohr's theory and its limitations, dual behaviour of matter and radiation, de-Broglie's relation, Heisenberg Uncertainty principle. Hydrogen atom spectra.

Quantum mechanics: Time independent Schrodinger equation and meaning of various terms in it. Significance of ψ and ψ2, Schrodinger equation for hydrogen atom. Radial and angular parts of the hydogenic wave functions (atomic orbitals) and their variations for 1s, 2s, 2p, 3s, 3p and 3d orbitals (Only graphical representation). Quantum numbers and their significance, shapes of s, p and d atomic orbitals, nodal planes.

Rules for filling electrons in various orbitals, Electronic configurations of the atoms. Stability of half-filled and completely filled orbitals, concept of exchange energy. Relative energies of atomic orbital, Anomalous electronic configurations.

Unit-II: Chemical Bonding and Molecular Structure

Ionic Bonding: General characteristics, energy considerations. Lattice energy and salvation energy and their importance in the context of stability and solubility of ionic compounds. Statement of Born-Lande equation for calculation of lattice energy, Born-Haber cycle and its applications, polarizing power and polarizability. Fajan's rules and its applications.

Covalent bonding: VB Approach: Shapes of some inorganic molecules and ions on the basis of VSEPR and hybridization with suitable examples of linear, trigonal planar, square planar, tetrahedral, trigonal bipyramidal and octahedral arrangements.

Concept of resonance and resonating structures in various inorganic and organic compounds. MO Approach: Rules for the LCAO method, bonding and antibonding MOs and their characteristics for *s-s*, *s-p* and *p-p* combinations of atomic orbitals, nonbonding combination of orbitals, MO treatment of homonuclear diatomic molecules (N2, O2) and heteronuclear diatomic molecules (CO, NO). Comparison of VB and MO approaches.

Section B: Organic Chemistry-I

Unit- III: Fundamentals of Organic Chemistry

Physical Effects, Electronic Displacements: Inductive effect, Electrometric effect, Resonance and hyperconjugation. Cleavage of bonds: Homolysis and heterolysis.

Structure, shape and reactivity of organic molecules: Nucleophiles and electrophiles. Reactive Intermediates: Carbocations, Carbanions and free radicals.

Strength of organic acids and bases: Comparative study with emphasis on factors affecting pK values. Aromaticity: Huckel's rule.

Stereochemistry

Conformations with respect to ethane, butane and cyclohexane. Interconversion of Wedge Formula, Newmann, Sawhorse and Fischer representations. Concept of chirality (up to two carbon atoms). Configuration: Geometrical and Optical isomerism; Enantiomerism, Diastereomerism and Meso compounds). D and L; cis-trans nomenclature; CIP Rules: R/ S (for one chiral carbon atoms) and E / Z Nomenclature (for up to two C=C systems).

Unit-IV: Aliphatic Hydrocarbons

Functional group approach for the following reactions (preparations & reactions) to be studied in context to their structure.

Alkanes: (Up to 5 Carbons) *Preparation:* Catalytic hydrogenation, Wurtz reaction, Kolbe's synthesis, from Grignard reagent. *Reactions:* Free radical Substitution: Halogenation.

Alkenes: (Up to 5 Carbons) *Preparation:* Elimination reactions: Dehydration of alkenes and dehydrohalogenation of alkyl halides (Saytzeff's rule); cis-alkenes (Partial catalytic hydrogenation) and trans-alkenes (Birch reduction). *Reactions:* cis-addition (alk. KMnO4) and trans-addition (bromine), Addition of HX (Markownikoff's and anti- Markownikoff's addition), Hydration, Ozonolysis.

Alkynes: (Up to 5 Carbons) *Preparation:* Acetylene from CaC2 and conversion into higher alkynes; by dehalogenation of tetra halides and dehydrohalogenation of vicinal-dihalides. *Reactions:* formation of metal acetylides, addition of bromine and alkaline KMnO4,ozonolysis.

Recommended Text Books:

1. Lee J. D., Concise Inorganic Chemistry, Wiley India, 5thEdn., 2008.
2. Puri, Sharma, Kalia, Principles of Inorganic Chemistry, Vishal Pub. Co., 33rd Ed., 2017.
3. Shriver D. E., Atkins P. W., Inorganic Chemistry, Oxford University Press, 5th Edn.
4. Huheey J. E., Keiter E. A. and Keiter R. L., Inorganic Chemistry – Principles of structure and reactivity, Pearson Education, 4th Ed. 2002.

5. Morrison, R. N. & Boyd, R. N., Organic Chemistry, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
6. Bhal Arun & Bhal B S , Advanced Organic Chemistry, 2nd Edition, S. Chand Publisher, 2012.
7. Kalsi, P. S. Stereochemistry Conformation and Mechanism; 8th Edn, New Age International, 2015.

Reference books

1. Das Asim K., Fundamentals of Inorganic Chemistry, Vol. II, CBS Publications, 2nd Ed. 2010.
2. Pradeep's Inorganic Chemistry, Vol. I & II, Universal Book seller, 14th Ed. 2017.
3. Mallick, Madan and Tuli, S. Chand Selected Topic in Inorganic Chemistry, 17thEdn. 2010.
4. Dhawan, S.N., Pradeep's Organic Chemistry, (Vol. I and II), Pradeep Publications.

Generic Elective Paper I LAB

Section A: Inorganic Chemistry

Volumetric Analysis

1. Estimation of sodium carbonate and sodium hydrogen carbonate present in a mixture.
2. Estimation of oxalic acid by titrating it with $KMnO_4$.
3. Estimation of water of crystallization in Mohr's salt by titrating with $KMnO_4$.
4. Estimation of Fe(II) ions by titrating it with $K_2Cr_2O_7$ using internal indicator.
5. Estimation of Cu(II) ions iodometrically using Na_2S2O_3.

Section B: Organic Chemistry

1. Detection of extra elements (N, S, Cl) in organic compounds (containing up to two extra elements)

2. Separation of mixtures by Chromatography: Measure the Rf value in each case (combination of two compounds to be given)

(a) Identify and separate the components of a given mixture of 2 amino acids (glycine, aspartic acid, glutamic acid, tyrosine or any other amino acid) by paper chromatography.

(b)Identify and separate the sugars present in the given mixture by paper chromatography.

Reference Books:

1. Mendham, J., A. I. Vogel's Quantitative Chemical Analysis 6th Ed., Pearson, 2009.
2. Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009)
3. Ahluwalia, V.K., Dhingra, S. and Gulati A, College Practical Chemistry, University Press (2005).

2nd Year: (Semester- III & IV) : Paper: GE-CHEM-A-2 & GE-CHEM-B-2

Generic Elective Paper II (Theory)
CHEMICAL ENERGETICS, EQUILIBRIA & FUNCTIONAL ORGANIC CHEMISTRY

Section A: Physical Chemistry-I

Unit-I: Chemical Energetics

Review of thermodynamics and the Laws of Thermodynamics.

Important principles and definitions of thermochemistry. Concept of standard state and standard enthalpies of formations, integral and differential enthalpies of solution and dilution. Calculation of bond energy, bond dissociation energy and resonance energy from thermochemical data. Variation of enthalpy of a reaction with temperature – Kirchhoff's equation.

Statement of Third Law of thermodynamics.

Chemical Equilibrium

Free energy change in a chemical reaction. Thermodynamic derivation of the law of chemical equilibrium. Distinction between ΔG and ΔG^o, Le Chatelier's principle. Relationships between K_p, K_c and K_x for reactions involving ideal gases.

Unit- II: Ionic Equilibria

Strong, moderate and weak electrolytes, degree of ionization, factors affecting degree of ionization, ionization constant and ionic product of water. Ionization of weak acids and bases, pH scale, common ion effect. Salt hydrolysis-calculation of hydrolysis constant, degree of hydrolysis and pH for different salts. Buffer solutions. Solubility and solubility product of sparingly soluble salts – applications of solubility product principle.

Section B: Organic Chemistry-II

Unit- III

Functional group approach for the following reactions (preparations & reactions) to be studied in context to their structure.

Aromatic hydrocarbons

Preparation (Case benzene): from phenol, by decarboxylation, from acetylene, from benzene sulphonic acid. Reactions: (Case benzene): Electrophilic substitution: nitration, halogenation and sulphonation. Friedel-Craft's reaction (alkylation and acylation) (up to 4 carbons on benzene).

Side chain oxidation of alkyl benzenes (up to 4 carbons on benzene).

Alkyl and Aryl Halides

Alkyl Halides (Up to 5 Carbons) Types of Nucleophilic Substitution (SN1, SN2 and SNi) reactions.

Preparation: from alkenes and alcohols. Reactions: hydrolysis, nitrite & nitro formation, nitrile &

isonitrile formation. Williamson's ether synthesis: Elimination vs substitution.
Aryl Halides Preparation: (Chloro, bromo and iodo-benzene case): from phenol, Sandmeyer & Gattermann reactions.
Reactions (Chlorobenzene): Aromatic nucleophilic substitution (replacement by –OH group) and effect of nitro substituent. Benzyne Mechanism: KNH2/NH3 (or NaNH2/NH3).

Unit- IV
Alcohols, Phenols and Ethers (Up to 5 Carbons)
Alcohols: Preparation: Preparation of 1°, 2° and 3° alcohols: using Grignard reagent, Ester hydrolysis, Reduction of aldehydes and ketones, carboxylic acid and esters.
Reactions: With sodium, HX (Lucas test), esterification, oxidation (with PCC, Alk. KMnO4, acidic dichromate, conc. HNO3). Oppeneauer oxidation Diols: (Up to 6 Carbons) oxidation of diols. Pinacol-Pinacolone rearrangement

Phenols: (Phenol case) Preparation: Cumene hydroperoxide method, from diazonium salts.
Reactions: Electrophilic substitution: Nitration, halogenation and sulphonation. Reimer Tiemann Reaction, Gattermann -Koch Reaction,

Ethers (aliphatic and aromatic): Cleavage of ethers with HI.

Aldehydes and ketones (aliphatic and aromatic): Formaldehyde, acetaldehyde, acetone and benzaldehyde
Preparation: from acid chlorides and from nitriles.
Reactions – Reaction with HCN, ROH, NaHSO3, NH2-G derivatives. Iodoform test. Aldol Condensation, Cannizzaro's reaction, Benzoin condensation. Clemensen reduction and Wolff Kishner reduction.

Recommended Text Books:
1. Atkins P. W. & Paula, J. de, Elements of Physical Chemistry, Oxford University Press, 6th Ed., (2006).
2. Principles of Physical Chemistry, Puri, Sharma & Pathania, Vishal Publishing Co, 47th Edn. 2017.
3. K. L. Kapoor, Text Book of Physical Chemistry, Mac Grow Hill, 3rdEdn. 2017.
4. Morrison, R. N. & Boyd, R. N., Organic Chemistry, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
5. Arun Bahl & B S Bahl, Advanced Organic Chemistry, 2nd Edition, S. Chand Publisher, 2012.

Reference Books:
1. Kheterpal S.C., Pradeep's Physical Chemistry, Vol. I & II, Pradeep Publications.
2. Dhawan, S.N., Pradeep's Organic Chemistry, (Vol. I and II), Pradeep Publications

Generic Elective Paper II LAB

Section A: Physical Chemistry

Thermochemistry (any three)

1. Determination of heat capacity of calorimeter for different volumes.
2. Determination of enthalpy of neutralization of hydrochloric acid with sodium hydroxide.
3. Determination of enthalpy of ionization of acetic acid.
4. Determination of integral enthalpy of solution of salts (KNO3, NH4Cl).
5. Determination of enthalpy of hydration of copper sulphate.
6. Study of the solubility of benzoic acid in water and determination of ΔH.

Ionic equilibria

pH measurements

a) Measurement of pH of different solutions like aerated drinks, fruit juices, shampoos and soaps (use dilute solutions of soaps and shampoos to prevent damage to the glass electrode) using pH-meter.

b) Preparation of buffer solutions:

- Sodium acetate-acetic acid
- Ammonium chloride-ammonium hydroxide

Measurement of the pH of buffer solutions and comparison of the values with theoretical values.

Section B: Organic Chemistry

1. Purification of organic compounds by crystallization (from water) and determination of melting.
2. Preparations, recrystallisation, determination of melting point and calculation of quantitative yields of the followings:

(a) Bromination of Phenol/Aniline

(b) Benzoylation of amines/phenols

(c) Oxime and 2,4 dinitrophenylhydrazone of aldehyde/ketone.

Reference Books

1. A.I. Vogel: Textbook of Practical Organic Chemistry, 5th edition, Prentice-Hall.
2. Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009).
3. Khosla, B. D.; Garg, V. C. & Gulati, A. Senior Practical Physical Chemistry, R. Chand & Co., New Delhi (2011).
4. Ahluwalia, V.K., Dhingra, S. and Gulati A, College Practical Chemistry, University Press (2005).

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GE: Subject: MATHEMATICS (MATH)

GENERIC ELECTIVES (TWO PAPER CHOICE)

(copied from page 36 to 39 of Mathematics Model CBCS syllabus)

1st year: (Semester- I & II) : Paper: GE-MATH-A-1 & GE-MATH-B-1

Generic Elective Paper I
CALCULUS AND DIFFERENTIAL EQUATIONS

Objective: Calculus invented by Newton and Leibnitz is powerful analytical tool to solve mathematical problems which arise in all branches of science and engineering. The main emphasis of this course is to equip the student with necessary analytic and technical skills to handle problems of a mathematical nature as well as practical problems using calculus and differential equation. The aim should be to expose the students to basic ideas quickly without much theoretical emphasis with importance on applications.

Excepted Outcomes: After completing the course, students are expected to be able to apply knowledge of calculus and differential equations in the areas of their own interest.

UNIT-I

Curvature, Asymptotes, Tracing of Curves (Catenary, Cycloid, Folium of Descartes), Rectification, Quadrature, Elementary ideas about Sphere, Cones, Cylinders and Conicoids.

UNIT-II

Reviewoflimits,continuityanddifferentiabilityoffunctionsofonevariable and their properties, Rolle's theorem, Mean value theorems, Taylor's theorem with Lagrange's theorem and Cauchy's form of remainder, Taylor's series, Maclaurin's series of $\sin x$, $\cos x$, e^x, $\log(1+x)$, $(1+x)^m$, L' Hospital's Rule, other Intermediate forms.

UNIT-III

Limitand Continuity of functions of several variables, Partial derivatives, Partial derivatives of higher orders, Homogeneous functions, Change of variables, Mean value theorem, Taylors theorem and Maclaurin's theorem for functions of two variables(statements &applications), Maxima and Minima of functions of two and three variables, Implicit functions, Lagrange's multipliers (Formulae & its applications), Concepts of Multiple integrals & its applications.

UNIT-IV

Ordinary Differential Equations of order one and degree one (variables separable, homogeneous, exact and linear). Equations of order one but higher degree. Second order linear equations with constant coefficients, homogeneous forms, Second order equations with variable coefficients, Variation of parameters.

BOOKS RECOMMENDED:

1. Shanti Narayan, P. K. Mittal, Differential Calculus, S. Chand, 2014.
2. Shanti Narayan, P. K. Mittal, Integral Calculus, S. Chand, 2014.
3. S.C. Mallik and S. Arora-Mathematical Analysis, New Age International Publications.
4. J. Sinharoy and S. Padhy: A Course of Ordinary and Partial Differential Equations, Kalyani Publishers.

BOOK FOR REFERENCES:

1. H.Anton,I.Bivens and S.Davis,*Calculus*,10th Ed.,John Wiley and Sons (Asia) P. Ltd., Singapore, 2002.
2. Shanti Narayan and P.K. Mittal-Analytical Solid Geometry, S. Chand & Company Pvt. Ltd., New Delhi.
3. Martin Braun-Differential Equations and their Applications-Martin Braun, Springer International.
4. B. P.Acharya and D. C.Sahu: Analytical Geometry of Quadratic Surfaces, Kalyani Publishers.

2nd Year: (Semester- III & IV) : Paper: GE-MATH-A-2 & GE-MATH-B-2

Generic Elective Paper II
ALGEBRA

Objective: This is a preliminary course for the basic courses in mathematics like, abstract algebra and linear algebra. The objective is to acquaint students with the properties of natural numbers i.e. Euclidean algorithm, congruence relation, fundamental theorem of arithmetic, etc. The basics of linear algebra i.e. vector spaces, matrices are introduced here.

Expected Outcomes: The acquired knowledge will help students to study further courses in mathematics like, group theory, ring theory and field theory and linear algebra. It has applications not only in higher mathematics but also in other science subjects like computer science, statistics, physics, chemistry etc.

UNIT-I

Sets, relations, Equivalence relations, partial ordering, well ordering, Functions, Composition of functions, Invertible functions, One to one correspondence and cardinality of a set, statements, compound statements, proofs in Mathematics, Truth tables, Algebra of propositions, logical arguments

UNIT-II

Well-ordering property of positive integers, Division algorithm, Divisibility and Euclidean algorithm, Congruence relation between integers, Principles of Mathematical Induction, statement of Fundamental Theorem of Arithmetic.

UNIT-III

Matrices, algebra of matrices, determinants, fundamental properties, minors and cofactors, product of determinant, adjoint and inverse of a matrix, Rank and nullity of a matrix, Systems of linear equations, row reduction and echelon forms, solution sets of linear systems, applications of linear systems,.

UNIT-IV

Vector spaces and subspaces, examples, linear independence, linear dependence, basis, dimension, examples, Introduction to linear transformations, matrix representation of a linear transformation, Eigen values, Eigen vectors of a matrix.

BOOKS RECOMMENDED:

1. Edgar G. Goodaire and Michael M. Parmenter, Discrete Mathematics with Graph Theory, 3rd Ed., Pearson Education (Singapore) P. Ltd., Indian Reprint, 2005.

2. V Krishna Murthy, V P Mainra, J L Arora, An Introduction to Linear Algebra , Affiliated East-West Press Pvt. Ltd

BOOKS FOR REFERENCE:

1**.** David C. Lay, Linear Algebra and its Applications,3rd Ed., Pearson Education Asia, Indian Reprint,2007.

2. B S Vatsa and Suchi Vatsa Theory of Matrices New age International third edition 2010.

3. Ward Cheney, David kincaid. Linear algebra theory and applications, Jones and Bartlett , 2010.

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GE: Subject: PHYSICS (PHY)

Generic Elective Papers (GE) (Minor-Physics) for other Departments/Disciplines: (Credit: 06 each) Depending on their requirements, Universities may choose 2 (two) GE subjects with 2 papers from each subject or only one GE subject with 4 papers from it. (Page-3)

Two papers GE subject will be :

1. GE-I (Mechanics & Properties of matter, Oscillation & Waves, Thermal Physics, Electricity and Magnetism & Electronics) + Lab

2. **GE-II** (Optics, Special Theory of Relativity, Atomic Physics, Quantum Mechanics and Nuclear Physics)+ Lab

(copied from page 3, 29 to 32 of Physics Model CBCS syllabus)

1st year: (Semester- I & II) : Paper: GE-PHY-A-1 & GE-PHY-B-1

Generic Elective Paper I
(Mechanics and Properties of matter, Oscillation and Waves, Thermal Physics, Electricity and Magnetism and Electronics

UNIT-I: Mechanics and Properties of Matter

- Moment of Inertia Parallel axis and perpendicular axis theorem, M.I. of a Solid sphere and Solid cylinder,
- Gravitational potential and field due to a thin spherical shell and a solid sphere at external points and internal points,
- Relation among elastic constants, depression at free end of a light cantilever,
- Surface tension, pressure difference across a curved membrane,
- Viscous flow, Poiseulles formula.

UNIT-II: Oscillation and Waves

- Simple harmonic motion, damped harmonic motion, under damped, over damped and critically damped motion, Forced vibration, Resonance,
- Wave equation in a medium, Velocity of Longitudinal waves in an elastic medium and velocity of transverse wave in a stretched string,
- Composition of SHM, Lissajous figures for superposition of two orthogonal simple harmonic vibrations (a) with same frequency, (b) frequency with 2:1.

UNIT-III: Thermal Physics

- Entropy, change in entropy in reversible and irreversible process, Carnot engine and its efficiency. Carnot Theorem, Second law of thermodynamics, Kelvin-Planck, Clausius formula.
- Thermal conductivity, differential equation for heat flow in one dimension,
- Maxwell thermodynamic relation (statement only), Clausius Clapeyron equation,
- Black body radiation, Planck radiation formula (No derivation).

UNIT-IV: Electricity and Magnetism & Electronics

Electricity : Gauss law of electrostatics, use of Gauss law to compute electrostatic field due to a linear charge distribution,

Magnetism : Magnetic induction B, Lorentz force law, Biot Savarts law, Magnetic induction due to long straight current carrying conductor, and in the axis of a current carrying circular coil, Amperes Circuital law, its differential form, The law of electromagnetic equations, its differential and integral form,

- Maxwells electro-magnetic equations and their physical significance,

- Growth and decay of currents in LR and RC circuits, time constant, alternating currents in RC, RL and LCR circuits, impedance, power factor, resonance.

Electronics: P-type and N-type semiconductors, PN-Junction as rectifier, Half wave and Full wave rectifiers (Bridge type), efficiency, ripple factor, use of RC, LC, and filters, working of PNP and NPN transistors, transistor configurations in CE and CB circuits and relation between α and β. JFET, its operation and characteristics of VI curve.

Text Books:

1. Elements of Properties of Matter D.S. Mathur (S. Chand Publication)-2010
2. Heat and Thermodynamics A.B. Gupta and H.B. Ray (New Central Book Agency)-2010
3. A Text Books book of oscillations, waves and acoustics (5thed.) M. Ghosh and D. Bhattacharya (S. Chand Publication)-2018
4. Electricity and magnetism- R. Murugeshan (S.Chand publishing)-2017
5. Fundamentals of Electronics-Raskhit and Chattopadhyay (New age International Publication)-2018

Reference Books:

1. Physics of Degree students Vol.I M. Das, P.K. Jena etal (Sri Krishna Prakashan)-2006
2. Physics of Degree students Vol.II M. Das, P.K. Jena etal (Sri Krishna Prakashan)-2006
3. Waves and Oscillations (2nd ed) N. Subramaniyam and Brij Lal (Vikas Publications)-1994
4. A Text Books book of Sound (2nd ed) - N. Subramaniyam and Brij Lal (S. Chand Publications)-1999

Generic Elective Paper I Lab-
(minimum 6 experiments are to be done)

1. To determine the moment of inertia of a fly wheel.
2. To determine the Young's modulus Y of a wire by Searl's method.
3. To determine the modulus of rigidity of a wire by Maxwell's needle/Torsion Pendulum (Dynamic method).
4. To determine g by bar pendulum.

5. To determine the value of Y of a rubber by using travelling microscope.
6. To determine the Rigidity of modulus by static method.
7. To determine the frequency of a telescope by using Sonometer.
8. Verification of Laws of Vibration of a string by using Sonometer.
9. To compare capacitances using De Sauty bridge.
10. To determine the Law of resistance by using Foster bridge.
11. Compare the specific heat of two liquids by method of Cooling.

Reference Books:

1. Advanced Practical Physics for students, B.L. Flintand H.T.Worsnop, 1971, Asia Publishing House
2. A Laboratory Manual of Physics for Undergraduate Classes, D.P. Khandelwal (1985), Vani Publication
3. A Text Books of Practical Physics, Indu Prakash and Ramakrishna, 11th Edition (2011), Kitab Mahal, NewDelhi

2nd Year: (Semester- III & IV) : Paper: GE-PHY-A-2 & GE-PHY-B-2

Generic Elective Paper -II
(Optics, Atomic Physics, Quantum Mechanics and Nuclear Physics & Special Theory of Relativity)

UNIT-I: Optics

Optics-I: Elementary ideas of monochromatic aberrations and their minimization, chromatic aberration, achromatic combination, Theory of formation of primary and secondary rainbow,

- Condition of interference, coherent sources, Young's double slit experiment, biprism and measurement of wave length of light of by it, color of thin films and Newton's rings,
- Fresnel and Fraunhoffer diffraction, diffraction by single slit plane transmission grating.

Optics-II : Electromagnetic nature of light, polarized and unpolarized light, polarization by reflection and refraction, Brewster's Law, Mauls Law, Double refraction, Ordinary and extraordinary rays.

UNIT-II: Atomic Physics

- Inadequacy of classical physics, brief outline of Rayleigh Jeans theory and Planck's quantum theory of radiation, particle nature of electromagnetic radiation photo electric effect, Compton effect, dual nature of radiation, wave nature of particles, de-Broglie hypothesis, matter wave, wave-particle duality, Davisson- Germer experiment.
- Bohr's theory of Hydrogen atom, explanation of Hydrogen Spectra, correction for finite mass of the nucleus, Bohrs correspondence principle, limitations of Bohr's theory, Discrete energy, exchange by atom Frank Hertz experiment.

UNIT-III: Quantum Mechanics :

Heisenberg's Uncertainty relation, Time dependent Schrodinger's wave equation in one dimension and three dimensions, The physical interpretation of the wave function, Probability density and probability current density, Equation of continuity, Normalization of the Wave function, Expectation value of an observable, Ehrenfest's theorem. Time independent

Schrodinger's wave equation in one dimension particle in a box, energy eigen values and eigen functions.

UNIT-IV

Nuclear Physics : Properties of the nucleus Charge, Size, Spin, Magnetic Moment, Mass, Mass defect, Binding energy, Packing fraction, Nuclear force and its characteristics features,

- Radioactive decay laws, average life, half life, nuclear fission, nuclear fusion,
- Linear accelerators and cyclotron.

Relativity: Galilean transformation, Newtonian relativity and its limitation, Michelson Morley experiment and it's consequence, postulates of special theory of relativity. Lorentz transformation, length contraction, time dilation, relativistic mass and momentum, mass energy relation.

Text Books:

1. University Physics, H. D. Young, R. A. Freedman (Person)-2017
2. Fundamentals of Physics, Resnick, Halliday, Walker (WIley)-2015

Reference Books:

1. A Text Books book of Optics N. Subrahmanyam and Brij Lal (S.Chand Publishing)-2006
2. Introduction to Special Relativity-R. Resnick (John Wiley)-2007
3. Concepts of Modern Physics Arthur Beiser (McGraw Hill)-2017
4. Modern Physics H.S. Mani and G.K.Mehta-2018.

Generic Elective Paper II LAB
(minimum 6 experiments are to be done)

1. Determination of E.C.E. of a Copper by taking 3readings.
2. Determination of Refractive index of the material of a prism using Sodium light.
3. To determine the wavelength of light using plane diffraction grating.
4. To determine the wavelength of light using Newton's ring.
5. Determination of refractive index of (a) glass and (b) liquid by using travelling microscope.
6. To plot the I-D curve and to determine the refractive index of a prism
7. Determination of radius of curvature of a convex/concave mirror by using Kohlrausch's method.
8. T o determine the magnifying power of a given telescope.
9. To Obtain the static characteristics of a P-N-P/N-P-N transistor/Triode Valve.
10. To determine the reduction factor of a tangent Galvanometer.
11. To study the Variation of magnetic field along the axis of a circular coil carrying current.

Reference Books:

1. Advanced Practical Physics for students, B.L.Flint and H.T. Worsnop, (1971), Asia Publishing House
2. A Laboratory Manual of Physics for Undergraduate Classes, D.P.Khandelwal (1985), Vani Publication
3. A Text Books of Practical Physics, Indu Prakash and Ramakrishna, 11th Edition (2011), Kitab Mahal, New Delhi

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GE: Subject: ZOOLOGY (ZOO)

[Universities where 2 subjects of two papers each are offered can offer GE1 and GE2.] (page-4)
(copied from page 4, 30 to 34 of Zoology Model CBCS syllabus)

1st year: (Semester- I & II) : Paper: GE-ZOO-A-1 & GE-ZOO-B-1

Generic Elective Paper I
Animal Diversity

Unit 1: Protista, Porifera, Radiata, Aceolomates and Pseudocoelomates
General characters of Protozoa; Life cycle of *Plasmodium*, General characters and canal system in Porifera, General characters of Cnidarians and polymorphism, General characters of Helminthes; Life cycle of *Taenia solium*, General characters of Nemethehelminthes; Parasitic adaptations

Unit 2: Coelomate Protostomes, Arthropoda, Mollusca and Coelomate Deuterostomes
General characters of Annelida, Metamerism, General characters, Social life in insects,General characters of mollusca, torsion in gastropod, pearl formation, General characters of Echinodermata, larval form in Echinodermata.

Unit 3: Protochordata , Pisces, Amphibia
Salient features, Osmoregulation, Migration of Fishes, General characters, Adaptations for terrestrial life, Parental care in Amphibia.

Unit 4: Reptiles, Aves and Mammals
Amniotes, Origin of reptiles, Terrestrial adaptations in reptiles, Origin of birds; Flight adaptations, early evolution of mammals; Primates; Dentition in mammals.

PRACTICAL

1. Study of **following specimens**:

Non Chordates*: Euglena, Noctiluca, Paramecium, Sycon, ,Physalia, Tubipora, Metridium, Taenia, Ascaris, Nereis, Aphrodite, Leech, Peripatus, T. gigas, Limulus, Hermitcrab, Daphnia, Millipede, Centipede*, Beetle, *Chiton, Dentalium, Octopus, Asterias* and *Antedon*.

Chordates: *Balanoglossus, Amphioxus, Petromyzon, Pristis, Hippocampus, Labeo, Icthyophis/Uraeotyphlus, Salamander, Rhacophorus Draco, Uromastix, Naja, Viper*, model of *Archaeopteryx*, any three common birds-(Crow, duck, Owl), Squirrel and Bat.

2. Study of **following Permanent** Slides:

Cross section of *Sycon*, Sea anemone and *Ascaris* (male and female). T. S. of Earthworm passing through pharynx, gizzard, and typhlosolar intestine. Bipinnaria and Pluteus larva

3. **Temporary mounts** of Septal & pharyngeal nephridia of earthworm.

Unstained mounts of Placoid, cycloid and ctenoid scales.

TEXT BOOKS

1.Kotpal RL. (2016) Modern Textbook of Zoology –Vertebrates; Rastogi Publications – Meerut.
2. Kotpal RL.(2016) Modern Textbook of Zoology –Invertebrates; Rastogi Publications – Meerut.

SUGGESTED READINGS

1. Barnes, R.D. (1992). Invertebrate Zoology. Saunders College Pub. USA.
2. Campbell & Reece (2005). Biology, Pearson Education, (Singapore) Pvt. Ltd.
3. Raven, P.H. and Johnson, G. B. (2004). Biology, 6th edition, Tata McGraw Hill Publications, New Delhi.
4. Kardong, K.V. (2002). Vertebrates Comparative Anatomy. Function and Evolution. Tata McGraw Hill Publishing Company. New Delhi.

OR

Insect Vectors and Diseases

Unit 1: Insects, Concept of Vectors, Insects as Vectors

General Features of Insects, Morphological features, Head – Eyes, Types of antennae, Mouth parts with reference to. feeding habits, Brief introduction of Carrier and Vectors (mechanical and biological vector),Reservoirs, Host-vector relationship, Vectorial capacity, Adaptations as vectors, Host Specificity, Classification of insects up to orders, detailed features of orders with insects as vectors – Diptera, Siphonaptera, Siphunculata, Hemiptera

Unit 2: Dipteran as Disease Vectors

Dipterans as important insect vectors – Mosquitoes, Sand fly, Houseflies; Study of mosquito-borne diseases – Malaria, Dengue, Chikungunya, Viral encephalitis, Filariasis; Control of mosquitoes Study of sand fly-borne diseases – Visceral Leishmaniasis, Cutaneous Leishmaniasis, Phlebotomus fever; Control of Sand fly, Study of house fly as important mechanical vector, Myiasis, Control of house fly

Unit 3: Siphonaptera and Siphunculata as Disease Vectors

Fleas as important insect vectors; Host-specificity, Study of Flea-borne diseases – Plague, Typhus fever; Control of fleas, Human louse (Head, Body and Pubic louse) as important insect vectors; Study of louse-borne diseases –Typhus fever, Relapsing fever, Trench fever, Vagabond's disease, Phthiriasis; Control of human louse

Unit 4: Hempitera as Disease Vectors

Bugs as insect vectors; Blood-sucking bugs; Chagas disease, Bed bugs as mechanical vectors, Control and prevention measures

PRACTICAL

1.Study of different kinds of mouth parts of insects

2. Study of following insect vectors through permanent slides/ photographs: *Aedes, Culex, Anopheles, Pediculushumanuscorporis, Phithirus pubis, Xenopsylla cheopis, Cimexlectularius, Phlebotomus argentipes, Musca domestica* through permanent slides/ photographs

3. Study of different diseases transmitted by above insect vectors.

4. Submission of a project report on any one of the insect vectors and disease transmitted.

TEXT BOOKS

1. Mathews, G. (2011). Integrated Vector Management: Controlling Vectors of Malaria and Other Insect Vector Borne Diseases. Wiley-Blackwel

2. Chapman, R.F. (1998). The Insects: Structure and Function. IV Edition, Cambridge University Press, UK

SUGGESTED READINGS

1. Mike Service (2012) Medical Entomology for StudentsCambridge University Press; 5th edition.

2. Pedigo L.P. (2002). Entomology and Pest Management. Prentice Hall Publication

2nd Year: (Semester- III & IV) : Paper: GE-ZOO-A-2 & GE-ZOO-B-2

Generic Elective Paper II
Aquatic Biology

UNIT 1: Aquatic Biomes

Brief introduction of the aquatic biomes: Freshwater ecosystem (lakes, wetlands, Streams and rivers), estuaries, intertidal zones, oceanic pelagic zone, marine benthic zone and coral reefs

UNIT 2: Freshwater Biology

Lakes: Origin and classification, Lake as an Ecosystem, Lake morphometry,
Physico–chemical Characteristics: Light, Temperature, Thermal stratification,
Dissolved Solids, Carbonate, Bicarbonates, Phosphates and Nitrates, Turbidity; dissolved gases (Oxygen, Carbon dioxide). Nutrient Cycles in Lakes-Nitrogen,
Sulphur and Phosphorous

Streams: Different stages of stream development, Physico-chemical, environment, Adaptation of hill-stream fishes.

UNIT 3: Marine Biology
Salinity and density of Sea water, Continental shelf, Adaptations of deep sea organisms, Coral reefs, Sea weeds.

UNIT 4: Management of Aquatic Resources
Causes of pollution: Agricultural, Industrial, Sewage, Thermal and Oil spills, Eutrophication, Management and conservation (legislations), Sewage treatment Water quality assessment- BOD and COD. 015

PRACTICAL:
1. Determine the area of a lake using graphimetric and gravimetric method.
2. Identify the important macrophytes, phytoplanktons and zooplanktons present in a lake ecosystem.
3. Determine the amount of Turbidity/transparency, Dissolved Oxygen, Free, Carbon dioxide, Alkalinity (carbonates & bicarbonates) in water collected from nearby lake/ water body.
4. Instruments used in limnology (Secchi disc, Van Dorn Bottle, Conductivity meter, Turbidity meter, PONAR grab sampler) and their significance.
5. A Project Report on a visit to a Sewage treatment plant/Marine bioreserve/ Fisheries Institutes.

TEXT BOOKS
1. Wetzel RG (2001)Limnology: Lake and River Ecosystems, Academic Press; 3rd edition

SUGGESTED READINGS
1. Anathakrishnan : Bioresources Ecology 3rd Edition
2. Odum and Barrett : Fundamentals of Ecology, 5th Edition
3. Pawlowski: Physicochemical Methods for Water and Wastewater Treatment, 1st Edition
4. Trivedi and Goyal : Chemical and biological methods for water pollution studies
5. Welch : Limnology Vols. I-II

OR

Food, Nutrition And Health

Unit 1: Basic concept of food and nutrition
Food Components and food-nutrients, Concept of a balanced diet, nutrient needs and dietary pattern for various groups, adults, pregnant and nursing mothers, infants, school children, adolescents and elderly

Unit 2: Nutritional Biochemistry:
Carbohydrates, Lipids, Proteins- Definition, Classification, their dietary source and role Vitamins- Fat-soluble and Water-soluble vitamins- their dietary source and importance Minerals- Iron, calcium, phosphorus, iodine, selenium and zinc: their biological functions

Unit 3: Health
Introduction to health- Definition and concept of health, Major nutritional Deficiency diseases- Protein Energy Malnutrition (kwashiorkor and marasmus), Vitamin A deficiency disorders, Iron

deficiency disorders, Iodine deficiency disorders- their causes, symptoms, treatment, prevention and government programmes, if any. Life style related diseases- hypertension, diabetes mellitus, and obesity- their causes and prevention through dietary and lifestyle modifications, Social health problems- smoking, alcoholism, drug dependence and Acquired Immuno Deficiency Syndrome (AIDS) - their causes, treatment and prevention, Common ailments- cold, cough, and fevers, their causes and treatment

Unit 4: Food hygiene:

Potable water- sources and methods of purification at domestic level Food and Water borne infections: **Bacterial infection**: Cholera, typhoid fever, dysentery; **Viral infection**: Hepatitis, Poliomyelitis, **Protozoan infection**: amoebiasis, giardiasis; **Parasitic infection**: taeniasis and ascariasis their transmission, causative agent, sources of infection, symptoms and prevention. Brief account of food spoilage: Causes of food spoilage and their preventive measures
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PRACTICAL

1. To detect adulteration in a) Ghee b) Sugars c) Tea leaves and d) Turmeric
3. Estimation of Lactose in milk
4. Ascorbic acid estimation in food by titrimetry
5. Estimation of Calcium in foods by titrimetry
6. Study of the stored grain pests from slides/ photograph (*Sitophilus oryzae*, *Trogoderma granarium, Callosobruchus chinensisand Tribolium castaneum*): their identification, habitat and food sources, damage caused andcontrol. Preparation of temporary mounts of the above stored grain pests.
7. Project- Undertake computer aided diet analysis and nutrition counseling for different age groups. OR Identify nutrient rich sources of foods **(fruits and vegetables),** their seasonal availability and price OR Study of nutrition labeling on selected foods

TEXT BOOKS

1. Mudambi, SR and Rajagopal, MV (2018). Fundamentals of Foods, Nutrition and Diet Therapy; Sixth Ed; New Age International Publishers.
2. Bamji MS, Rao NP, and Reddy V.(2017) Text Book of Human Nutrition; Oxford & IBH Publishing Co. Pvt Ltd., 4th edition

SUGGESTED READINGS

1. Srilakshmi B. Nutrition Science; 2002; New Age International (P) Ltd.
2. Srilakshmi B. Food Science; Fourth Ed; 2007; New Age International (P) Ltd.
3. Swaminathan M. Handbook of Foods and Nutrition; Fifth Ed; 1986; BAPPCO

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GE: COMMERCE

GE Subject: Commerce (COM)

(Page 38 to 43 of Commerce Model CBCS syllabus)

*Generic Elective for commerce students– **4 papers as adopted**.*

NOU, Baripada opted for GE-1, GE-2, GE-3 & GE-4 papers for commerce honous)

1st year: (Semester- I) : Paper: GE-1 : Micro Economics GE-1
1st year: (Semester- II) : Paper: GE-2: Macro & Indian Economy GE-2
2nd Year: (Semester- III) : Paper: GE-3 : Business Statistics GE-3
2nd Year: (Semester-IV) : Paper: GE-4 : Principles of Marketing GE-4

For detailed syllabus of each paper download from the link

http://gwckeonjhar.in/syllabus.aspx

or

http://dheodisha.gov.in/DocPath.ashx?clsid=9&id=CommerceHonsPassrevised.pdf

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EXAMINATION QUESTION PATTERN

(Copied from page no 16 of clause 12 OSHEC Model Regulation for UG Programme for +3 CBCS System w.e.f. 2019-20)

12.1. The **duration of end semester** examination is as reflected in *Clause No.5* given below.

5. DURATIONOF THE EXAMINATIONS - MID SEMESTER & END SEMESTER:

The Choice Based Credit System (CBCS) examination shall be implemented in Semester pattern.Examination timetable for the odd semester will be communicated by 20th June and even semester by 7th December. Each semester examination shall consist of a **Mid-Semester (Internal) Examination** and **End Semester examination**. Mid Semester examination shall be conducted only for theory papers. End Semester Examination in theory papers carrying full marks **above 50**(e.g. 60, 75, 80 etc) shall be of 3 hours duration and practical shall be of **3hours (for full marks carrying 25).** On the other hand, theory papers carrying **50 marks or below** shall be of 2 hours duration.

12.2 For subjects other than language subjects and ***without having practical***, full marks are 100 per paper out of which 20 marks are allotted for Mid-Semester Examination (Internal) and 80 marks are for end semester examination.

a. The question papers shall be divided into ***four parts.***

b. Part I will carry 12 one mark questions in the form of fill in the blanks and one word answer. (12 marks)

c. Part II will carry 10 two mark questions of which 8 have to be answered. The answer should be within two to three sentences maximum. (16 marks (8X2))

d. Part III will carry 10 three mark questions of which 8 have to be answered. The answer should be within 75 words maximum. (24 marks (8X3))

e. Part IV will carry 4 seven mark questions of EITHER OR format. The EITHER OR in question can be from same or different units of the paper. The answer should be within 500 words maximum. (28marks (7X4))

12.3 For subjects other than language subjects and ***with practical***, full marks are 100 per paper out of which 15 marks is allotted for Mid- Semester Examination, 60 marks is for End Semester Examination and 25 marks is for practical.

a. The question papers shall be divided into **four parts**

b . Part I will carry 8 one mark questions in the form of fill in the blanks and one word answer. (08 marks(8X1)

c. Part II will carry 10 one point five mark questions of which 8 have to be answered. The answer should be within two to three sentences maximum. (12 marks (8X1.5))

d Part III will carry 10 two mark questions of which 8 have to be answered. The answer should be within 75 words maximum. (16 marks (8X2))

e Part IV will 4 numbers of six mark questions of EITHER OR format. The EITHER OR in question can be from same or different units of the paper. The answer should be within 500 words maximum. (24 marks (6X4))

f Practical will carry 25 marks out of which 05 will be for records , 05 for viva voce and 15 for the core experiment .

12.4 For Language courses like Odia, Hindi, Sanskrit, English, the question pattern and marking scheme will be **as given in the respective curriculum**. **For Example, MIL (Odia) is available in the Model Syllabus for Odia.**

12.5 For Autonomous Colleges, each department shall have a designated Teacher in-charge of Examination to be decided by the Principal in addition to the Controller of Examinations of the College.
For non autonomous college, the principal or the teacher nominated by the principal will be responsible for conducting examinations.
Suitable modifications may be made by the Autonomous Colleges keeping in view the UGC Guideline for Autonomous Colleges, University as well as state government's Guidelines from time to time.

12.7 The board of studies in each subject are required **to prepare Question Banks** in each paper and submit it to the controller of Examination.

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