

NAGARJUNA GOVERNMENT COLLEGE

(Autonomous), NALGONDA

(Re accredited by NAAC with 'A' Grade)

BOARD OF STUDIES MEETING - 2018



DEPARTMENT OF BOTANY

B. Sc I, II & III Year (CBCS) Syllabus

2018-2019

NAGARJUNA GOVERNMENT COLLEGE (Autonomous), NALGONDA

Re accredited by NAAC with 'A' Grade

DEPARTMENT OF BOTANY

BOARD OF STUDIES MEETING - 2018

CONSTITUTION OF BOARD OF STUDIES

The Board of studies in the Department of Botany is constituted with the following members for the academic year 2018-19.

S.NO	CATEGORY	NAME & DESIGNATION	ADRESS/MAIL/PHONE
1.	Chairman, Board of Studies	Dr. T. Aravinda In-charge, Dept of Botany Nagarjuna Government college Nalgonda.	Dept. of Botany Nagarjuna Government College, Nalgonda.
2.	University Nominee	Prof. S.K. Mahamood Dept of Botany Osmania University, Hyd.	Dept. of Botany University College of Science Saifabad, Osmania University, Hyd.
3.	Subject Experts	Prof. Nirmala Babu Rao H.O.D. Dept. of Botany, Osmania University, Hyd. Dr. P. Kamalakar Professor, Department of Botany, chairman, BOS University College of Science, Osmania University, Hyderabad.	Dept. of Botany University College of Science Osmania University, Hyd. Dept. of Botany University College of Science Osmania University, Hyd.
4.	Faculty members of Department	1. A. Sandhya, Asst. Prof. 2. R. Swapna (Contract Lecturer) 3. A. Raju (Contract Lecturer) 4. S. Shankar (Contract Lecturer)	Dept. of Botany Nagarjuna Government College, Nalgonda.



In-Charge/Chairman BOS
Assistant Professor
Department of Botany
Nagarjuna Government College
NALGONDA



Principal/Chairman Academic Council

NAGARJUNA GOVERNMENT COLLEGE (Autonomous), NALGONDA

Re accredited by NAAC with 'A' Grade
(Affiliated to Mahatma Gandhi University)

DEPARTMENT OF BOTANY
BOARD OF STUDIES MEETING – 2018-2019

The Board of studies meeting of Botany Department is held on 10-9-2018 in the Department of Botany and formulated the following resolutions.

Agenda:

1. To consider and approve the syllabus of B. Sc I, II and III Year (I, II, III, IV, V, & VI semesters).
2. To conduct two internal assessments for 30 marks as twice in a semester (20 marks for written examination, 5 marks for Assignment and 5 marks for student seminar) and semester end exam for 70 marks.
3. To consider and approve the new syllabus for the CBCS system for I, II & III years as per the Mahatma Gandhi University, Nalgonda.
4. To approve Elective-1, i.e., "Ecology and Biodiversity" for semester-V and Elective-III, i.e., "Tissue culture and Biotechnology" for semester-VI in III year course.
5. To consider the syllabus prescribed by Mahatma Gandhi university, Nalgonda for Ability Enhancement Compulsory Course (AECC) and Skill Enhancement Course (SEC) for the semesters.
6. To consider and approve the model question papers for B. Sc I, II and III Year.
7. To consider and approve the list of Panel of examiners for paper setting and evaluation.
8. To consider and approve to conduct practical exams semester wise for I, II & III year courses for 50 marks for each paper.
9. Any other related academic matters.

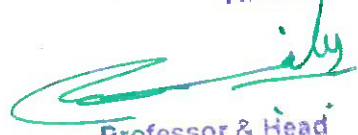
Resolutions:

1. It is resolved to approve the syllabus of B. Sc I, II and III Year (I, II, III, IV, V, & VI semesters).
2. It is resolved to approve each semester end examination will be of 100 marks in total in which semester end exam is of 70 marks and internal assessment is of 30 marks (20 marks for written examination (best one out of two), 5 marks for student assignment and 5 marks for student seminar).
3. Approved the new syllabus for the CBCS system for I, II & III year as per the Mahatma Gandhi University, Nalgonda.
4. It is resolved to approve Elective-1, i.e., "Ecology and Biodiversity" for semester-V and Elective-III, i.e., "Tissue culture and Biotechnology" for semester-VI in III year course.
5. It is resolved to approve the syllabus of Mahatma Gandhi University, Nalgonda for the courses of AECC & SEC's.
6. Approved the model question papers for B. Sc I, II and III Year Courses.
7. Approved the Panel of examiners for paper setting and evaluation.
8. Approved to conduct practical exams semester wise for I, II & III year Courses for 50 marks for each year.


Members Present:





1. Dr. T. Aravinda
Chairman, Board of Studies,
Dept of Botany, Nagarjuna Government College,
Nalgonda.
2. Prof. Nirmala Babu Rao
H.O.D.,
Dept of Botany,
Osmania University, Hyderabad
3. Prof. S.K. Mahamood
University Nominee, Dept of Botany,
University College of Science, Saifabad
Osmania University, Hyderabad.
4. Dr. P. Kamalakar
Professor, Department of Botany,
University College of Science, chairman, BOS,
Osmania University, Hyderabad.
5. Members from the Department:
 1. A. Sandhya, Asst. Prof.
 2. R. Swapna (contract Lecturer)
 3. A. Raju (contract Lecturer)
 4. S. Shankar (contract Lecturer)



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09.2018


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DEPARTMENT OF BOTANY


BOARD OF STUDIES MEETING - 2018


Q.Paper setters and Panel of examiners for the academic year 2018-19

S. No	Semester	S. No	Name/Designation/Working address/mobile. No/email.ID	Residential Address
1.	I&II	1	P. Suresh Babu, Asst. Prof of Botany GDC, Kukatpally. Mobile No:9440394036 Email ID:sureshbtm@gmail.com	H. No: 4-21, East part phase-II Chaitanya Nagar, B.N Reddy Nagar, Hyderabad.
2		2	Dr. K. Srinivas Reddy Asst. Prof of Botany GDC (W), Nalgonda. Mobile No: 7396667598 Email ID:kotativas@gmail.com	Flat No.205, A-block, K.S. Enclave, Bhavani Nagar, Kodad. Pin: 508206
3		3	Dr. S. Anuradha, Asst. Prof of Botany GDC, Chevella, Ranga Reddy. Mobile No: 9985076989 EmailID: sanginenianu@rediffmail.com	TRT Quarters-192, Sithaphalmandi, Secunderabad. Pin : 500039.
4		4	T. Lalitha GDC(Women) Gajwel, Medak.	H. No: 23-11, RK Nagar, Malkajgiri, Hyderabad. Pin: 500047
5	III & IV	1	Dr. K. Srinivas Reddy Asst. Prof of Botany GDC (W), Nalgonda. Mobile No:7396667598 Email ID: kotativas@gmail.com	Flat No.205, A-block, K.S. Enclave, Bhavani Nagar, Kodad.PIN-508206
6		2	P.V. Lakshmi Narayana Asst. Prof of Botany GDC (W), Nalgonda. Mobile No:9948159047 Email ID:popupvln@gmail.com	Flat No-104, Sai Srisadan Apartment, Behind bank of Maharashtra NallalaBhavi Road, Suryapet. Pin: 508213



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		3	T. Lalitha GDC(Women) Gajwel, Medak.	H. No: 23-11, RK Nagar, Malkajgiri, Hyderabad. Pin: 500047
8	V	1	D. Srihari Reddy Asst. Prof of Botany GDC, Patancheru, Hyd. Mobile No: 9441564471 Email ID: devarrintisriharireddy5@gmail.com	Plot. No. 12 II Floor Near Nagarjuna School Street No. 1 Srinivasapuram, NGO's Colony Vanasthalipuram, Hyd-500070.
9		2	Dr. S. Anuradha Asst. Prof of Botany GDC, Kamareddy, Nizamabad. Mobile No: 9985076989 Email ID: sanginenianu@rediffmail.com	TRT Quarters-192, Sithaphalmandi, Secunderabad. 500039.
10		3	P. Suresh Babu, Asst. Prof of Botany GDC, Ibrahimpatnam. Mobile No: 9440394036 Email ID: sureshbtm@gmail.com	H. No: 4-21, East part phase-II Chaitanya Nagar, B.N Reddy Nagar, Hyderabad.
11		4	T. Lalitha GDC(Women) Gajwel, Medak.	H. No: 23-11, RK Nagar, Malkajgiri, Hyderabad. Pin: 500047
12	VI	1	T. Shankarachary Principal Siddartha Degree College, Nalgonda. Mobile No: 9959198191 Email ID:	H. No 6-7-187 Shivaji Nagar Nalgonda. Pin: 508001
13		2	Dr. K. Srinivas Reddy Asst. Prof of Botany KRR GDC, Kodad. Mobile No:7396667598 Email ID: kotanimvas@gmail.com	Flat No-104, Sai Srisadan Apartment, Behind bank of Maharashtra NallalaBhavi Road, Suryapet. Pin: 508213
14		3	T. Lalitha GDC(Women) Gajwel, Medak.	H. No: 23-11, RK Nagar, Malkajgiri, Hyderabad. Pin: 500047
15		4	N. Siddulu Asst. Prof. of Botany GDC, Tara College, Sanga Reddy Mobile No: 9133468688 Email ID: siddubot@gmail.com	Vil.Vartoor Aaleru , Mandal Dist.Yadadri


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 Professor & Head


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B.Sc (CBCS) Botany- I year
Semester-I - Paper-I
Microbial Diversity of Lower Plants

DSC - 1A (4 hrs./week)

Theory Syllabus

Credits -4

60 Hrs

UNIT - I

1. Brief account of Archaeobacteria, Actinomycetes. (4h)
2. Cyanobacteria: General characters, cell structure, thallus organisation and their significance as biofertilizers with special reference to *Oscillatoria*, *Nostoc* and *Anabaena*. (6h)
3. Lichens: Structure and reproduction; ecological and economic importance. (5h)

UNIT- II

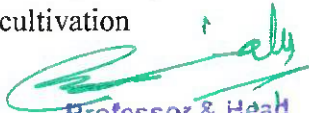
4. Viruses: Structure, replication and transmission; plant diseases caused by viruses and their control with reference to Tobacco Mosaic and Rice Tungro. (7h)
5. Bacteria: Structure, nutrition, reproduction and economic importance. An outline of plant diseases of important crop plants caused by bacteria and their control with reference to Angular leaf spot of cotton and Bacterial blight of Rice. (8h)
6. General account of Mycoplasma with reference to Little leaf of brinjal and Papaya leaf curl

UNIT-III

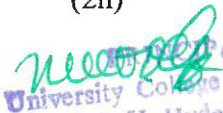
7. General characters, structure, reproduction and classification of algae (Fritsch) and thallus organization in algae. (3h)
8. Structure and reproduction of the following:
Chlorophyceae- *Volvox*, *Oedogonium* and *Chara*. (5h)
Phaeophyceae- *Ectocarpus* (2h)
Rhodophyceae- *Polysiphonia*. (3h)
9. Economic importance of algae in Agriculture and Industry. (2h)

UNIT-IV

10. General characters and classification of fungi (Ainsworth). (3h)
11. Structure and reproduction of the following:
(a) Mastigomycotina- *Albugo*
(b) Zygomycotina- *Mucor*
(c) Ascomycotina- *Saccharomyces* and *Penicillium*.
(d) Basidiomycotina- *Puccinia*
(e) Deuteromycotina- *Cercospora*. (10h)
12. Economic importance of fungi in relation to mycorrhizae and mushrooms. General account of mushroom cultivation (2h)



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References:

1. Alexopolous, J. and W. M. Charles. 1988. Introduction to Mycology. Wiley Eastern, New Delhi.
2. Mckane, L. and K. Judy. 1996. Microbiology – Essentials and Applications. McGraw Hill, New York.
3. Pandey, B. P. 2001. College Botany, Vol. I: Algae, Fungi, Lichens, Bacteria, Viruses, Plant Pathology, Industrial Microbiology and Bryophyta. S. Chand & Company Ltd, New Delhi.
4. Pandey, B. P. 2007. Botany for Degree Students: Diversity of Microbes, Cryptogams, Cell Biology and Genetics. S. Chand & Company Ltd, New Delhi.
5. Sambamurthy, A. V. S. S. 2006. A Textbook of Plant Pathology. I. K. International Pvt. Ltd., New Delhi.
6. Sambamurthy, A. V. S. S. 2006. A Textbook of Algae. I. K. International Pvt. Ltd., New Delhi.
7. Sharma, O. P. 1992. Textbook of Thallophyta. McGraw Hill Publishing Co., New Delhi.
8. Thakur, A. K. and S. K. Bassi. 2008. A Textbook of Botany: Diversity of Microbes and Cryptogams. S. Chand & Company Ltd, New Delhi.
9. Vashishta, B. R., A. K. Sinha and V. P. Singh. 2008. Botany for Degree Students: Algae. S. Chand & Company Ltd, New Delhi.
10. Vashishta, B. R. 1990. Botany for Degree Students: Fungi, S. Chand & Company Ltd, New Delhi.
11. Dutta A.C. 2016. Botany for Degree Students. Oxford University Press.


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B.Sc I(CBCS) Botany-I year
Semester-I - Paper-I
Microbial Diversity of Lower Plants
Theory Model Question Paper

Time : 2 1/2 Hrs

Max. Marks: 70

Instruction to the candidates: Draw neat labeled diagrams wherever necessary

Section A

1. Define or explain All of the following: -

5 X 2 = 10M

- 1.
- 2.
- 3.
- 4.
- 5.

Section B

(Instruction to the question PAPER SETTER : Set atleast ONE question from Each Unit of the given syllabus.)

Write short answers for FOUR of the following:

4 X 5 = 20 M

- 6.
- 7.
- 8.
- 9.
- 10.
- 11.

Section C

(Instruction to the question PAPER SETTER : Set atleast TWO questions from Each Unit of the given syllabus.)

Write detailed answers for ALL of the following:

4 X 10 = 40 M

Unit - I

12 . a)

(OR)

b)

Unit - II

13 . a)

(OR)

b)

Unit - III

14 . a)

(OR)


b)


Unit - IV

15 . a)

(OR)

b)


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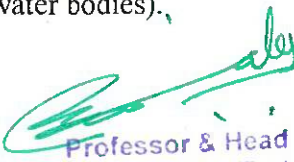

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**B.Sc (CBCS) Botany-I year
Semester-I - Paper-I
Microbial Diversity of Lower Plants
Practical Syllabus**

(45 hours)

1. Study of viruses and bacteria using electron micrographs (photographs). (3h)
2. Gram staining of Bacteria. (3h)
3. Study of symptoms of plant diseases caused by viruses, bacteria, Mycoplasma and fungi:
Viruses: Tobacco mosaic
Bacteria: Angular leaf spot of cotton and Rice tungro.
Mycoplasma: Little leaf of Brinjal and Leaf curl of papaya (3h)
Fungi: White rust on Crucifers, Rust on wheat & Tikka disease of Groundnut. (6h)
4. Vegetative and reproductive structures of the following taxa:
Algae: *Oscillatoria*, *Nostoc*, *Volvox*, *Oedogonium*, *Chara*, *Ectocarpus*
and *Polysiphonia*. (6 h)
Fungi: *Albugo*, *Mucor*, *Saccharomyces*, *Penicillium*, *Puccinia* and *Cercospora* (6h)
5. Section cutting of diseased material infected by Fungi and identification of pathogens as per theory syllabus. White rust of Crucifers, Rust on wheat & Tikka disease of Groundnut. (9h)
6. Lichens: Different types of thalli and their external morphology (3 h).
7. Examination of important microbial, fungal and algal products:
Biofertilizers, protein capsules, antibiotics, mushrooms, Agar-agar etc. (3h)
8. Field visits to places of algal / microbial / fungal interest (e.g. Mushroom cultivation, water bodies). (3h)


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B. Sc (CBCS) Botany- I year
Semester-I - Paper-I
Microbial Diversity of Lower Plants
Practical Model Paper


Time : 2 Hrs

Max. Marks: 50

1. Identify the given components 'A' , 'B' & 'C' in the algal mixture .
Describe with neat labeled diagrams & give reasons for the classifications. 3 X 6 = 18M
2. Classify the given bacterial culture 'D' using Gram – staining technique. 8M
3. Take a thin transverse section of given diseased material 'E'.
Identify & describe the symptoms caused by the pathogen. 10M
4. Identify the given specimens 'F', 'G' & 'H' by giving reasons.
(Fungal-1, Bacteria-1 & Viral-1) 3 X 2 = 6 M
5. Comment on the given slides 'I' & 'J' .
(Algae-1 , Fungi-1) 2 X 2 = 4 M
6. Record 4M


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U.G. I Year Semester - I - (B.Sc./B.A./B.Com.) CBCS

Environmental Studies

AECC-2 (2 hrs./ week)

Credits-2

(30 Hours)

Unit – I : Ecosystem, Biodiversity & Natural Resources

(15 Hours)

1. Definition, scope and importance of Environmental Studies.
2. Structure of Ecosystem – Abiotic & Biotic components Producers, Consumers, Decomposers, Food chains, Food webs, Ecological Pyramids.
3. Functions of an Ecosystem: Energy flow in the Ecosystem (Single channel energy flow model)
4. Definition of Biodiversity, Genetic, Species and Ecosystem diversity, Hot-spots of Biodiversity, Threats to Biodiversity, Conservation of Biodiversity (Insitu and Exsitu)
5. Renewable and Non - renewable resources, Brief account of Forest, Mineral and Energy (Solar Energy and Geothermal Energy) resources.
6. Water Conservation, Rain water harvesting and Watershed management

Unit – II : Environmental pollution, Global Issues and Legislation

(15 Hours)

1. Causes, Effects and control measures of air pollution, water pollution.
2. Solid waste management.
3. Global warming and ozone layer depletion.
4. III – Effects of Fire – Works
5. Disaster management – floods, earthquakes and cyclones.
6. Environmental Legislation:-
(a) Wild life protection Act (b) Forest Act (c) Water Act (d) Air Act
7. Human rights
8. Women and child welfare
9. Role of information technology in environment and human health.

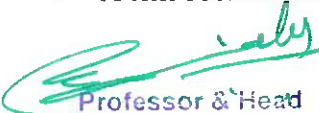
❖ Field Study:


(5 Hours)

- Pond Ecosystem
- Forest Ecosystem

References:

- Environmental studies – From crises to cure – by R. Rajagopalan (Third edition) Oxford University Press.
- Text book of environmental studies for Undergraduate courses (Second edition) By Erach Bharucha.
- A text book of environmental studies by Dr.D.K. Asthana and Dr. Meera Asthana.


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Model Question Paper For Semester Examination (End) for AECC/SEC Papers
w.e.f 2016-2017 Academic Year
CBCS Pattern (for All Semesters)

TIME: 2 Hours

MAX MARKS: 40

Credits - 2

Section A

Answer the following in short:

4 X 5 = 20 M

- 1.
- 2.
- 3.
- 4.

Section B


Answer the following essays:


2 X 10 = 20 M


5. (a)
- (b)
6. (a)
- (b)

OR

OR


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B.Sc (CBCS) Botany- I year
Semester-II - Paper-II
Bryophytes, Pteridophytes, Gymnosperms and Paleobotany

DSC-1B (4 hrs./week)	Theory Syllabus	Credits- 4 (60 hours)
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UNIT-I

- | | |
|---|-------|
| 1. Bryophytes: General characters and classification. | (3h) |
| 2. Structure, reproduction, life cycle and systematic position of <i>Marchantia</i> , <i>Anthoceros</i> and <i>Polytrichum</i> . (Development stages are not required). | (10h) |
| 3. Evolution of Sporophyte in Bryophytes. | (2h) |

UNIT-II

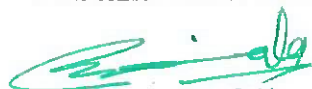
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|--|-------|
| 4. Pteridophytes: General characters and classification (Sporne's) | (3h) |
| 5. Structure, reproduction, life cycle and systematic position of <i>Rhynia</i> , <i>Lycopodium</i> , <i>Equisetum</i> and <i>Marsilea</i> . | (10h) |
| 7. Stellar evolution, heterospory and seed habit in Pteridophytes. | (2h) |

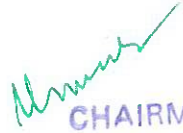
UNIT-III


- | | |
|--|-------|
| 7. Gymnosperms: General characters, structure, reproduction and classification (Sporne's). | (4h) |
| 8. Distribution and economic importance of Gymnosperms. | (3h) |
| 9. Morphology of vegetative and reproductive parts, systematic position and life cycle of <i>Pinus</i> and <i>Gnetum</i> . | (8 h) |

UNIT-IV.

- | | |
|---|-------|
| 10. Palaeobotany: Introduction, Fossils and fossilization; Importance of fossils. | (8 h) |
| 11. Geological time scale; | (4 h) |
| 12. Bennettitales: General account. | (3 h) |



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References:

1. Watson, E. V. 1974. The structure and life of Bryophytes, B. I. Publications, New Delhi.
2. Pandey, B. P. 2006. College Botany, Vol. II: Pteridophyta, Gymnosperms and Paleobotany. S. Chand & Company Ltd, New Delhi.
3. Sporne, K. R. 1965. Morphology of Gymnosperms. Hutchinson Co., Ltd., London.
4. Vashishta, P. C., A. K. Sinha and Anil Kumar. 2006. Botany - Pteridophyta (Vascular Cryptogams). . Chand & Company Ltd, New Delhi.
5. Pandey, B. P. 2001. College Botany, Vol. I: Algae, Fungi, Lichens, Bacteria, Viruses, Plant Pathology, Industrial Microbiology and Bryophyta. S. Chand & Company Ltd, New Delhi.
6. Pandey, B. P. 2007. Botany for Degree Students: Diversity of Microbes, Cryptogams, Cell Biology and Genetics. S. Chand & Company Ltd, New Delhi.
7. Thakur, A. K. and S. K. Bassi. 2008. A Textbook of Botany: Diversity of Microbes and Cryptogams. S. Chand & Company Ltd, New Delhi.
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9. Vashishta, P. C., A. K. Sinha and Anil Kumar. 2006. Botany for Degree Students: Gymnosperms. Chand & Company Ltd, New Delhi.
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B.Sc (CBCS) Botany- I year
Semester-II - Paper-II
(Module: Bryophytes, Pteridophytes, Gymnosperms and Paleobotany)
Theory Model Question Paper

Time : 2 ½ hrs

Max. Marks: 70

Instructions to the candidates: Draw well-labeled diagrams wherever necessary.

SECTION A

5 X 2 = 10M

Define or explain ALL of the following:

- 1.
- 2.
- 3.
- 4.
- 5.

SECTION B

(Instructions to the question PAPER SETTER: Set atleast ONE question for EACH UNIT of the given syllabus)

Write short answers for FOUR of the following

4 X 5 = 20 M

- 6.
- 7.
- 8.
- 9.
- 10.
- 11.

SECTION C

(Instruction to the question PAPER SETTER : Set TWO questions from EACH UNIT of the given syllabus.)

Write detailed answers for ALL of the following:

4 X 10 = 40 M

Unit - I

12 . a)

(OR)

b)

Unit - II

13 . a)

(OR)

b)

Unit - III

14 . a)

(OR)


b)


Unit - IV


15 . a)

(OR)

b)


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B.Sc (CBCS) Botany- I year
Semester-II - Paper-II
Bryophytes, Pteridophytes, Gymnosperms and Paleobotany


Practical Syllabus

(45 hours)

1. Study of Morphology (vegetative and reproductive structures) and anatomy of the following
Bryophytes: *Marchantia*, *Anthoceros* and *Polytrichum*. (9 h)
2. Study of Morphology (vegetative and reproductive structures) and anatomy of the following
Pteridophytes: *Lycopodium*, *Equisetum* and *Marsilea*. (9 h)
3. Study of Anatomical features of *Lycopodium* stem, *Equisetum* stem and *Marsilea* petiole &
rhizome by preparing double stained permanent mounts. (12h)
4. Study of Morphology (vegetative and reproductive structures) of the following taxa:
Gymnosperms: *Pinus* and *Gnetum*. (6 h)
5. Study of Anatomical features of *Pinus* needle and *Gnetum* stem by preparing double stained
permanent mounts. (6h)
6. Fossil forms using permanent slides / photographs: *Rhynia* and *Cycadeoidea*. (3h)


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B.Sc (CBCS) Botany- I year
Semester-II - Paper-II
Bryophytes, Pteridophytes, Gymnosperms and Paleobotany
Practical Model Paper


Time : 2 Hrs

Max. Marks: 50

- 1 . Prepare a double stained permanent mount of the given material ' A ' (Pteridophyte)
Draw diagram & give reasons for identification. 14M
- 2 . Prepare a double stained permanent mount of the given material ' B ' (Gymnosperms)
Draw diagram & give reasons for identification. 16M
- 3 . Identify the given specimens C , D , E & F (Bryophyte – 2 , Pteridophyte – 1 &
Gymnosperm – 1) 4 X 2 = 8 M
- 4 . Identify the given slides G , H , I & J (Bryophyte – 2 , Pteridophyte – 1
& Gymnosperm – 1) 4 X 2 = 8 M
- 5 . Record 4 M


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U.G. I YEAR Semester –II – (B.Sc/B.A /B.COM)

(w.e.f Academic Year 2016 – 17)

Gender Sensitization

AECC – 2

Credits -2

Unit – I (Theory) – 1 Credit – 1 Hour of instruction per week


1. Gender : Definition, Nature and Evolution , Culture, Tradition, Historicity.
2. Gender Spectrum: Biological, Sociological, Psychological Conditioning.
3. Gender based division of labour – domestic work and use value.
4. Gender, Human Rights and Parity (parallel progress of both genders).

Unit-II (Practical Activity) 1 Credit – 2Hours of Activity per Week


Group discussion ,Presentation, Role play, Survey, Case studies , Group project based on following issues:

1. Respect and Co-existence.
2. Social, Biological, Psychological, Political, Economic, Cultural,Health issues.
3. Domestic Violence, Eve-Teasing , SexualHarassment.
4. Real Life Experience of Gender Interaction.
5. Print and Electronic Media and Gender Inequalities.
6. Contemporary Challenges.

BOOK : “ Towards a World of Equals : A Bilingual Text book on Gender ” published by Telugu Akademi


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B. Sc (CBCS) BOTANY- II YEAR
Semester-III - Paper-III
Taxonomy of Angiosperms and Medicinal Botany

<u>DSC-1C(4 hrs./week)</u>	<u>Theory syllabus</u>	<u>Credits-4</u> <u>(60 hours)</u>
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UNIT - I

1. Introduction: Principles of plant systematics, Types of classification: Artificial, Natural and Phylogenetic; Systems of classification: Salient features and comparative account of Bentham & Hooker and Engler & Prantle. An introduction to Angiosperm Phylogeny Group (APG). (7h)
- 2.. Current concepts in Angiosperm Taxonomy: Embryology in relation to taxonomy, Cytotaxonomy, Chemotaxonomy and Numerical Taxonomy. (4 h)
- 3.. Nomenclature and Taxonomic resources: An introduction to ICBN, Vienna code - a brief account. Herbarium: Concept, techniques and applications. (4 h)

UNIT-II


- 4.. Systematic study and economic importance of plants belonging to the following families: Polypetalae : Annonaceae, Capparidaceae, Rutaceae, Fabaceae (Faboideae/papilionoideae, Caesalpinioideae, Mimosoideae), Cucurbitaceae
5. Gamopetalae: Apiaceae, Asteraceae, Asclepiadaceae, Lamiaceae
6. Monochalmydeae: Amaranthaceae, Euphorbiaceae, Monocotyledons: Orchidaceae and Poaceae. (15h)


UNIT - III


- 7.. Ethnomedicine: Scope, interdisciplinary nature, distinction of Ethnomedicine from Folklore medicine. (3h)
8. Outlines of Ayurveda, Sidda, Unani and Homeopathic systems of traditional medicine. Role of AYUSH, NMPB, CIMAP and CDRI. (5 h)
- 9.. Plants in primary health care: Common medicinal plants – Tippateega (*Tinospora cordifolia*), tulasi (*Ocimum sanctum*), pippallu (*Piper longum*), Karakaya (*Terminalia chebula*), Kalabanda (*Aloe vera*), Turmeric (*Curcuma longa*). Evaluation of crude drugs. (7h)

UNIT-IV

10. Traditional medicine vs Modern medicine: Study of selected plant examples used in traditional medicine as resource (active principles, structure, usage and pharmacological action of modern medicine: Aswagandha (*Withania somnifera*), Sarpagandha (*Rauwolfia serpentina*), Nela usiri (*Phyllanthus amarus*), Amla (*Phyllanthus emblica*) and Brahmi (*Bacopa monnieri*). (8h)
11. Pharmacognosy: Introduction and scope. Adulteration of plant crude drugs and methods of identification - some examples. Indian Pharmacopoeia. (4h)
12. plant crude drugs: Types, methods of collection, processing and storage practices. (3h)

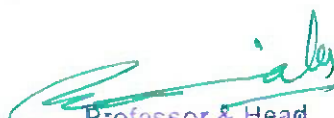

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- Jain, S. K. and V. Mudgal. 1999. A Handbook of Ethnobotany. Bishen Singh Mahendra Pal Singh, Dehradun.
- Jeffrey, C. 1982. An Introduction to Plant Taxonomy. Cambridge University Press, Cambridge. London.
- Joshi, S. G. 2000. Medicinal Plants. Oxford and IBH, New Delhi.
- Kokate, C. and Gokeale- Pharmacognacy- Nirali Prakashan, New Delhi.
- Lad, V. 1984. Ayurveda – The Science of Self-healing. Motilal Banarasidass, New Delhi.
- Lewis, W. H. and M. P. F. Elwin Lewis. 1976. Medical Botany. Plants Affecting Man's Health. A Wiley Inter science Publication. John Wiley and Sons, New York.


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B. Sc (CBCS) BOTANY- II YEAR
Semester-III - Paper-III
Taxonomy of Angiosperms and Medicinal Botany
Theory Model Question Paper

Time : 2 ½ hrs

Max. Marks: 70

Instructions to the candidates: Draw well-labeled diagrams wherever necessary.

SECTION A

5 X 2 = 10M

Define or explain ALL of the following:

- 1.
- 2.
- 3.
- 4.
- 5.

SECTION B

(Instructions to the question PAPER SETTER: Set atleast ONE question for EACH UNIT of the given syllabus)

Write short answers for FOUR of the following

4 X 5 = 20 M

- 6.
- 7.
- 8.
- 9.
- 10.
- 11.

SECTION C

(Instruction to the question PAPER SETTER : Set TWO questions from EACH UNIT of the given syllabus.)

Write detailed answers for ALL of the following:

4 X 10 = 40 M

Unit - I

12 . a)

(OR)

b)

Unit - II

13 . a)

(OR)

b)

Unit - III

14 . a)

(OR)


b)

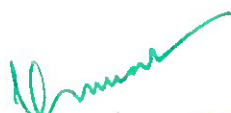
Unit - IV


15 . a)

(OR)

b)


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B.Sc (CBCS) BOTANY- II YEAR
Semester-III - Paper-III
Taxonomy of Angiosperms and Medicinal Botany
Practical syllabus

(45 hours)

1. Systematic study of locally available plants belonging to the families prescribed in theory syllabus (Minimum of one plant representative for each family) (24h)
2. Demonstration of herbarium techniques. (3 h)
3. Identification, medicinal value & active principle present in the following plants : Tulasi (*Ocimum sanctum*), Karakaya (*Terminalichebula*), Kalabanda (*Aloe vera*). (6 h)
4. Ethnomedicinal value/practice of the following plants :
Aswagandha (*Withania somnifera*), Sarpagandha (*Rauwolfiaserpentina*), Amla (*Phyllanthus emblica*) and Brahmi (*Bacopa monnieri*). (6h)
5. Pharmacognosy:
Powder analysis : Pippalu (*Piper longam*), Nela usiri (*Phyllanthus niruri*), Study of Organoleptic (sectional study) of the following:
Tippateega (*Tinospora cordifolia*) and Turmeric (*Curcuma longa*). (6h)
6. Candidate have to submit at least 30 herbarium sheets


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B.Sc (CBCS) BOTANY- II YEAR
Semester-III - Paper-III
Taxonomy of Angiosperms and Medicinal Botany
Practical Model Paper


Time: 2 Hrs

Max. Marks: 50

- | | |
|---|-----|
| 1. Technical description of the given plant twig ' A ' | 18M |
| 2. Identify the given material ' B ' & write its medicinal properties | 6M |
| 3. Identify the specimen ' C ' & write organoleptic evaluation | 6M |
| 4. Identify the given material D ' & discuss the ethno medicinal value of it. | 6M |
| 5. Identify the given material ' E ' . Write the active principle and uses | 6M |
| 6. Herbarium | 4M |
| 7. Record | 4M |


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SKILL ENHANCEMENT COURSE – I (SEC - I)

With effect from 2016-17

B.Sc II year : III semester

Medical Diagnostics

2 hrs : 2 Credits

Unit – I: Introduction to medical diagnostics , Diagnostic methods for analysis of blood and urine

- 1.1 Introduction to medical diagnostics and its importance
- 1.2 Blood composition ,Leishman 's staining, Platelet count using haemocytometer ,Erythrocyte sedimentary Rate (ESR) , Packed cell volume (P.C.V)
- 1.3 Urine analysis Physical characteristics , abnormal constituents.


Unit II: Non – infection , Infection diseases & Tumours


- 1.1 Non – infection diseases – causes , types , symptoms , complications , diagnosis and prevention of diabetes (type – I & II) , Hypertension (Primary & Secondary) , testing of blood glucose using glucometer / Kit.
- 1.2 Infectious diseases – causes , types, symptoms complication, diagnosis and prevention of tuberculosis and hepatitis.
- 1.3 Tumours – Types (Benign, Malignant), detection & metastasis.

Suggested Readings:

1. Prakash, G.(2012). Lab Manual on Blood analysis and Medical Diagnostics. S. Chand and Co. Ltd., New Delhi.



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B.SC (CBCS) BOTANY- II YEAR
Semester-IV- Paper IV
Plant Anatomy, Embryology and Palynology

<u>DSC-1D (4 hrs./week)</u>	<u>Theory syllabus</u>	<u>Credits-4</u> (60 hours)
UNIT - I:		
1. Meristems: Types, histological organization of shoot and root apices and theories.		(3h)
2. Tissues and Tissue Systems: Simple, complex and special tissues.		(6 h)
3. Leaf: Ontogeny, diversity of internal structure; stomata and epidermal outgrowths.		(6 h)
UNIT-II		
4. Stem and root anatomy: Vascular cambium - Formation and function.		(3h)
5. Anomalous secondary growth of Stem - <i>Achyranthes</i> , <i>Boerhaavia</i> , <i>Bignonia</i> , <i>Dracaena</i> ; Root- <i>Beta vulgaris</i>		(5h)
6. Wood structure: General account. Study of local timbers – Teak (<i>Tectona grandis</i>), Rosewood, (<i>Dalbergia latifolia</i>), Red sanders, (<i>Pterocarpus santalinus</i>) Nallamaddi (<i>Terminalia tomentosa</i>) and Neem (<i>Azadirachta indica</i>).		(7h)
UNIT - III		
7. Introduction: History and importance of Embryology.		(2h)
8. Anther structure, Microsporogenesis and development of male gametophyte.		(6h)
9. Ovule structure and types; Megasporogenesis; types and development of female gametophyte.		(7h)
UNIT-IV		
10. Pollination - Types; Pollen - pistil interaction. Fertilization.		(4h)
11. Endosperm - Development and types. Embryo - development and types; Polyembryony and Apomixis - an outline.		(5h)
12.. Palynology- Pollen morphology, NPC system and application of Palynology.		(6h)


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- Bhojwani, S. S. and S. P. Bhatnagar. 2000. The Embryology of Angiosperms (4th Ed.), Vikas Publishing House, Delhi.
- M.R.Saxena- A textbook of Palynology.
- Vashista- A textbook of Anatomy.
- P.K.K.Nair- A textbook of Palynology.
- Esau, K. 1971. Anatomy of Seed Plants. John Wiley and Son, USA.
- Johri, B. M. 1984. Embryology of Angiosperms. Springer-Verleg, Berlin.
- Kapil, R. P. 1986. Pollination Biology. Inter India Publishers, New Delhi.
- Maheswari, P. 1971. An Introduction to Embryology of Angiosperms. McGraw Hill Book Co., London.
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B.SC (CBCS) BOTANY- II YEAR
Semester-IV- Paper IV
Plant Anatomy, Embryology and Palynology
Theory Model Question Paper

Time : 2 ½ hrs

Max. Marks: 70

Instructions to the candidates: Draw neat labeled diagrams wherever necessary.

SECTION A

5 X 2 = 10M

Define or explain ALL of the following:

- 1.
- 2.
- 3.
- 4.
- 5.

SECTION B

(Instructions to the question PAPER SETTER: Set atleast ONE question for EACH UNIT of the given syllabus)

Write short answers for FOUR of the following

4 X 5 = 20 M

- 6.
- 7.
- 8.
- 9.
- 10.
- 11.

SECTION C

(Instruction to the question PAPER SETTER : Set TWO questions from EACH UNIT of the given syllabus.)

Write detailed answers for ALL of the following:

4 X 10 = 40 M

Unit - I

12 . a)

(OR)

b)

Unit - II

13 . a)

(OR)

b)

Unit - III

14 . a)

(OR)

b)

Unit - IV

15 . a)

(OR)

b)


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B.SC (CBCS) BOTANY- II YEAR
Semester-IV- Paper IV
Plant Anatomy, Embryology and Palynology

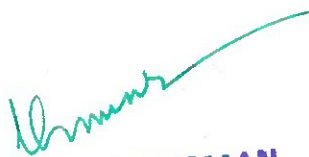
Practical syllabus


(45 hours)

Suggested Laboratory Exercises:

1. Demonstration of double staining technique. (3 h)
2. Tissue organization in root and shoot apices using permanent slides (3 h)
3. Preparation of double stained Permanent slides
Primary structure: Root - *Cicer*, *Canna*; Stem - *Tridax*, *Sorghum* (6 h)
Secondary structure: Root - *Tridax* sp.; Stem - *Pongamia*
Anomalous secondary structure: Examples as given in theory syllabus. (6 h)
4. Stomatal types using epidermal peels. (3 h)
5. Microscopic study of wood in T.S., T.L.S. and R.L.S. (6 h)
6. Structure of anther and microsporogenesis using permanent slides. (3 h)
7. Structure of pollen grains using whole mounts - *Hibiscus*, *Acacia* and Grass). (3 h)
8. Pollen viability test using Evans Blue - *Hibiscus* (3 h)
9. Study of ovule types and developmental stages of embryosac. (3 h)
10. Structure of endosperm (nuclear and cellular); Developmental stages of dicot and monocot embryos using permanent slides. (3 h)
11. Isolation and mounting of embryo (using *Cymopsis* / *Senna* / *Crotalaria*) (3 h)


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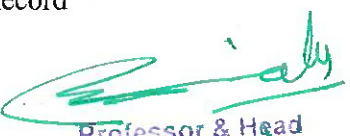

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B.SC (CBCS) BOTANY- II YEAR
Semester-IV- Paper IV
Plant Anatomy, Embryology and Palynology
Practical Model Paper


Time: 2 Hrs

Max. marks : 50

1. Prepare a double stained permanent mount of transverse section of given material " A " . 18M
2. Prepare a temporary mount of epidermal peel of the given leaf material " B " and identify the stomatal type . 8M
3. Conduct the pollen viability test " C " (OR) Isolate the embryo from the given material . 8M
4. Identify and describe the specimens / slides with well labelled diagrams
(a) Embryology – D (b) Palynology – E (c) Anatomy – F 3 X 4 = 12M
5. Record 4M


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SKILL ENHANCEMENT COURSE - II (SEC-2)

With effect from 2016-17

B.Sc II year : IV semester

FOOD ADULTERATION

Code : BS 401, SEC - 2

2 Hours : 2 - Credits

Unit -I

Definitation and Introduction of food adulteration.

Types of Food Adulteration.

Common Food Adulteration.

Causes of Food Adulteration.

Analysis of food

UNIT - II

Effects of Food Adulteration


Prevention of Food adulteration


Detection of Common food Adulterants.


Food Adulteration act – 1954

Reference :

1. Jesse Park Battershall. Food adulteration and its detection . Published by Book on Demand , Miami, 2015
2. R . B. Sethi 's Prevention of food adulterantion act
3. Dr.Sheela .S. Prevention of Food Adulteration


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B.Sc. Botany- III Year
Semester-V : Paper-V
Cell Biology and Genetics
w.e.f. 2018 - 2019

DSC-1E (3 hrs/week)	Theory Syllabus (core)	Credits-3 45 hours
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Unit - I:

1. Principles of Microscopy: Light Microscope and Electron Microscope. (2 h)
2. Plant cell envelopes: Ultra structure of cell wall, molecular organization of cell membranes. (3 h)
3. Nucleus: Ultra structure, Nucleic acids - Structure of DNA, types and functions of RNA. (4 h)
4. Chromosomes: Morphology, organization of DNA in a chromosome, Euchromatin and Heterochromatin, Karyotype. Special types of chromosomes: Lampbrush and Polytene chromosomes. (3 h)
5. Extra nuclear genome: Mitochondrial DNA and Plastid DNA, Plasmids. (3 h)


Unit - II:


6. Cell division: Cell and its regulation; mitosis, meiosis and their significance (3h)
7. Mendelism: Laws of inheritance. Genetic interactions - Epistasis, Complementary, Supplementary and inhibitory genes. (5h)
8. Linkage: A brief account and theories of Linkage. Crossing over: Mechanism and theories of crossing over. (4 h)
9. Genetic maps: Construction of genetic maps with Two point and Three point test cross data. (3h)

Unit - III:

10. Mutations: Chromosomal aberrations - structural and numerical changes; Gene mutations, Transposable elements. (4h)
11. Gene Organization- Structure of gene, Genetic code, Process of DNA Replication with Polymerase enzyme. (5h)
12. Mechanism of transcription in Prokaryotes and Eukaryotes. (4h)
13. Regulation of gene expression in prokaryotes (Lac and Trp. Operons). (2h)



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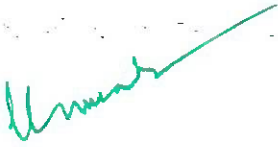

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1. Sharma, A. K. and A. Sharma. 1999. Plant Chromosomes: Analysis, Manipulation and Engineering. Harward Academic Publishers, Australia.
2. Shukla, R. S. and P. S. Chandel. 2007. Cytogenetics, Evolution, Biostatistics and Plant Breeding. S.Chand & Company Ltd., New Delhi.
3. Singh, H. R. 2005. Environmental Biology. S. Chand & Company Ltd., New Delhi.
4. Snustad, D. P. and M. J. Simmons. 2000. Principles of Genetics. John Wiley & Sons, Inc., U S A.
5. Strickberger, M. W. 1990. Genetics (3rd Ed.). Macmillan Publishing Company.
6. Verma, P. S. and V. K. Agrawal. 2004. Cell Biology, Genetics, Molecular Biology, Evolution and Ecology. S. Chand & Company Ltd., New Delhi.


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B.SC (CBCS) BOTANY- III YEAR
Semester-V- Paper V
Cell Biology and Genetics
Theory Model Question Paper

Time : 2 ½ hrs

Max. Marks: 70

Instructions to the candidates: Draw neat labeled diagrams wherever necessary.

SECTION A

5 X 2 = 10M

Define or explain ALL of the following:

- 1.
- 2.
- 3.
- 4.
- 5.

SECTION B

(Instructions to the question PAPER SETTER: Set atleast ONE question for EACH UNIT of the given syllabus)

Write short answers for FOUR of the following

4 X 5 = 20 M

- 6.
- 7.
- 8.
- 9.
- 10.
- 11.

SECTION C

(Instruction to the question PAPER SETTER : Set atleast TWO questions from EACH UNIT of the given syllabus.)

Write detailed answers for ALL of the following:

4 X 10 = 40 M

Unit - I

12. a)

(OR)

b)

Unit - II

13. a)

(OR)

b)

Unit - III

14. a)

(OR)


b)

15. a)

(OR)


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**B. Sc Botany- III Year
Semester-V: Paper-V
Cell Biology and Genetics**


Credits-1


DSC-1E (2 hrs/week)


Practical Syllabus

30 hours

1. Demonstration of cytochemical methods: Fixation of plant material and nuclear staining for mitotic and meiotic studies. (4 h)
2. Study of various stages of mitosis using cytological preparation of Onion root tips. (4 h)
3. Study of various stages of meiosis using cytological preparation of Onion flower buds. (2 h)
4. Solving genetic problems related to monohybrid, dihybrid ratio incomplete dominance and interaction of genes (minimum of six problems in each topic). (8 h)
5. Construction of linkage maps; two and three point test cross. (4 h)
6. Study of ultra structure of cell organelles using photographers. Chloroplast, Mitochondria, Nucleus, Ribosomes, Endoplasmic reticulum, and Golgi complex. (4 h)
7. Study of Special types of Chromosomes (Polytene chromosome and Lampbrush chromosomes-Permanent slide) (4 h)



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**B.Sc. Botany- III Year
Semester-V - Paper-V
Cell Biology and Genetics
Practical Model Question Paper**


Time : 2 Hrs

Max. marks : 50

1. Prepare a cytological slide of given material 'A' and identify & describe any two stages with well labeled diagrams. (12 marks)
2. Solve genetic problems 'B' related to dihybrid ratio or incomplete dominance (6marks)
3. Solve the genetic problem 'C' related to interaction of genes. (8 Marks)
4. Solve the genetic problem 'D' related to two or three point test cross (10 marks)
5. Slides/ Specimen (2x2) = (4 marks)
E-Cell organelles
F-Chromosomes (Polytene Chromosome)
6. Record (5 Marks)
7. Viva (5 Marks)


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B. Sc (CBCS) Botany-III Year
Semester-V: Elective-I
Ecology & Biodiversity

Credits-3
(45 hours)

DSE-1E (3 hrs./week)

Theory Syllabus

UNIT - I

1. Concept and components of Ecosystem. Energy flow, food chains, food webs, ecological pyramids, Biogeochemical cycles - Carbon Cycle (4h)
2. Definition of Environment: Atmosphere (Troposphere, Stratosphere, Mesosphere, Ionosphere), Hydrosphere, Lithosphere & Biosphere. (3h)
3. Plants and environment: Ecological factors - Climatic (Light and Temperature) and biotic. Ecological adaptations of plants. (5h)
4. Edaphic Factors: Soil- Formation- Weathering, mode of formation- residual; Transported: Colluvial, Alluvial, Glacial & Eolian. Soil erosion & Conservation. (4h)


UNIT - II


5. Population ecology: Natality, Mortality, Growth curves, Ecotypes & Ecads. (4h)
6. Community ecology: Frequency, density cover, Life forms & Biological spectrum. (4h)
7. Community Dynamics: Succession - Serial stages, Modification of physical environment, Climax formation with reference to Hydrosere and Xerosere. (4h)
8. Production ecology: Concepts of productivity - Primary and Secondary Productivity. (4h)

UNIT- III

9. Biodiversity: Concepts, Convention of Biodiversity - Earth Summit (Copenhagen). (4h)
10. Biodiversity- Levels, threats and value (3h)
11. Hot spots of India - North Eastern Himalayas, Western Ghats; Endemism. IUCN categories, RED data book (3h)
12. Principles of conservation – *In situ* and *Ex situ*. Role of organizations in the conservation of Biodiversity - WWF and NBPGR. (3h)

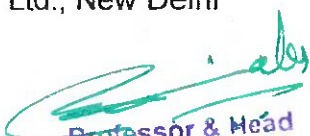

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B.SC (CBCS) BOTANY- III YEAR
Semester-V: Elective-I
Ecology & Biodiversity
Theory Model Question Paper

Time : 2 ½ Hrs

Max. Marks: 70

Instructions to the candidates: Draw neat labeled diagrams wherever necessary.

SECTION A

5 X 2 = 10M

Define or explain ALL of the following:

- 1.
- 2.
- 3.
- 4.
- 5.

SECTION B

(Instructions to the question PAPER SETTER: Set atleast ONE question for EACH UNIT of the given syllabus)

Write short answers for FOUR of the following

4 X 5 = 20 M

- 6.
- 7.
- 8.
- 9.
- 10.
- 11.

SECTION C

(Instruction to the question PAPER SETTER : Set atleast TWO questions from EACH UNIT of the given syllabus.)

Write detailed answers for ALL of the following:

4 X 10 = 40 M

Unit - I

12 . a)

(OR)

b)

Unit - II

13 . a)

(OR)

b)

Unit - III

14 . a)


(OR)


b)


15 . a)

(OR)

b)


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B. Sc (CBCS) Botany-III Year
Semester-V: Elective-I
Ecology & Biodiversity.

Practical Syllabus

30 hours

1. Study of plant communities by Quadrat Method (8h)
2. Estimation of carbonates and bicarbonates in the given water sample. (4h)
3. Determination of soil texture (composition of clay, sand silt etc.) and pH. (2h)
4. Study of morphological and anatomical characteristics of plant communities using locally available plant species: Hydrophytes (*Eichhornia, Hydrilla, Pistia, Nymphaea, Vallisneria*), Xerophytes: (*Asparagus, Opuntia, Euphorbia melii*), (*Casuarina, Calotropis*). (8h)
5. Value of biodiversity
 - a) Medicinal value: *Catharanthus, Tinospora* and *Emblica*
 - b) Timber Value: *Acacia, Tectona* and *Azardirachta*
 - c) Aesthetic Value: *Mangifera, Ficus, Ocimun*
 - d) Assessment of local biodiversity. (8h)


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**B.Sc (CBCS) Botany-III Year
Semester-V: Elective-I**

Time: 2 Hrs


Ecology & Biodiversity


Max. marks : 50

Practical Model Question Paper

1. Calculate the frequency and density of the given Quadrate (8M)
2. Estimate the amount of Carbonates/Bicarbonates present in the given water sample. (8M)
3. Determination of soil texture and pH. (5M)
4. Comment on the specimens A, B, C, D & E (5x2) = (10M)
5. Identify the given slides F & G (Hydrophytes & Xerophytes) (2x2) = (4M)
6. Biodiversity: Identification and Biodiversity value (Medicinal/Timber/Aesthetic) (5M)
7. Record (5M)
8. Viva (5M)


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B. Sc (CBCS) BOTANY: III YEAR
Semester-V: Elective-II
Horticulture

DSE-1E (3 hrs./week) Credits-3

(45 hours)

Theory Syllabus

UNIT - I

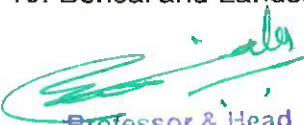
1. Definition, branches, scope and economic importance of horticultural crops (4h)
2. Classification of horticultural crops based on -Climatic requirements, Season of growth. (6h)
3. Manures: Definition, importance of manures FYM (compost), oil cakes, green manure, Organic manures and vermi-compost. (5h)


UNIT - II

4. Natural Propagation: By seeds, Vegetative Structures like Bulbs, Tubers, Corms, Rhizomes, Root stock, runners, Offsets and suckers. (4h)
5. Artificial Propagation: Cutting, Layering, Grafting and Budding (4h)
6. Application of the following plant growth regulators in horticulture - Auxins, Gibberellins, Cytokinins, Ethylene and Brassinosteroids. (4h)
7. Green house technology- definition, types, layout, construction, irrigation systems, care and attention, hardening of plants. (4h)

UNIT - III

8. Adaphic and environmental parameters for horticultural crops, Selection of site, planning, training, pruning and Cropping system; Garden implements and their uses. (5h)
9. Management: Nutrition, Water, Pest and Weed Management. (4h)
10. Bonsai and Landscaping techniques. (5h)

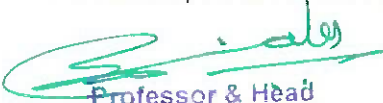

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B.SC (CBCS) BOTANY- III YEAR
Semester-V: Elective-II
HORTICULTURE
Theory Model Question Paper

Time : 2 1/2 Hrs

Max. Marks: 70

Instructions to the candidates: Draw neat labeled diagrams wherever necessary.

SECTION A

5 X 2 = 10M

Define or explain ALL of the following:

- 1.
- 2.
- 3.
- 4.
- 5.

SECTION B

(Instructions to the question PAPER SETTER: Set atleast ONE question for EACH UNIT of the given syllabus)

Write short answers for FOUR of the following

4 X 5 = 20 M

- 6.
- 7.
- 8.
- 9.
- 10.
- 11.

SECTION C

(Instruction to the question PAPER SETTER : Set atleast TWO questions from EACH UNIT of the given syllabus.)

Write detailed answers for ALL of the following:

4 X 10 = 40 M

Unit - I

12 . a)

(OR)

b)

Unit - II

13 . a)

(OR)

b)

Unit - III

14 . a)


(OR)


b)

15 . a)

(OR)

b)


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B.Sc (CBCS) BOTANY: III YEAR
Semester-V: Elective II
Horticulture


Practical Syllabus

(30 hours)

1. Garden tools and implements. (2h)
2. Identification and economic values of any two of tropical and subtropical vegetable, fruit, flower and ornamental crops. (2h)
3. Propagation practices by seed, Vegetative propagation (Rhizome, bulb, corm), cutting, layering, budding, grafting with two examples. (6h)
4. Seed propagation- seed treatments, sowing and seedling production. (4h)
5. Nursery practices, transplanting, field preparation, sowing/planting, use of herbicides, top dressing of fertilizers and use of growth regulators. (4h)
6. Nursery containers, media, potting and repotting of plants, hardening of plants in nursery, shade regulation in nursery, plant protection in nursery plants (Demonstration) (4h)
7. Packing nursery plants for local and long distance markets. (Demonstration) (2h)
8. Making of organic-compost. (6h)


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B.Sc. (CBCS) BOTANY: III YEAR
Semester-V: Elective-II
Horticulture


Time: 2 Hrs


Practical Model Paper

Max. marks : 50

1. Major Experiment 'A' (15marks)
 Air Layering
 (OR)
 Grafting
2. Minor Experiment 'B' (8marks)
 Identification, Nutritive and economic value of vegetable or fruit.
3. Making of organic compost-Flow chart. (8Marks)
4. Spotters (3x3=9marks)
 C. Vegetative propagative organ
 D. Horticulture- Garden tools
 E. Types of Bonsai Growth hormones
5. Record (5marks)
6. Viva (5Marks)


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B.Sc. (CBCS) Botany: III Year

Semester-VI : Paper-VI
Plant Physiology(Core)

DSC-1F (3hrs./week)

Credits-3

Theory Syllabus

(45 hours)

UNIT – I

1. Plant-Water Relations: Importance of water to plant life, physical properties of water, diffusion, imbibition, osmosis; water, osmotic and pressure potentials; absorption, transport of water, Ascent of sap; Transpiration; Stomatal structure and movements. (7h)
2. Mineral Nutrition: Essential macro and micro mineral nutrients and their role; symptoms of mineral deficiency. (3h)
3. Translocation of organic substances: Mechanism of phloem transport. (2h)
4. Enzymes: Nomenclature, Characteristics, Classification, Mechanism and regulation of enzyme action, factors regulating enzyme activity. (3h)


UNIT- II


5. Photosynthetic pigments, absorption and action spectra; Red drop and Emerson enhancement effect; concept of two photosystems; mechanism of photosynthetic electron transport and evolution of oxygen; Factors effecting Photosynthesis, Photophosphorylation. (6h)
6. Carbon assimilation pathways: C3, C4 and CAM. (4h)
7. Nitrogen Metabolism: Biological nitrogen fixation, nitrate reduction, ammonia assimilation, (GS-GOGAT, transamination) (4h)

UNIT – III

8. Respiration: Aerobic and Anaerobic; Glycolysis, Krebs cycle; electron transport system, mechanism of oxidative phosphorylation, pentose phosphate pathway. (5h)
9. Growth and Development: Physiological effects of phytohormones–Auxins, gibberellins, cytokinins, ABA, ethylene and Brassinosteroids (5h)
10. Physiology of flowering and photoperiodism. Role of Phytochrome in flowering. (3h)
11. Stress physiology: Concept of water, salt and temperature stresses and plant responses. (3h)



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B.SC (CBCS) BOTANY- III YEAR
Semester-VI :Paper VI
PLANT PHYSIOLOGY
Theory Model Question Paper

Time : 2 1/2 Hrs

Max. Marks: 70

Instructions to the candidates: Draw neat labeled diagrams wherever necessary.

SECTION A

5 X 2 = 10M

Define or explain ALL of the following:

- 1.
- 2.
- 3.
- 4.
- 5.

SECTION B

(Instructions to the question PAPER SETTER: Set atleast ONE question for EACH UNIT of the given syllabus)

Write short answers for FOUR of the following

4 X 5 = 20 M

- 6.
- 7.
- 8.
- 9.
- 10.
- 11.

SECTION C

(Instruction to the question PAPER SETTER : Set atleast TWO questions from EACH UNIT of the given syllabus.)

Write detailed answers for ALL of the following:

4 X 10 = 40 M

Unit - I

12 . a)

(OR)

b)

Unit - II

13 . a)

(OR)

b)

Unit - III

14 . a)

(OR)


b)

15 . a)

(OR)

b)


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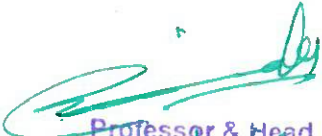

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**B.Sc (CBCS) Botany: III Year
Semester-VI: Paper-VI
Plant Physiology**


Practical Syllabus

**Credits-1
(30 hours)**

-
1. Determination of osmotic potential of vacuolar sap by Plasmolytic method using leaves of *Rheodiscolor* / *Tradescantia*. (4h)
 2. Determination of rate of transpiration using Cobalt chloride method (2h)
 3. Determination of stomatal frequency using leaf epidermal peelings / impressions (4h)
 4. Determination of catalase activity using potato tubers by titration method (4h)
 5. Separation of chloroplast pigments using paper chromatography technique (8h)
 6. Estimation of protein by Biurette method (4h)
 7. Mineral deficiency- Detail study of Micronutrients and Macro nutrients (2h)
 8. Identification of C₃, C₄ and CAM plants (2h)


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**B.Sc (CBCS) Botany: III Year
Semester-VI - Paper-VI
Plant Physiology
Practical Model paper**

Time : 2 Hrs

Max. marks:50

Major Experiment - i: (Any One Question out of two) (12 marks)

1. Determination of Osmotic potential of vascular sap- Plasmolytic method.
2. Determination of Catalase activity – Potato, tubers by Titration method.

Major Experiment - ii: (Any One Question out of two) (12 marks)

3. Separation of Chloroplast pigments by Paper chromatography.
4. Estimation of proteins by Biuret Method.

II. Minor Experiment: (Any One Question out of two) (10 marks)

1. Determination of Stomatal frequency using leaf epidermal peel impressions.
2. Determination of Rate of transpiration by Cobalt chloride method.


III. Identify and Comment on: A, B & C (3x2=6 Marks)

1. Micronutrient Deficiency
2. Macronutrient Deficiency
3. C₃, C₄ and CAM plants.

IV. Record (5 Marks)

V. Viva (5 Marks)


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B.Sc (CBCS) Botany-III Year
Semester-VI: Elective-III
Tissue Culture and Biotechnology

DSE-1F (3 hrs./week)

Theory Syllabus

Credits-3

(45 hours)

UNIT – I


1. Tissue culture: Introduction, sterilization procedures, explants, culture media – composition and preparation; Micro propagation. (4h)
2. Organ culture: Vegetative Organs-Root, Shoot, Leaf culture (3h)
Reproductive Organs-Anther, Ovary, Ovule, Embryo culture
3. Callus culture, Cell and Protoplast culture (4h)
4. Somatic hybrids and Cybrids. (4h)


UNIT- II


5. Applications of tissue culture: Production of pathogen free plants and somaclonal variants, production of stress resistance plants, secondary metabolites and synthetic seeds. (6h)
6. Induction of hairy roots and its applications in production of secondary metabolites. (2h)
7. Biotechnology: Introduction, history, scope and applications. (3h)
8. rDNA technology: Basic aspect of of gene cloning, Enzymes used in gene cloning- Restriction enzymes, Ligases, Polymerases. (4h)

UNIT- III

9. Gene cloning-Vectors – cloning vehicles (Plasmid , Cosmids, Bacteriophages , & Phasmids) application of r DNA technology. (5h)
10. Gene Libraries: Genomic Libraries, cDNA Libraries, Polymerase chain reaction and its applications. (4h)
11. Method of gene transfer in plants (*Agrobacterium* and Microprojectile) (4h)
12. Production of transgenic plants and application of transgenic in crop improvement: Bt-cotton and Brinjal. (2h)

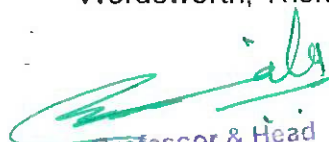

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B.SC (CBCS) BOTANY- III YEAR
Semester-VI: Elective-III
TISSUE CULTURE & BIOTECHNOLOGY
Theory Model Question Paper

Time : 2 1/2 Hrs

Max. Marks: 70

Instructions to the candidates: Draw neat labeled diagrams wherever necessary.

SECTION A

5 X 2 = 10M

Define or explain ALL of the following:

- 1.
- 2.
- 3.
- 4.
- 5.

SECTION B

(Instructions to the question PAPER SETTER: Set atleast ONE question for EACH UNIT of the given syllabus)

Write short answers for FOUR of the following

4 X 5 = 20 M

- 6.
- 7.
- 8.
- 9.
- 10.
- 11.

SECTION C

(Instruction to the question PAPER SETTER : Set atleast TWO questions from EACH UNIT of the given syllabus.)

Write detailed answers for ALL of the following:

4 X 10 = 40 M

Unit - I

12 . a)

(OR)

b)

Unit - II

13 . a)

(OR)

b)

Unit - III

14 . a)


(OR)


b)


15 . a)

(OR)

b)


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B. Sc (CBCS) Botany-III Year
Semester-VI: Elective-III
Tissue Culture and Biotechnology

Practical Syllabus

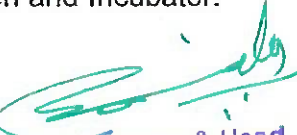
30 Hours


Major Experiments


1. Isolation of plant DNA. (Tomato) (4h)
2. Production of synthetic seeds /Encapsulation of embryo (2h)
3. Preparation of plant tissue culture medium. (4h)

Minor Experiments

4. Callus induction (2h)
5. Demonstration of Micro propagation/ multiple shoots (4h)
6. Anther culture (2h)
7. PCR –Demonstration (2h)
8. Study of biotechnology products: Samples of antibiotics and vaccines (4h)
9. Photographs of Gene transfer methods. (2h)
10. Instruments used in Biotechnology lab- Autoclave, Laminar air flow, Hot air oven and Incubator. (4h)


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B.Sc (CBCS) Botany-III Year
Semester-VI: Elective III
Tissue Culture and Biotechnology


Time: 2 Hrs


Practical Model Paper

Max. marks : 50

- I. Major Experiment (Any two Qs out of three) (2X12) =24 marks
- a) Isolation of DNA
 - b) Production of synthetic seeds /Encapsulation of embryo
 - c) Preparation of plant tissue culture medium
2. Minor Experiment (7 marks)
- Callus Induction/ Micropropagation/ Multiple shoots
3. Spotters (3x3) =9 marks
- A. Vaccines
 - B. Antibiotics
 - C. Gene transfer method/ Instruments
4. Record (5 marks)
5. Viva (5 Marks)


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B.Sc (CBCS) BOTANY: III YEAR
Semester-VI: Elective IV
Seed Technology

DSE- 1F (3 hrs./week)

Theory Syllabus

Credits-3
45 Hours

UNIT-I


1. Seed development in cultivated plants, seed quality concept, importance of genetic purity of seed. Hybrid seed production and Heterosis. (4h)
2. Principles of hybrid seed production-Cross pollination, Emasculation, role of pollinators and their management. (5h)
3. Collection and storage of pollen for artificial pollination. (3h)
4. Seed: Structure and types. Seed dormancy: causes and methods of breaking dormancy. (4h)


UNIT-II


5. Cultural practices and harvesting of Seed: Isolation, Sowing, Cultural practices, harvesting and threshing of the following crops: a) Rice b) Cotton c) Sunflower (4h)
6. Physico and Bio-chemical changes during seed storage. (3h)
7. Seed Treatment to control seed borne disease –General account (3h)
8. Seed production technology; seed testing- Procedures of seed testing, seed testing laboratories and importance of seed testing. (4h)

UNIT-III

9. Seed viability, factors affecting seed viability and genetic erosion. (4h)
10. Seed storage: Long term and short term storage. Orthodox and recalcitrant seeds. Packing of seeds – Principles, practices, bagging and labelling. (4h)
12. Seed banks- National, International and Millennium seed banks. (3h)
11. Seed certification- History, Seed certification agency, Indian minimum, general and specific seed certification standard. (4h)

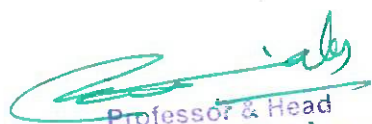

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B.SC (CBCS) BOTANY- III YEAR
Semester-VI: Elective-IV
SEED TECHNOLOGY
Theory Model Question Paper

Time : 2 1/2 Hrs

Max. Marks: 70

Instructions to the candidates: Draw neat labeled diagrams wherever necessary.

SECTION A

5 X 2 = 10M

Define or explain ALL of the following:

- 1.
- 2.
- 3.
- 4.
- 5.

SECTION B

(Instructions to the question PAPER SETTER: Set atleast ONE question for EACH UNIT of the given syllabus)

Write short answers for FOUR of the following

4 X 5 = 20 M

- 6.
- 7.
- 8.
- 9.
- 10.
- 11.

SECTION C

(Instruction to the question PAPER SETTER : Set atleast TWO questions from EACH UNIT of the given syllabus.)

Write detailed answers for ALL of the following:

4 X 10 = 40 M

Unit - I

12 . a)

(OR)

b)

Unit - II

13 . a)

(OR)

b)

Unit - III

14 . a)

(OR)


b)


15 . a)

(OR)

b)


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B.Sc. (CBCS) BOTANY: III YEAR
Semester-VI: Elective IV
Seed Technology
Practical syllabus

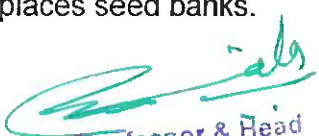
(30 hours)


Major Experiment


1. Testing of seed viability using 2, 3, 5-triphenyl tetrazolium chloride (TTC). (2h)
2. Estimation of amylase activity of germinating seeds (Qualitatively). (2h)
3. Demonstration of seed dressing using fungicides to control seed borne diseases. (2h)
4. Demonstration of seed dressing using Biofertilizers (BGA) to enrich nutrient supply. (2h)

Minor Experiments

5. Emasculation, bagging of flower for hybrid seed production. (4h)
6. Dissection of Dicot embryo (bean) and Monocot embryo (maize). (4h)
7. Pollen viability test using Evan's blue staining. (*Hibiscus*). (2h)
8. Harvesting and Importance of following seeds: (4h)
 - a) Rice
 - b) Maize
 - c) Cotton
 - d) Groundnut and
 - e) Sunflower.
9. Methods to break Seed dormancy (2h)
10. Study visits to research institutes, seed tests and certification laboratories and places seed banks. (6h)


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B.Sc (CBCS) BOTANY: III YEAR
Semester-VI: Elective-IV
Seed Technology
Practical Model paper


Time: 2 Hrs

Max. Marks: 50

-
1. Major Experiment.
 - a) Estimation of Amylase activity in germinating seeds.
(OR)
 - b) Seed viability test by triphenyl tetrazolium chloride (TTC) (15 Marks)
 2. Minor Experiment. (8 Marks)
 - a) Dissection of Dicot / Monocot embryo
 3. Methods to break Seed dormancy / Seed dressing. (8 Marks)
 4. Spotters (3x3=9marks)
 - A. Emasculation / Bagging
 - B. Germination of seeds.
 - C. Importance of following seeds: rice, cotton and sunflower.
 5. Record (5 Marks)
 6. Viva (5 Marks)


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