It is notified for information of all concerned that the Syndicate in its meeting held on 28.05.2018 (vide Item No.14) approved the Syllabi of different subjects in Undergraduate Honours / General / Major courses of studies (CBCS) under this University, as laid down in the accompanying pamphlet:

List of the subjects

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Subject</th>
<th>Sl. No.</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Anthropology (Honours / General)</td>
<td>29</td>
<td>Mathematics (Honours / General)</td>
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<td>2</td>
<td>Arabic (Honours / General)</td>
<td>30</td>
<td>Microbiology (Honours / General)</td>
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<td>3</td>
<td>Persian (Honours / General)</td>
<td>31</td>
<td>Mol. Biology (General)</td>
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<td>4</td>
<td>Bengali (Honours / General/LCC2 /AECC1)</td>
<td>32</td>
<td>Philosophy (Honours / General)</td>
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<tr>
<td>5</td>
<td>Bio-Chemistry (Honours / General)</td>
<td>33</td>
<td>Physical Education (General)</td>
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<td>6</td>
<td>Botany (Honours / General)</td>
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<td>Physics (Honours / General)</td>
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<td>7</td>
<td>Chemistry (Honours / General)</td>
<td>35</td>
<td>Physiology (Honours / General)</td>
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<tr>
<td>8</td>
<td>Computer Science (Honours / General)</td>
<td>36</td>
<td>Political Science (Honours / General)</td>
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<tr>
<td>9</td>
<td>Defence Studies (General)</td>
<td>37</td>
<td>Psychology (Honours / General)</td>
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<td>Economics (Honours / General)</td>
<td>38</td>
<td>Sanskrit (Honours / General)</td>
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<td>Education (Honours / General)</td>
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<td>Social Science (General)</td>
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<td>Electronics (Honours / General)</td>
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<td>Sociology (Honours / General)</td>
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<td>13</td>
<td>English ((Honours / General/ LCC1/ LCC2/AECC1)</td>
<td>41</td>
<td>Statistics (Honours / General)</td>
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<td>Urdu (Honours / General /LCC2 /AECC1)</td>
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<td>15</td>
<td>Environmental Studies (AECC2)</td>
<td>43</td>
<td>Women Studies (General)</td>
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<td>16</td>
<td>Film Studies (General)</td>
<td>44</td>
<td>Zoology (Honours / General)</td>
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<td>17</td>
<td>Food Nutrition (Honours / General)</td>
<td>45</td>
<td>Industrial Fish and Fisheries – IFFV (Major)</td>
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<td>18</td>
<td>French (General)</td>
<td>46</td>
<td>Sericulture – SRTV (Major)</td>
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<td>19</td>
<td>Geography (Honours / General)</td>
<td>47</td>
<td>Computer Applications – CMAV (Major)</td>
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<td>20</td>
<td>Geology (Honours / General)</td>
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<td>Tourism and Travel Management – TTMV (Major)</td>
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<td>21</td>
<td>Hindi (Honours / General/LCC2 /AECC1)</td>
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<td>History (Honours / General)</td>
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<td>Communicative English –CMEV (Major)</td>
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<td>23</td>
<td>Islamic History Culture (Honours / General)</td>
<td>51</td>
<td>Clinical Nutrition and Diethetics CNDV (Major)</td>
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<td>Home Science Extension Education (General)</td>
<td>52</td>
<td>Bachelor of Business Administration (BBA) (Honours)</td>
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<td>25</td>
<td>House Hold Art (General)</td>
<td>53</td>
<td>Bachelor of Fashion and Apparel Design – (B.F.A.D.) (Honours)</td>
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<td>26</td>
<td>Human Development (Honours / General)</td>
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<td>Bachelor of Fine Art (B.F.A.) (Honours)</td>
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<td>27</td>
<td>Human Rights (General)</td>
<td>55</td>
<td>B. Music (Honours / General) and Music (General)</td>
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<tr>
<td>28</td>
<td>Journalism and Mass Communication (Honours / General)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The above shall be effective from the academic session 2018-2019.

SENATE HOUSE
KOLKATA-700073
The 4th June, 2018

(Dr. Santanu Paul)
Deputy Registrar
Choice Based Credit System (CBCS): Syllabus of Geography

INTRODUCTION: In compliance with recent directives from the University Grants Commission, the undergraduate syllabus for Geography is reframed into Choice Based Credit System largely following the model syllabus prepared by the West Bengal State Council of Higher Education.

The main objective of this new curriculum is to give the students a holistic understanding of the subject, putting equal weightage to the core content and techniques used in Geography. The syllabus tries to give equal importance to the two main branches of Geography: Physical and Human.

The principal goal of the syllabus is to enable the students to secure a job at the end of the undergraduate programme. Keeping this in mind and in tune with the changing nature of Geography, adequate emphasis is rendered on applied aspects of the subject such as emerging techniques of mapping and field-based data generation, especially in the honours course. The syllabus emphasises on development of basic skills of the subject, so that everyone need not go for higher studies in search of professional engagement or employment.

LEARNING OUTCOMES: This syllabus is designed to impart basic knowledge on geography as a spatial science and train the undergraduates to secure employment in the sectors of geospatial analysis, development and planning, mapping, and surveying.

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1. Scheme for the CBCS Curriculum

1.1 Credit Distribution across Courses: Honours Course

<table>
<thead>
<tr>
<th>Course Type</th>
<th>Total Papers</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>S-CC</strong> Core Courses: Geography Honours</td>
<td>14</td>
<td>14 ( \times 4 = 56 ) ( \text{THEORY} + \text{PRACTICAL} ), 14 ( \times 2 = 28 ) ( \text{THEORY} + \text{TUTORIAL} )*</td>
</tr>
<tr>
<td><strong>S-DSE</strong> Discipline (Geography) Specific Electives</td>
<td>4</td>
<td>4 ( \times 4 = 16 ) ( \text{THEORY} ), 4 ( \times 2 = 08 ) ( \text{PRACTICAL} )</td>
</tr>
<tr>
<td><strong>S-GE</strong> Generic Electives: Two disciplines other than Geography</td>
<td>4</td>
<td>4 ( \times 4 = 16 ) ( \text{THEORY} ), 4 ( \times 2 = 08 ) ( \text{PRACTICAL} )</td>
</tr>
<tr>
<td><strong>AECC</strong> Ability Enhancement Courses</td>
<td>2</td>
<td>2 ( \times 2 = 04 ) ( \text{S-SEC} )</td>
</tr>
<tr>
<td><strong>S-SEC</strong> Skill Enhancement Courses: from geography and/or other disciplines</td>
<td>2</td>
<td>2 ( \times 2 = 04 ) ( \text{S-SEC} )</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>26</td>
<td>140</td>
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</tbody>
</table>

* Tutorials of 1 Credit will be conducted in case there is no practical component (Generic Electives from BA courses)

1.2 Credit Distribution across Courses: General Course

<table>
<thead>
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<th>Course Type</th>
<th>Total Papers</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td><strong>S-CC</strong> Core Course: Geography and two other disciplines</td>
<td>12</td>
<td>12 ( \times 4 = 48 ) ( \text{THEORY} ), 12 ( \times 2 = 24 ) ( \text{PRACTICAL} )</td>
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<tr>
<td><strong>S-DSE</strong> Discipline Specific Electives: Geography and two other disciplines</td>
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<td>6 ( \times 4 = 24 ) ( \text{THEORY} ), 6 ( \times 2 = 12 ) ( \text{PRACTICAL} )</td>
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<tr>
<td><strong>AECC</strong> Ability Enhancement Course</td>
<td>2</td>
<td>2 ( \times 2 = 04 )</td>
</tr>
<tr>
<td><strong>S-SEC</strong> Skill Enhancement Course: from geography and/or other disciplines</td>
<td>4</td>
<td>4 ( \times 2 = 08 )</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>24</td>
<td>120</td>
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</table>

* Tutorials of 1 Credit will be conducted in case there is no practical component

1.3 Suggested Mark-wise Class Distribution (apart from SECs)

<table>
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<th>Type of Course</th>
<th>Marks</th>
<th>Number of Periods</th>
<th>Duration of Periods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory (TH)</td>
<td>60</td>
<td>60</td>
<td>40~45 minutes</td>
</tr>
<tr>
<td>Practical (P)</td>
<td>30</td>
<td>60</td>
<td>40~45 minutes</td>
</tr>
</tbody>
</table>
1.4 **Honours Course: Core Subjects**

- GEO-A-CC-1-01-TH/P – Geotectonics and Geomorphology
- GEO-A-CC-1-02-TH/P – Cartographic Techniques
- GEO-A-CC-2-03-TH/P – Human Geography
- GEO-A-CC-2-04-TH/P – Cartograms, Thematic Mapping and Surveying
- GEO-A-CC-3-05-TH/P – Climatology
- GEO-A-CC-3-06-TH/P – Hydrology and Oceanography
- GEO-A-CC-3-07-TH/P – Statistical Methods in Geography
- GEO-A-CC-4-08-TH/P – Economic Geography
- GEO-A-CC-4-09-TH/P – Regional Planning and Development
- GEO-A-CC-4-10-TH/P – Soil and Biogeography
- GEO-A-CC-5-11-TH/P – Research Methodology and Fieldwork
- GEO-A-CC-5-12-TH/P – Remote Sensing, GIS and GNSS
- GEO-A-CC-6-13-TH/P – Evolution of Geographical Thought
- GEO-A-CC-6-14-TH/P – Disaster Management

1.5 **Honours Course: Choices for Four Discipline Specific Electives**

- GEO-A-DSE-B-5-05-TH/P – Cultural and Settlement Geography
- GEO-A-DSE-B-5-06-TH/P – Social Geography
- GEO-A-DSE-A-6-03-TH/P – Environmental Issues in Geography
- GEO-A-DSE-B-6-07-TH/P – Urban Geography
- GEO-B-DSE-B-6-08-TH/P – Geography of India

1.6 **Honours Course: Choices for Two Skill Enhancement Courses**

- GEO-A-SEC-B-4-03-TH – Rural Development
- GEO-A-SEC-B-4-04-TH – Sustainable Development

1.7 **General Course: Core Subjects**

- GEO-G-CC-1-01-TH/P – Physical Geography
- GEO-G-CC-2-02-TH/P – Environmental Geography
- GEO-G-CC-3-03-TH/P – Human Geography
- GEO-G-CC-4-04-TH/P – Cartography

---

1 Any two electives, one each from DSE-A and DSE-B, are to be chosen in each of Semesters-V and VI
1.8  General Course: Choices for Two Discipline Specific Electives

GEO-G-DSE-A-5-01-TH/P – Regional Development
GEO-G-DSE-A-5-02-TH/P – Geography of Tourism
GEO-G-DSE-B-6-01-TH/P – Agricultural Geography
GEO-G-DSE-B-6-04-TH/P – Population Geography

1.9  General Course: Choices for Two Skill Enhancement Courses

GEO-G-SEC-A-3/5-01-TH – Coastal Management
GEO-G-SEC-B-4/6-03-TH – Rural Development
GEO-G-SEC-B-4/6-03-TH – Sustainable Development
### 1.10 Credits and Marks Distribution Scheme for CBCS Curriculum: Honours Course

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Type</th>
<th>Paper Code and Name</th>
<th>Credits</th>
<th>Marks Distribution</th>
<th>Marks per Qn Type</th>
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<td></td>
<td>Ability Enhancement Compulsory Course - I</td>
<td>AECC-1 – Communicative Bengali / English / Hindi / Urdu</td>
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<td>20 / 80</td>
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<td>I</td>
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<td>GEO-A-CC-1-01-TH – Geotectonics and Geomorphology</td>
<td>4</td>
<td>70</td>
<td>20 / 100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GEO-A-CC-1-01-P – Geotectonics and Geomorphology Lab</td>
<td>2</td>
<td>30</td>
<td>20 / 100</td>
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<tr>
<td></td>
<td></td>
<td>GEO-A-CC-1-02-TH – Cartographic Techniques</td>
<td>4</td>
<td>70</td>
<td>20 / 100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GEO-A-CC-1-02-P – Cartographic Techniques Lab</td>
<td>2</td>
<td>30</td>
<td>20 / 100</td>
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<td>Generic Elective - I</td>
<td>TBD-TH</td>
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<td>70/85</td>
<td>20 / 100</td>
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<td>TBD-P/T</td>
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<td>30/15</td>
<td>20 / 100</td>
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<td>Ability Enhancement Compulsory Course - II</td>
<td>AECC-2 – Environmental Studies</td>
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<td>II</td>
<td>Core Course - III</td>
<td>GEO-A-CC-2-03-TH – Human Geography</td>
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<td>GEO-A-CC-2-03-P – Human Geography Lab</td>
<td>2</td>
<td>30</td>
<td>20 / 100</td>
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<tr>
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<td>GEO-A-CC-2-04-TH – Cartograms, Thematic Mapping and Surveying</td>
<td>4</td>
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<td>GEO-A-CC-2-04-P – Cartograms, Thematic Mapping and Surveying Lab</td>
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<td>20 / 100</td>
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<td>TBD-TH</td>
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<td>70/85</td>
<td>20 / 100</td>
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<td>20 / 100</td>
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<td>Core Course - V</td>
<td>GEO-A-CC-3-05-TH – Climatology</td>
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<td>GEO-A-CC-3-05-P – Climatology Lab</td>
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<td>20 / 100</td>
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<td>Core Course - VI</td>
<td>GEO-A-CC-3-06-TH – Hydrology and Oceanography</td>
<td>4</td>
<td>70</td>
<td>20 / 100</td>
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<td>GEO-A-CC-3-06-P – Hydrology and Oceanography Lab</td>
<td>2</td>
<td>30</td>
<td>20 / 100</td>
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<td>GEO-A-CC-3-07-TH – Statistical Methods in Geography</td>
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*Tutorials of 1 Credit will be conducted in case there is no practical component*
2. HONOURS COURSE: CORE SUBJECTS

2.1 GEO-A-CC-1-01-TH – Geotectonics and Geomorphology  ◀ 60 Marks* / 4 Credits

Unit I: Geotectonics

1. Earth’s tectonic and structural evolution with reference to geological time scale [3]

2. Earth’s interior with special reference to seismology. Isostasy: Models of Airy, Pratt, and their applicability [3]

3. Plate Tectonics as a unified theory of global tectonics: Processes and landforms at plate margins and hotspots [10]

4. Folds and Faults—origin and types. [4]

Unit II: Geomorphology

5. Degradational processes: Weathering, mass wasting, and resultant landforms [5]


11. Aeolian and fluvo-aeolian processes and landforms [4]


References

BOOKS:


Frisch, W., Meschede, M., Blakey, R.C. 2011. Plate Tectonics: Continental Drift and Mountain Building, Springer.


* Excluding 10 marks for attendance
2.2 GEO-A-CC-1-01-P – Geotectonics and Geomorphology Lab  ♦  30 Marks / 2 Credits

A laboratory notebook, comprising class assignments of the following is to be prepared and submitted. The exercises are to be drawn in pencil with photocopied representation of source materials where necessary. All texts are to be handwritten.


2. Megascopic identification of (a) mineral samples: Bauxite, calcite, chalcopyrite, feldspar, galena, gypsum, hematite, magnetite, mica, quartz, talc, tourmaline; and (b) rock samples: Granite, basalt, dolerite, laterite, limestone, shale, sandstone, conglomerate, slate, phyllite, schist, gneiss, quartzite, marble [14]

3. Extraction and interpretation of geomorphic information from Survey of India 1:50k topographical maps of plateau region: Construction of relief profiles (superimposed, projected, and composite). Delineation of drainage basins. Construction of relative relief map, slope map (Wentworth’s method), drainage density map, stream ordering (Strahler), and bifurcation ratio on a drainage basin (c. 5’ x 5’) [35]

4. Construction of hypsometric curve and derivation of hypsometric integer of a drainage basin (c. 5’ x 5’) from Survey of India 1:50k topographical maps of plateau region [5]

5. Viva-voce based on laboratory notebook (5 Marks)

References

2.3 GEO-A-CC-1-02-TH – Cartographic Techniques ♦ 60 Marks / 4 Credits

2. Concept and application of scales: Plain, comparative, diagonal and Vernier [8]
4. Concept of generating globe [2]
5. Grids: Angular and linear systems of measurement [5]
7. Concept of geoid and spheroid with special reference to Everest and WGS-84 [4]
8. Map projections: Classification, properties and uses [8]
10. Representation of data using dots, spheres and divided proportional circles [5]
11. Representation of data using isopleth, choropleth, and chorochromatic maps [5]

References

Books
Vaidyanadhan, R., Subbarao, K.V. 2014. Landforms of India from Topomaps and Images, Geological Society of India.

Websites
Geological Survey of India: www.gsi.gov.in
Indian National Cartographic Association: www.incaindia.org
Indian Naval Hydrographic Department: www.hydrobharat.nic.in
Land & Land Reforms and Refugee Relief and Rehabilitation Department, Gov. of West Bengal: www.banglarbhumi.gov.in
National Bureau of Soil Survey and Land Use planning: www.nbsslup.in
Survey of India: www.surveyofindia.gov.in
2.4 GEO-A-CC-1-02-P – Cartographic Techniques Lab ★ 30 Marks / 2 Credits

A laboratory notebook, comprising class assignments of the following is to be prepared and submitted. The exercises are to be drawn in pencil with photocopied representation of source materials where necessary. All texts are to be handwritten.

1. Graphical construction of scales: Plain, comparative, diagonal and Vernier [16]
2. Construction of projections: Polar Zenithal Stereographic, Simple Conic with one standard parallel, Bonne’s, Cylindrical Equal Area, and Mercator’s [20]
3. Thematic maps: Proportional squares, pie diagrams with proportional circles, dots and spheres [12]
4. Thematic maps: Choropleth, isopleth, and chorochromatic maps [12]
5. Viva-voce based on laboratory notebook (5 Marks)

References

2.5 **GEO-A-CC-2-08-TH – Human Geography** ✿ 60 Marks / 4 Credits

### Unit I: Nature and Principles

4. Space, society, and cultural regions (language and religion) [5]

### Unit II: Society, Demography and Ekistics

6. Human adaptation to environment: Case studies of Eskimo, Masai and Maori [4]
8. Population-resource regions (Ackerman) [5]
10. Types and patterns of rural settlements [5]
11. Rural house types in India [5]
12. Morphology and hierarchy of urban settlements [5]

### References

- Majumdar, P.K. 2013. India’s Demography: Changing Demographic Scenario in India, Rawat Publications.
2.6 **GEO-A-CC-2-03-P – Human Geography Lab** 30 Marks / 2 Credits

A laboratory notebook, comprising class assignments of the following is to be prepared and submitted. The exercises are to be drawn in pencil with photocopied representation of source materials where necessary. All texts are to be handwritten.

1. Spatial variation in continent- or country-level religious composition by divided proportional circles [12]
2. Measuring arithmetic growth rate of population comparing two decadal datasets [15]
3. Types of age-sex pyramids (progressive, regressive, intermediate, and stationary): Graphical representation and analysis [20]
4. Nearest neighbour analysis from Survey of India 1:50k topographical maps of plain region (c. 5’ x 5’) [13]
5. Viva-voce based on laboratory notebook (5 Marks)

**References**


2.7 GEO-A-CC-2-04-TH – Thematic Mapping and Surveying  ♦ 60 Marks / 4 Credits


2. Concept of diagrammatic representation of data [2]


4. Preparation and interpretation of weather maps [5]

5. Preparation and interpretation land use land cover maps [5]


7. Principal national agencies producing thematic maps in India: NATMO, GSI, NBSSLUP, NHO, and NRSC / Bhuvan [5]

8. Basic concepts of surveying and survey equipment: Prismatic compass [5]


References

Books:

WEBSITES:
Geological Survey of India: www.gsi.gov.in
Indian Naval Hydrographic Department: www.hydrobharat.nic.in
National Bureau of Soil Survey and Land Use planning: www.nbsslup.in
Survey of India: www.surveyofindia.gov.in
ISRO Bhuvan 2D Platform: bhuvan.nrsc.gov.in/map/bhuvan/bhuvan2d.php
National Remote Sensing Centre: www.nrsc.gov.in
2.8  GEO-A-CC-2-04-P – Thematic Mapping and Surveying Lab ♦ 30 Marks / 2 Credits

A laboratory notebook, comprising class assignments of the following is to be prepared and submitted. The exercises are to be drawn in pencil with photocopied representation of source materials where necessary. All texts are to be handwritten.

1. Traverse survey using prismatic compass [10]
2. Profile survey using dumpy Level [12]
3. Height determination of base accessible and inaccessible (same vertical plane method) objects by theodolite [18]
4. Interpretation of geological maps with uniclinal structure, folds, unconformity, and intrusions [20]
5. Viva-voce based on laboratory notebook (5 Marks)

References

2.9 GEO-A-CC-305-TH – Climatology ♦ 60 Marks / 4 Credits

Unit I: Elements of the Atmosphere


Unit II: Atmospheric Phenomena and Climatic Classification

6. Air mass: Typology, origin, characteristics and modification [4]
7. Fronts: Warm and cold, frontogenesis, and frontolysis [5]
8. Weather: Stability and instability, barotropic and baroclinic conditions [5]
10. Atmospheric disturbances: Tropical and mid-latitude cyclones, thunderstorms [5]
11. Monsoon circulation and mechanism with reference to India [5]
12. Climatic classification after Thornthwaite (1955) and Oliver [5]

References

Books:
Oliver, J.E., Hidore J.J. 2002. Climatology: An Atmospheric Science, Pearson Education India

Websites:
India Meteorological Department: www.imd.gov.in
Intergovernmental Panel on Climate Change: www.ipcc.ch
World Meteorological Organization: public.wmo.int/en
2.10 GEO-A-CC-3-05-P – Climatology Lab  ♦  30 Marks / 2 Credits

A laboratory notebook, comprising class assignments of the following is to be prepared and submitted. The exercises are to be drawn in pencil with photocopied representation of source materials where necessary. All texts are to be handwritten.

1. Measurement of weather elements using analogue instruments: Mean daily temperature, air pressure, relative humidity, and rainfall [15]
2. Interpretation of a daily weather map of India (any two): Pre-Monsoon, Monsoon, and Post-Monsoon [20]
3. Construction and interpretation of hythergraph and climograph (G. Taylor) [15]
4. Construction and interpretation of wind rose [10]
5. Viva-voce based on laboratory notebook (5 Marks)

References

Books:

Website:
India Meteorological Department: www.imd.gov.in
2.11 GEO-A-CC-3-06-TH – Hydrology and Oceanography ♦ 60 Marks / 4 Credits

Unit-I: Hydrology


Unit-II: Oceanography

5. Major relief features of the ocean floor: Characteristics and origin according to plate tectonics [6]
6. Physical and chemical properties of ocean water [4]
8. Air-Sea interactions, ocean circulation, wave and tide [8]
12. Sea level change: Types and causes [5]

References

Pinet, P.R. 2014. Invitation to Oceanography. 7th ed, Jones and Barlett Publishers.
2.12 GEO-A-CC-3-06-P – Hydrology and Oceanography Lab ◇ 30 Marks / 2 Credits

A laboratory notebook, comprising class assignments of the following is to be prepared and submitted. The exercises are to be drawn in pencil with photocopied representation of source materials where necessary. All texts are to be handwritten.

1. Construction and interpretation of rating curves [10]
2. Construction and interpretation of hydrographs and unit hydrographs [15]
3. Construction and interpretation of monthly rainfall dispersion diagram (Quartile method), Climatic water budget and Ergograph [25]
4. Construction of Theissen polygon from precipitation data [10]
5. Viva-voce based on laboratory notebook (5 Marks)

References

Books:


Websites:

India Meteorological Department: www.imd.gov.in

Central Water Commission: cwc.gov.in
2.13 GEO-A-CC-3-07-TH – Statistical Methods in Geography    60 Marks / 4 Credits

Unit I: Frequency Distribution and Sampling

1. Importance and significance of statistics in Geography [4]
2. Discrete and continuous data, population and samples, scales of measurement (nominal, ordinal, interval and ratio) [5]

Unit II: Numerical Data Analysis

7. Central tendency: Mean, median, mode, and partition values [6]

References

2.14 GEO-A-CC-3-07-P – Statistical Methods in Geography Lab ✶ 30 Marks / 2 Credits

A laboratory notebook, comprising class assignments of the following is to be prepared and submitted. The exercises are to be drawn in pencil with photocopied representation of source materials where necessary. All texts are to be handwritten.

1. Construction of data matrix with each row representing an areal unit (districts / blocks / mouzas / towns) and corresponding columns of relevant attributes [15]

2. Based on the above, a frequency table, measures of central tendency, and dispersion would be computed and interpreted using histogram and frequency curve [15]

3. From the data matrix, a sample set (20%) would be drawn using random, systematic, and stratified methods of sampling and the samples would be located on a map with an explanation of the methods used [15]

4. Based on the sample set and using two relevant attributes, a scatter diagram and linear regression line would be plotted and residual from regression would be mapped with a short interpretation [15]

5. Viva-voce based on laboratory notebook (5 Marks)

References


Unit I: Concepts

1. Meaning and approaches to economic geography [4]

Unit II: Economic Activities

5. Concept and classification of economic activities [4]
6. Factors affecting location of economic activity with special reference to agriculture (von Thünen), and industry (Weber) [6]
7. Primary activities: Agriculture, forestry, fishing, and mining [6]
10. Transnational sea-routes, railways and highways with reference to India [4]
12. WTO and BRICS: Evolution, structure and functions [4]

References

BOOKS:
Aoyama, Y., Murphy, J.T., Hanson, S. 2010. Key Concepts in Economic Geography, Sage.

WEBSITES:
World Trade Organisation: www.wto.org
2.16 GEO-A-CC-4-P – Economic Geography Lab ◀ 30 Marks / 2 Credits

A laboratory notebook, comprising class assignments of the following is to be prepared and submitted. The exercises are to be drawn in pencil with photocopied representation of source materials where necessary. All texts are to be handwritten.

1. Choropleth mapping of state-wise variation in GDP [10]
2. State-wise variation in occupational structure by proportional divided circles [15]
3. Time series analysis of industrial production (India and West Bengal) [20]
4. Transport network analysis by detour index and shortest path analysis [15]
5. Viva-voce based on laboratory notebook (5 Marks)

References

BOOKS:

WEBSITES:
Open Government of India Data Platform: data.gov.in
planningcommission.nic.in/plans/stateplan/sdr/sdr_wb1909.pdf
Trending Economics (India’s industrial production):
tradingeconomics.com/india/industrial-production
Wikipedia (Hierarchy of states):
en.wikipedia.org/wiki/List_of_Indian_states_and_union_territories_by_GDP_per_capita
2.17 GEO-A-CC-4-00-TH – Regional Planning and Development  ◇ 60 Marks / 4 Credits

Unit I: Regional Planning

2. Regional Planning: Types, principles, objectives, tools and techniques [6]
3. Regional planning and multi-level planning in India [6]
4. Concept of metropolitan area and urban agglomeration [4]

Unit I: Regional Development

5. Concept of growth and development, growth versus development [6]
7. Human development: Concept and measurement [4]
8. Theories and models for regional development: Cumulative causation (Myrdal) [4]
11. Regional development in India: Disparity and diversity [5]

References


2.18  GEO-A-CC-4-09-P – Regional Planning and Development Lab  ♦ 30 Marks / 2 Credits

A laboratory notebook, comprising class assignments of the following is to be prepared and submitted. The exercises are to be drawn in pencil with photocopied representation of source materials where necessary. All texts are to be handwritten.

1. Delineation of formal regions by weighted index method [15]
2. Delineation of functional regions by breaking point analysis [15]
5. Viva-voce based on laboratory notebook (5 Marks)

References

2.19 GEO-A-CC-4-10-TH – Soil and Biogeography ♦ 60 Marks / 4 Credits

Unit I: Soil Geography

1. Factors of soil formation [3]
2. Definition and significance of soil properties: Texture, structure, and moisture [5]

Unit II: Biogeography

9. Classification of world biomes (Whittaker). Geographical extent and characteristics of tropical rain forest, savanna, hot desert, taiga and coral reef biomes [8]

References

2.20  **GEO-A-CC-4-10-P – Soil and Biogeography Lab**  ∗  30 Marks / 2 Credits

*A laboratory notebook, comprising class assignments of the following is to be prepared and submitted. The exercises are to be drawn in pencil with photocopied representation of source materials where necessary. All texts are to be handwritten.*

1. Determination of soil reaction (pH) and salinity using field kit [15]
2. Determination of soil type by ternary diagram textural plotting [15]
3. Plant species diversity determination by matrix method [10]
4. Time series analysis of biogeography data [20]
5. Viva-voce based on laboratory notebook (5 Marks)

**References**


2.21 GEO-A-CC-5-TH – Research Methodology and Fieldwork  

60 Marks / 4 Credits

Unit I: Research Methodology

1. Research in Geography: Meaning, types and significance [5]
2. Literature review and formulation of research design [5]
5. Techniques of writing scientific reports: Preparing notes, references, bibliography, abstract, and keywords [6]

Unit II: Fieldwork

7. Fieldwork in Geographical studies: Role and significance. Selection of study area and objectives. Pre-field academic preparations. Ethics of fieldwork [6]
8. Field techniques and tools: Observation (participant, non-participant), questionnaires (open, closed, structured, non-structured). Interview [5]
9. Field techniques and tools: Landscape survey using transects and quadrants, constructing a sketch, photo and video recording [5]
11. Post-field tabulation, processing and analysis of quantitative and qualitative data [5]

References

Every student needs to participate in fieldwork and prepare a field report according to the following guideline, failing which he/she will not be evaluated for GEO-A-CC-5-11-P.

1. Each student will prepare a report based on primary data collected from field survey and secondary data collected from different sources.

2. Students will select either one rural area (mouza) or an urban area (municipal ward) for the study, with the primary objective of evaluating the relation between physical and cultural landscape.

3. A specific problem or a special feature should be identified based on which, the study area will be selected.

4. The report should be handwritten in English on A4 size paper in candidate’s own words within 5,000 words (Introductory Chapter: 1000 words; Physical Aspects: 1500 words; Socio-economic Aspects: 1500 words; Concluding Chapter: 500 words, approximately) excluding tables, photographs, maps, diagrams, references and appendices.

5. Photographs, maps and diagrams should not exceed 15 pages.

6. A copy of the bound report, duly signed by the concerned teacher, will be submitted during examination.

7. The field work and post-field work will include:
   a. Collection of primary data on physical aspects (relief and soil) of the study area. Students should use survey instruments like prismatic compass, dumpy level, Abney level or clinometer wherever necessary.
   b. Collection of soil samples from different land cover land use regions of the study area for determining pH and NPK values with help of a soil kit.
   c. Collection of socio economic data, at the household level (with the help of a questionnaire) in the selected study area.
   d. Plot to plot land use survey for preparation of a land use map, covering whole or part of the selected area.
   e. Visit to different organisations and departments for collection of secondary data.
   f. Any other survey relevant to the objective of the study.

8. The Field Report should contain the following sections (a–e).
   a. Introduction: Study area extent and space relations, reasons for selection of the study area on the basis of a specific problem or special feature, objectives, methods of data collection, analyses and presentation, sources of information, etc.
   b. Physical aspects: Lithology and geological structure, relief, slope, drainage, climate, soil, vegetation, environmental issues, proneness to natural hazards, etc.
   c. Socio-economic aspects:
      i. Population attributes: Number, sex ratio, literacy, occupational structure, ethnic and religious composition, language, per capita income, etc.
      ii. Settlement characteristics: Number of houses, building materials, number and size of rooms, amenities, etc.
      iii. Agriculture: General land use, crop-combination, use of fertiliser and irrigational facilities, production and marketing etc.
      iv. Other economic activities: Fishing, horticulture, brick-making, household and other industries, etc.

e. Bibliography.

9. The students will prepare (i) a chorochromatic land use land cover map on the basis of plot to plot survey; (ii) a profile of suitable length, surveyed and plotted, with different land use land cover superimposed on it.

10. All sections of the report should contain relevant maps, diagrams and photographs using primary and secondary data, clearly citing sources.

11. All surveys should pertain to the objective of the study. Surveys not relevant for establishing the relation between physical and cultural landscape should be avoided.

12. Marks division: 20 on report + 10 on viva-voce = 30

**Honours Course: Core Subjects**

**Unit I: Remote Sensing**

- 3. Image referencing schemes and acquisition procedure of free geospatial data from NRSC / Bhuvan and USGS [5]
- 4. Preparation of False Colour Composites from IRS LISS-3 and Landsat TM / OLI data. [5]
- 6. Acquisition and utilisation of free Digital Elevation Model data: CartoDEM, SRTM and ALOS [5]

**Unit II: Geographical Information Systems and Global Navigation Satellite System**

- 7. GIS data structures types: Spatial and non-spatial, raster and vector [5]

**Unit III: Global Navigation Satellite System (GNSS)**

- 12. Principles of transferring of GNSS waypoints to GIS. Area and length calculations from GNSS data [5]

**References**

**Books:**


WEBSITES:
International Society for Photogrammetry and Remote Sensing: www.isprs.org
ISRO Bhuvan 2D and 3D Platforms: bhuvan.nrsc.gov.in/map/bhuvan/bhuvan2d.php
bhuvan.nrsc.gov.in/globe/3d.php#
NASA Landsat Science: www.landsat.gsfc.nasa.gov
National Remote Sensing Centre: www.nrsc.gov.in
USGS Global Visualization Viewer: www.glovis.usgs.gov

2.24 GEO-A-CC-512P – Remote Sensing, GIS and GNSS Lab ◇ 30 Marks / 2 Credits

A laboratory notebook, comprising class assignments of the following is to be prepared and submitted. The exercises are to be represented as computer prints from Q-GIS / Garmin Basecamp / MS Excel software as applicable. Methods and interpretations are to be handwritten.

1. Image georeferencing and enhancement. Preparation of reflectance libraries of LULC features across different image bands of IRS L3 or Landsat OLI data [15]
2. Supervised image classification, class editing, and post-classification analysis [15]
3. Digitisation of features and administrative boundaries. Data attachment, overlay, and preparation of annotated thematic maps [20]
4. Waypoint collection from GNSS receivers and exporting to GIS database [10]
5. Viva-voce based on laboratory notebook (5 Marks)

References

BOOKS:


WEBSITES:

Garmin: support.garmin.com/en-US/?productID=52801&tab=manuals

International Society for Photogrammetry and Remote Sensing: www.isprs.org

ISRO Bhuvan 2D and 3D Platforms: bhuvan.nrsc.gov.in/map/bhuvan/bhuvan2d.php
bhuvan.nrsc.gov.in/globe/3d.php#

NASA Landsat Science: www.landsat.gsfc.nasa.gov

National Remote Sensing Centre: www.nrsc.gov.in

Q-GIS: qgis.org/en/site/forusers/index.html

USGS Global Visualization Viewer: www.glovis.usgs.gov
Unit I: Nature of Pre Modern Geography

1. Development of pre-modern Geography: Contributions of Greek, Chinese, and Indian geographers [5]
2. Impact of ‘Dark Age’ in Geography and Arab contributions [5]
3. Geography during the age of ‘Discovery’ and ‘Exploration’ (contributions of Portuguese voyages, Columbus, Vasco da Gama, Magellan, Thomas Cook) [5]
4. Transition from cosmography to scientific Geography (contributions of Bernard Varenius and Immanuel Kant). Dualism and Dichotomies (General vs. Particular, Physical vs. Human, Regional vs. Systematic, Determinism vs. Possibilism, Ideographic vs. Nomothetic) [7]

Unit II: Foundations of Modern Geography and Recent Trends

5. Evolution of Geographical thoughts in Germany, France, Britain, and United States of America [5]
9. Structuralism and historical materialism [3]

References

GEO-A-CC-6-P – Evolution of Geographical Thought Lab  

A laboratory notebook, comprising class assignments of topics 1 and 2, is to be prepared and submitted. The exercises are to be drawn in pencil with photocopied representation of source materials where necessary. All texts are to be handwritten.

1. Changing perception of maps of the world (Ptolemy, Ibn Batuta, Mercator)
2. Mapping voyages; Columbus, Vasco da Gama, Magellan, Thomas Cook
3. Group Presentation of five to ten students on any selected school of geographical thought (20 marks)
4. Viva-voce based on laboratory notebook on topics 1 and 2 (10 Marks)

References

2.27  **GEO-A-CC-6-14-TH – Hazard Management**  ◊  60 Marks / 4 Credits

### Unit I: Concepts

4. Hazards mapping: Data and geospatial techniques (for hazards enlisted in Unit II and GEO-A-CC-6-14-P) [5]

### Unit II: Hazard-specific Study with Focus on West Bengal and India

5. Earthquake: Factors, vulnerability, consequences, and management [5]
7. Land subsidence: Factors, vulnerability, consequences, and management [5]
8. Tropical cyclone: Factors, vulnerability, consequences, and management [5]

### References

**BOOKS:**

**WEBSITES:**
- AGU landslide Blog: blogs.agu.org/landslideblog
- Dartmouth Flood Observatory: floodobservatory.colorado.edu
- Disaster News Network: secure.disasternews.net
- USGS Earthquake Hazards Programme: www.earthquake.usgs.gov
2.28 **GEO-A-CC-6-14-P – Hazard Management Lab** ♦ 30 Marks / 2 Credits

A Group Project Report is to be prepared and submitted based on any one case study among the following hazards from West Bengal, incorporating a preparedness plan, preferably in the vicinity of the candidates' institution / district:

1. Earthquake
2. Landslide
3. Land subsidence
4. Thunderstorm
5. Flood
6. Riverbank / Coastal erosion
7. Fire
8. Industrial accident
9. Road / Railway accident
10. Structural collapse
11. Environmental pollution
12. Biohazard

One case study will be done by a group of five to ten students. Different groups may choose different case studies from any one or different types of disasters. The report should be prepared on secondary data and handwritten on A4 page in candidates’ own words not exceeding 2,000 words excluding references. The report should contain a proper title. The report should incorporate relevant tables, maps, diagrams, and references, not exceeding ten pages. Photographs are optional and should not exceed three. A copy of the stapled / spiral-bound report in a transparent cover, duly signed by the concerned teacher, is to be submitted during examination. Without the report the candidates will not be evaluated for GEO-A-CC-6-14-P.

Marks division: 20 on report + 10 on viva-voce = 30
3. Honours Course: Discipline Specific Electives

3.1 GEO-A-DSE-A-5-01-TH – Fluvial Geomorphology ♦ 60 Marks / 4 Credits

3. Models of channel initiation and network development [5]
6. Fluvial morphodynamics: Adjustment of channel forms to tectonic, climatic, sea level and land use changes [6]
7. Large rivers of the tropics: Characteristics and significance [5]
10. Human intervention on fluvial systems: Types and consequences [8]
11. Concept and significance of ecological flow [3]
12. Integrated watershed management: Principles and significance [5]

References

3.2 GEO-A-DSE-A-5-01-P – Fluvial Geomorphology Lab ❖ 30 Marks / 2 Credits

A laboratory notebook, comprising class assignments of the following, is to be prepared and submitted. The exercises are to be drawn in pencil with photocopied representation of source materials where necessary. All texts are to be handwritten.

1. Identification of drainage patterns and construction of channel profiles from Survey of India 1:50k topographical maps. Computation of sinuosity indices from river planforms [20]

2. Riverbank erosion: Quantification of eroded area and vulnerability zonation using multi-dated maps and images [20]

3. Flood frequency analysis from hydrographs [5]


5. Viva-voce based on laboratory notebook (5 Marks)

References

BOOKS:

WEBSITES:
Central Water Commission: cwc.gov.in
Dartmouth Flood Observatory: floodobservatory.colorado.edu
3.3 GEO-A-DSE-A-5-02-TH – Climate Change: Vulnerability and Adaptations ✨ 60 Marks

1. The science of climate change: Origin, scope and trends [5]
2. Climate change with reference to the geological time scale [6]
5. Electromagnetic spectrum, atmospheric window, heat balance of the earth [5]
7. Climate change and vulnerability: Physical; economic and social [5]
8. Impact of climate change: Agriculture and water; flora and fauna; human health and morbidity [5]
10. Climate change vulnerability assessment and adaptive strategies with particular reference to South Asia [5]
12. Role of urban local bodies, panchayats, and educational institutions on climate change mitigation: Awareness and action programmes [5]

References

BOOKS:


3.4 GEO-A-DSE-A-5-02-P – Climate Change: Vulnerability and Adaptations Lab 30 Marks

A laboratory notebook, comprising class assignments of the following, is to be prepared and submitted. The exercises are to be drawn in pencil with photocopied representation of source materials where necessary. All texts are to be handwritten.

1. Analysis of trends of temperatures (maximum and minimum of about three decades) of any India Meteorological Department (IMD) station [10]

2. Comparative analysis of seasonal variability of rainfall on the basis of monthly data of any two IMD stations [15]

3. Annual rainfall variability of about three decades for any two representative climatic regions of India [15]

4. Preparation of an inventory of extreme climatic events and mitigation measure of any climatic region / country of South Asia for a period of one decade on the basis of secondary information [20]

5. Viva-voce based on laboratory notebook (5 Marks)

References

BOOKS:


Overseas Development Institute and Climate & Development Knowledge Network. 2014. The IPCC’s Fifth Assessment Report: What’s in it for South Asia? Available at: https://cdkn.org/wp-content/uploads/2014/04/IPCC_AR5_CDKN_ Whats_in_it_for_South_Asia_FULL.pdf

WEBSITES:
India Meteorological Department: www.imd.gov.in/Welcome%20To%20IMD/Welcome.php
3.5 GEO-A-DSE-A-6-TH – Environmental Issues in Geography  

1. Geographers’ approach to environmental studies [5]
2. Concept of holistic environment and systems approach [5]
5. Rural environmental issues: Special reference to sanitation and public health [6]
11. Principles of wasteland management with examples from West Bengal [5]
12. Principles of forest management with examples from West Bengal [5]

References

Books:

Websites:
Central Pollution Control Board: www.wbpcb.gov.in
3.6 GEO-A-DSE-A-6-03-P – Environmental Issues in Geography Lab diamond 30 Marks / 2 Credits

A laboratory notebook, comprising class assignments of the following, is to be prepared and submitted. The exercises are to be drawn in pencil with photocopied representation of source materials where necessary. All texts are to be handwritten.

1. Preparation of questionnaire for perception survey on environmental problems [15]
4. Interpretation of changes in air quality using multi-seasonal and multi-city or multi locational (within a single city) CPCB / WBPCB data [15]
5. Laboratory notebook and viva voce (10 marks)

References

Books:

Websites:
Central Pollution Control Board: www.wbpcb.gov.in
West Bengal Pollution Control Board: www.cpcb.nic.in
Unit I: Resource and Development

1. Natural resources: Concept and classification [4]
5. Problems of resource depletion: global scenario (forest, water, fossil fuels) [7]
6. Sustainable resource development [3]

Unit II: Resource Conflict and Management

11. Politics of power resources [3]
12. Limits to growth and sustainable use of resources. Concept of resource sharing [5]

References

3.8 GEO-A-DSE-A-6-P – Resource Geography Lab iamond 30 Marks / 2 Credits

A laboratory notebook, comprising class assignments of the following, is to be prepared and submitted. The exercises are to be drawn in pencil with photocopied representation of source materials where necessary. All texts are to be handwritten.

1. Mapping and area estimate of changes in forest or vegetation cover from maps and/or satellite images [15]
2. Mapping and number estimate of changes in water bodies from maps and/or satellite images [15]
3. Decadal changes in state-wise production of coal and iron ore [15]
4. Computing Human Development Index: Comparative decadal change of top five Indian states [15]
5. Viva-voce based on laboratory notebook (5 Marks)

References

Books:

Websites:
Open Government of India Data Platform: data.gov.in
Wikipedia (hierarchy of states):
   en.wikipedia.org/wiki/List_of_Indian_states_and_union_territories_by_GDP_per_capita
3.9 GEO-A-DSE-B-5-TH – Cultural and Settlement Geography ♦ 60 Marks / 4 Credits

Unit I: Cultural Geography

1. Definition, scope and content of cultural geography [5]
3. Cultural hearth and realm, cultural diffusion, diffusion of major world religions and languages [6]
4. Cultural segregation and cultural diversity, culture, technology and development [5]
5. Races and racial groups of the world [5]
6. Cultural regions of India [4]

Unit II: Settlement Geography

7. Rural settlement: Definition, nature and characteristics [3]
8. Rural settlement: Site, situation, and morphology [5]
9. Rural house types with reference to India, social segregation in rural areas. Census of India categories of rural settlements [7]
10. Urban settlement: Census of India definition and categories [3]

References

3.10 GEO-A-DSE-B-5-05-P – Cultural and Settlement Geography Lab  30 Marks / 2 Credits

A laboratory notebook, comprising class assignments of the following, is to be prepared and submitted. The exercises are to be drawn in pencil with photocopied representation of source materials where necessary. All texts are to be handwritten.

1. Mapping language distribution of India [10]
2. CD block-wise housing distribution in any district of West Bengal using proportional square [20]
3. Identification of rural settlement types from Survey of India 1:50k topographical maps [15]
4. Social area analysis of a city (Shevky & Bell) [15]
5. Viva-voce based on laboratory notebook (5 Marks)

References


3.11 GEO-A-DSE-B-5-O6-TH- Social Geography ♦ 60 Marks / 4 Credits

Unit I: Society, Identity and Crisis

2. Concept of space, Social differentiation, and stratification. Social processes [5]
4. Basis of social region formation; Evolution of social-cultural regions of India [4]
6. Social groups, social behaviour and contemporary social environmental issues with special reference to India [5]

Unit II: Social Wellbeing and Planning

10. Social planning during the five-year plans in India [3]

References

Majumdar, P.K. 2013. India’s Demography: Changing Demographic Scenario in India, Rawat Publications.
3.12 GEO-A-DSE-B-5-06-P – Social Geography Lab  30 Marks / 2 Credits

A laboratory notebook, comprising class assignments of the following, is to be prepared and submitted. The exercises are to be drawn in pencil with photocopied representation of source materials where necessary. All texts are to be handwritten.

1. Preparation of spatial distribution maps of India: Gender, caste, and religion [15]
2. Preparation of spatial distribution map of West Bengal: Healthcare indices and institutions [15]
3. Analysis of migration data: (a) rural to urban and (b) urban to urban migration. [15]
4. Preparation for Social Impact Assessment (checklist of indices only) [15]
5. Viva-voce based on laboratory notebook (5 Marks)

References

Books:

Website:
West Bengal Directorate of Health Services (Data on Health):
3.13 GEO-A-DSE-B-6-07-TH – Urban Geography  60 Marks / 4 Credits

Unit I: Urban Settlements – Origin and Evolution

2. Origin of urban places in ancient, medieval, modern and post-modern periods: Factors, stages, and characteristics [7]
3. Theories of urban evolution and growth: Hydraulic theory and economic theory [3]
5. Urban hierarchies: Central place theory. August Lösch’s theory of market centres [5]
6. Patterns of urbanisation in developed and developing countries [5]

Unit II: Urban Places – Changing Scenario

8. Models on urban structure: Political economy, bid-rent curve, social area analysis [5]
9. Urban issues: Problems of housing, slums, civic amenities (water and transport) [7]
10. Patterns and trends of urbanisation in India [3]
12. Case studies of Delhi, Kolkata, and Chandigarh with reference to land use [5]

References

Ramachandran, R., 1992: The Study of Urbanisation, Oxford University Press
3.14 GEO-A-DSE-B-6-07-P – Urban Geography Lab  ◊ 30 Marks / 2 Credits

A laboratory notebook, comprising class assignments of the following, is to be prepared and submitted. The exercises are to be drawn in pencil with photocopied representation of source materials where necessary. All texts are to be handwritten.

2. State-wise variation and trends of urbanisation [15]
3. Temporal analysis of urban growth using Census of India data [15]
4. Preparation of urban land use land cover map from satellite images [15]
5. Viva-voce based on laboratory notebook (5 Marks)

References

Books:

WEBSITES:
Census of India: censusindia.gov.in
  censusindia.gov.in/2011census/dchb/WBA.html
  planningcommission.nic.in/plans/stateplan/sdr/sdr_wb1909.pdf
3.15  GEO-A-DSE-B-6-08-TH – Geography of India  ◦  60 Marks / 4 Credits

Unit I: Geography of India

1. Physiographic divisions with reference to tectonic provinces [5]
2. Climate, soil and vegetation: Classification and interrelation [6]
4. Tribes of India with special reference to Gaddi, Toda, Santal, and Jarwa [5]
7. Industrial development: Automobile and information technology [3]
8. Regionalisation of India: Physiographic (R.L. Singh) and economic (P. Sengupta) [7]

Unit II: Geography of West Bengal

12. Regional issues: Darjeeling Hills and Sundarban [4]

References

Books
WEBSITES
Geological Survey of India: gsi.gov.in
National Bureau of Soil Survey and Land Use Planning: nbsslup.in
Indian Council of Agricultural Research: icar.org.in
Census of India: censusindia.gov.in
censusindia.gov.in/2011census/dchb/WBA.html

3.16 GEO-A-DSE-B-6-08-P – Geography of India Lab ♦ 30 Marks / 2 Credits

A laboratory notebook, comprising class assignments of the following, is to be prepared and submitted. The exercises are to be drawn in pencil with photocopied representation of source materials where necessary. All texts are to be handwritten.

1. Monthly temperature and rainfall graphs of five select stations from different physiographic regions of India [15]
2. Crop combination: Comparison of any two contrasting districts from West Bengal [15]
3. Annual trends of production: Mineral resources and manufacturing goods over two decades [20]
4. Composite Index: Comparison of developed and backward states of India [10]
5. Viva-voce based on laboratory notebook (5 Marks)

References

BOOKS:
Government of West Bengal: District Statistical Handbooks (e.g. bardhaman.nic.in/dshb05.pdf)

WEBSITES:
India Meteorological Department: www.imd.gov.in
ISRO Bhuvan 2D Platforms: bhuvan.nrsc.gov.in/map/bhuvan/bhuvan2d.php
Open Government of India Data Platform: data.gov.in
planningcommission.nic.in/plans/stateplan/sdr/sdr_wb1909.pdf
Trending Economics (India’s industrial production):
tradingeconomics.com/india/industrial-production
UNDP Human Development Report on India (2016):
hdr.undp.org/en/countries/profiles/IND
hdr.undp.org/sites/all/themes/hdr_theme/country-notes/IND.pdf
Wikipedia (hierarchy of states):
en.wikipedia.org/wiki/List_of_Indian_states_and_union_territories_by_GDP_per_capita
4. Honours Course: Skill Enhancement Electives

4.1 GEO-A-SEC-A-3-01-TH – Coastal Management ★ 90 Marks / 2 Credits


2. Environmental impacts and management of mining, oil exploration, salt manufacturing, land reclamation and tourism [8]

3. Coastal hazards and their management using structural and non-structural measures: Erosion, flood, sand encroachment, dune degeneration, estuarine sedimentation and pollution [8]


References

Books:

Website:
Govt. of India CRZ notification:
4.2 GEO-A-SEC-A-3-02-TH – Tourism Management ✧ 90 Marks / 2 Credits

1. Scope and Nature: Concepts and issues, tourism, recreation and leisure inter-relations; Factors influencing tourism, Types of Tourism: Ecotourism, cultural tourism, adventure tourism, medical tourism, pilgrimage, international, national [10]

2. Use of information on factors (historical, natural, socio-cultural and economic; motivating factors for pilgrimages) to plan destination marketing; tourism products. Niche tourism planning [5]

3. Tourism impact assessment, Sustainable tourism, Information Technology and Tourism, Tour operations planning and guiding [8]

4. Increasing Global tourism; Tourism in India: Tourism infrastructure, access, planning for different budgets for case study sites of Western Himalayas, Goa, Chilka/Vembanad, Jaipur [7]

References


4.3 GEO-A-SEC-B-4-08-TH – Rural Development ⭐ 90 Marks / 2 Credits

1. Rural Development: Concept, basic elements, measures of level of rural development [5]

2. Paradigms of rural development: Gandhian approach to rural development Lewis model of economic development, ‘big push’ theory of development, Myrdal’s model of ‘spread and backwash effects’ [10]

3. Area based approach to rural development: Drought prone area programmes, PMGSY, SJSY, MNREGA, Jan Dhan Yojana [10]

4. Rural Governance: Panchayati Raj System and rural development policies and Programmes in India [5]

References


4.4 **GEO-A-SEC-B-404-TH – Sustainable Development** ♦ 90 Marks / 2 Credits

1. Sustainable development: Concept, historical background, components, and limitations [5]

2. Challenges of sustainable development: Determinants, linkage among sustainable development, environment and poverty [10]

3. Determinants of global environmental issues: Population, income distribution, urbanisation, deforestation, and depletion / contamination water resources [9]


### References

**BOOKS:**


**WEBSITE:**

UNO Sustainable Development Knowledge Platform: sustainabledevelopment.un.org
5.1 **GEO-G-CC-1-01-TH – Physical Geography** ♦ 60 Marks* / 4 Credits

**Unit I: Geotectonics**

1. Earth’s interior with special reference to seismology [3]
2. Plate Tectonics as a unified theory of global tectonics. Formation of major relief features of the ocean floor and continents according to Plate Tectonics [7]
3. Folds and faults: Classification and surface expressions [6]

**Unit II: Geomorphology**

5. Principal geomorphic agents. Classification and evolution of fluvial, coastal, aeolian, and glacial landforms [12]

**Unit III: Hydrology**


**Unit IV: Oceanography**

12. Marine resources: Classification and sustainable utilisation [3]

**References**

Books:

* Excluding 10 marks for attendance

WEBSITES:
British Society for Geomorphology: geomorphology.org.uk
Geological Survey of India: www.gsi.gov.in
Indian Institute of Geomorphologists: www.indiageomorph.org
International Association of Geomorphologists: www.geomorph.org
Plaleomap Project: www.scotese.com & www.youtube.com/user/cscotese
‘This Dynamic Earth’ (USGS): pubs.usgs.gov/gip/dynamic/dynamic.html

5.2 GEO-G-CC-1-01-P – Physical Geography Lab  ⧫  30 Marks / 2 Credits

A laboratory notebook, comprising class assignments of the following, is to be prepared and submitted. The exercises are to be drawn in pencil with photocopied representation of source materials where necessary. All texts are to be handwritten.

1. Megascopic identification of mineral samples: Bauxite, calcite, chalcopyrite, feldspar, galena, hematite, mica, quartz, talc, tourmaline [8]

2. Megascopic identification of rock samples: Granite, basalt, laterite, limestone, shale, sandstone, conglomerate, slate, phyllite, schist, gneiss, quartzite [12]

3. Extraction of physiographic information from Survey of India 1:50k topographical maps of plateau region: Construction and interpretation of relief profiles (superimposed, projected and composite), Construction and interpretation of relative relief map (c. 5’×5’) [20]

4. Extraction of drainage information from Survey of India topographical maps of plateau region: Extraction and interpretation of channel features and drainage patterns, Construction of channel profiles [20]

5. Viva-voce based on laboratory notebook (5 Marks)

References

## 5.3 GEO-G-CC-2-02-TH – Environmental Geography

### Unit I: Climatology

1. Insolation and Heat Budget. Horizontal and vertical distribution of atmospheric temperature and pressure [5]
5. Scheme of world climatic classification by Köppen [2]

### Unit II: Soil Geography

7. Soil profile development under different climatic conditions: Laterite, Podsol, and Chernozem [6]

### Unit III: Biogeography

10. Ecosystem and Biomes. Distribution and characteristics of tropical rainforest; Savannah, and hot desert biomes [6]

### References

**BOOKS:**


WEBSITES:
India Meteorological Department: www.imd.gov.in
Intergovernmental Panel on Climate Change: www.ipcc.ch
World Meteorological Organization: public.wmo.int/en
United Nations Environment Programmes: www.unep.org

5.4 GEO-G-CC-2-02-P – Environmental Geography Lab  ♦  30 Marks / 2 Credits

A laboratory notebook, comprising class assignments of the following, is to be prepared and submitted. The exercises are to be drawn in pencil with photocopied representation of source materials where necessary. All texts are to be handwritten.

1. Interpretation of daily weather map of India (any one): Pre-Monsoon or Monsoon or Post-Monsoon [20]
2. Construction and interpretation of hythergraph, climograph (G. Taylor) and wind rose (seasonal) [20]
3. Determination of soil type by ternary diagram textural plotting [10]
4. Preparation of peoples' biodiversity register [10]
5. Viva-voce based on laboratory notebook (5 Marks)

References

5.5 GEO-G-CC-3-TH – Human Geography  ⚫ 60 Marks / 4 Credits

Unit I: Economic Geography

2. Location of economic activities: Theories of von Thünen, Lösch, and Weber [5]

Unit II: Social Geography

6. Types and characteristics of social organisations: Primitive, hunting–gathering, agrarian, industrial [5]

Unit III: Cultural Geography

2. Rural and urban settlements: Differentiation in cultural landscapes [5]
3. Cultural regions and cultural realms [5]
4. Diffusion of culture and innovations [4]

References:

Aoyama, Y., Murphy, J.T., Hanson, S. 2010. Key Concepts in Economic Geography, Sage.

5.6 GEO-G-CC-3-03-P- Human Geography Lab ◆ 30 Marks / 2 Credits

A laboratory notebook, comprising class assignments of the following, is to be prepared and submitted. The exercises are to be drawn in pencil with photocopied representation of source materials where necessary. All texts are to be handwritten.

1. State-wise variation in occupational structure by proportional divided circles [15]
2. Time series analysis of industrial production using any two manufactured goods from India [20]
3. Measuring arithmetic growth rate of population comparing two datasets [15]
4. Nearest neighbour analysis: Rural example from Survey of India 1:50k topographical maps [10]
5. Viva-voce based on laboratory notebook (5 Marks)

References

BOOKS:

WEBSITES:
Census of India: censusindia.gov.in
Open Government of India Data Platform: data.gov.in
Trending Economics (India’s industrial production): tradingeconomics.com/india/industrial-production
Unit I: Scale and Projections

1. Maps: Classification and types. Scales: Types, significance, and applications [3]

Unit II: Topographic and Thematic Maps

5. Representation of data by dots and proportional circles [4]
6. Representation of data by isopleth and choropleth [4]
7. Principal national agencies producing thematic maps in India: GSI, NATMO, NBSSLUP, NHO, and NRSC. Acquaintance with Bhuvan platform [5]

Unit III: Remote Sensing and Geographical Information System


Unit IV: Surveying


References

Books:
Vaidyanadhan, R., Subbarao, K.V. 2014. Landforms of India from Topomaps and Images, Geological Society of India.

WEBSITES:
Geological Survey of India: www.gsi.gov.in
Indian Naval Hydrographic Department: www.hydrobharat.nic.in
National Bureau of Soil Survey and Land Use planning: www.nbsslup.in
Survey of India: www.surveyofindia.gov.in
International Society for Photogrammetry and Remote Sensing: www.isprs.org
ISRO Bhuvan 2D Platform: bhuvan.nrsc.gov.in/map/bhuvan/bhuvan2d.php
NASA Landsat Science: www.landsat.gsfc.nasa.gov
National Remote Sensing Centre: www.nrsc.gov.in
USGS Global Visualization Viewer: www.glovis.usgs.gov

5.8 GEO-G-CC-404-P – Cartography Lab ◻ 30 Marks / 2 Credits

A laboratory notebook, comprising class assignments of the following, is to be prepared and submitted. The exercises are to be drawn in pencil with photocopied representation of source materials where necessary. All texts are to be handwritten.

1. Graphical construction of scales: Plain and comparative [10]
4. Preparation of annotated thematic overlays from satellite standard FCCs of 1:50k [10]
5. Viva-voce based on laboratory notebook (5 Marks)

References

6. General Course: Discipline Specific Electives

6.1 GEO-G-DSE-A-5-01-TH – Regional Development ♦ 60 Marks / 4 Credits

1. Definition of region. Types and need of regional planning [3]
2. Choice of a region for planning; characteristics of an ideal planning region; delineation of planning region [7]
3. Regionalization of India for planning (agro-ecological zones) [5]
7. Changing concept of development and underdevelopment; Efficiency-equity debate [5]
9. Regional development in India, regional inequality, disparity and diversity [5]

References

6.2 GEO-G-DSE-A-5-P – Regional Development Lab ✷ 30 Marks / 2 Credits

A laboratory notebook, comprising class assignments of the following, is to be prepared and submitted. The exercises are to be drawn in pencil with photocopied representation of source materials where necessary. All texts are to be handwritten.

1. Delineation of regions according to given criteria using Weaver’s method [15]
2. Determination of sphere of influence by gravity model [15]
3. Measurement of inequality by Lorenz curve and location quotient [15]
4. Preparation of Z-score and composite index from suitable data [15]
5. Viva-voce based on laboratory notebook (5 Marks)

References

6.3 **GEO-G-DSE-A-5-02-TH – Geography of Tourism** ♦ 60 Marks / 4 Credits


2. Types of Tourism: Ecotourism, cultural tourism, adventure tourism, medical tourism, pilgrimage, international, national [6]


4. Spatial pattern of tourism: Spatial affinity; areal and locational dimensions comprising physical, cultural, historical and economic; International travel destinations- cultural and historical [4]

5. Impact of tourism: Physical, economic, social, and perceptive positive and negative impacts [4]


7. Role of foreign capital and impact of globalisation on tourism [4]

8. Recent trends of tourism: International and domestic (India) and local, sustainable tourism, Meeting Incentives Conventions and Exhibitions (MICE) [6]

9. Tourism in India: Tourism infrastructure; regional dimensions of tourist attraction; case studies of Dal lake, Goa, Garhwal Himalaya, desert and coastal areas [5]


11. Infrastructure and support system: Accommodation and supplementary accommodation, other facilities and amenities [5]


**References**


6.4 GEO-G-DSE-A-5-02-P – Geography of Tourism Lab 30 Marks / 3 Credits

A laboratory notebook, comprising class assignments of the following, is to be prepared and submitted. The exercises are to be drawn in pencil with photocopied representation of source materials where necessary. All texts are to be handwritten.

1. Tourist flow analysis [15]
2. Tourist flow projection from time-series data [15]
3. Isochronic map showing tourist resource and travel time [15]
5. Viva-voce based on laboratory notebook (5 Marks)

References

BOOKS:

WEBSITE:
Open Government of India Data Platform: data.gov.in
6.5 GEO-G-DSE-B-6-09-TH – Agricultural Geography ⚫ 60 Marks / 4 Credits

Unit I: Agriculture System

1. Progress of Agricultural Geography with reference to allied disciplines. Approaches to Agricultural Geography [5]
2. Origin and dispersal of agriculture; Role of agriculture on human society [5]
4. Location and characteristics of major agricultural types: Intensive subsistence, extensive commercial and plantation agriculture [6]

Unit II: Regionalisation of Agricultural Patterns

5. Concept of cropping pattern, crop combination, gross and net cropped area, crop rotation [7]
6. A critical review and contemporary perspective of von Thünen model [3]
8. Role of irrigation in Indian agriculture [5]
10. World patterns of agricultural production and food security [5]
11. Land use survey and land classification (USDA) [5]

References

6.6 GEO-G-DSE-B-6-03-P – Agricultural Geography Lab 30 Marks / 2 Credits

A laboratory notebook, comprising class assignments of the following, is to be prepared and submitted. The exercises are to be drawn in pencil with photocopied representation of source materials where necessary. All texts are to be handwritten.

1. Preparation and interpretation of crop calendar using Ergograph [15]
2. Preparation of crop-combination regions by Weaver [15]
3. Determination and mapping of cropping intensity [15]
4. Determination and mapping of crop diversity [15]
5. Viva-voce based on laboratory notebook (5 Marks)

References

## Unit I: Population Dynamics

1. Development of Population Geography as a field of specialization. Relation between population geography and demography. Sources of population data, their level of reliability and problems of mapping [6]


## Unit II: Population and Development

5. Types of population composition: Age–sex. rural–urban, literacy and education [5]


8. Migration: Causes and types [3]

9. National and international patterns of migration with reference to India [5]


## References

Books:


Majumdar, P.K. 2013. India’s Demography: Changing Demographic Scenario in India, Rawat Publications.


WEBSITES:
Census of India: censusindia.gov.in
World Population History: worldpopulationhistory.org
World Population Review: worldpopulationreview.com/continents/world-population

6.8 GEO-G-DSE-B-6-04-P – Population Geography Lab ◇ 30 Marks / 2 Credits

A laboratory notebook, comprising class assignments of the following, is to be prepared and submitted. The exercises are to be drawn in pencil with photocopied representation of source materials where necessary. All texts are to be handwritten.

3. Analysis of work participation rate: Total and gender-wise for India [15]
4. Analysis occupation structure by dominant and distinctive functions: Districts of West Bengal [15]
5. Viva-voce based on laboratory notebook (5 Marks)

References

BOOKS:
Majumdar, P.K. 2013. India’s Demography: Changing Demographic Scenario in India, Rawat Publications.

WEBSITE:
Census of India: censusindia.gov.in
  censusindia.gov.in/2011census/dchb/WBA.html
7. General Course: Skill Enhancement Electives

7.1 GEO-G-SEC-A-3/5-TH – Coastal Management ♠ 90 Marks / 2 Credits


6. Environmental impacts and management of mining, oil exploration, salt manufacturing, land reclamation and tourism [8]

7. Coastal hazards and their management using structural and non-structural measures: Erosion, flood, sand encroachment, dune degeneration, estuarine sedimentation and pollution [8]


References


7.2 **GEO-G-SEC-A-3/5-02-TH – Forest and Wildlife Management** ◀ 90 Marks / 2 Credits

1. Forest and wildlife management: Importance and strategies. Role and significance of stakeholders. Tangible and intangible benefits of forest and wildlife management [7]


3. Forests as common property resources. Forest rights: Tribals and forests. Gender dimension of forest management. Management of poaching and illegal logging. [8]


**References**

**Books:**


**WEBSITES:**

Department of Forest, Govt. of West Bengal: [www.westbengalforest.gov.in](http://www.westbengalforest.gov.in)

Forest Research Institute, Dehradun: [www.fri.res.in](http://www.fri.res.in)

Ministry of Environment, Forest and Climate Change, Govt. of India: [envfor.nic.in](http://envfor.nic.in)
7.3 **GEO-G-SEC-B-4/6-03 TH – Rural Development** ✏️ 90 Marks / 2 Credits

1. Rural Development: Concept, basic elements, measuring the level of rural development [5]

2. Paradigms of rural development: Cumulative causation model, core-periphery model, Gandhian approach to rural development [10]

3. Area based approach to rural development: Drought prone area programmes, PMGSY, SJSY, MGNREGA, Jan Dhan Yojana [10]

4. Rural Governance: Panchayati Raj system, rural development policies and programmes in India – an overview [5]

**References**

7.4 **GEO-G-SEC-B-4/6-04-TH – Sustainable Development** ° 90 Marks / 2 Credits

1. Sustainable development: Concept, Historical background, components, limitations [5]
2. Challenges of sustainable development: Determinants, linkage among sustainable development, environment and poverty [10]
3. Global environmental issues: Population, income and urbanization, health care, forest and water resources [8]

### References

**Books:**


**Website:**

UNO Sustainable Development Knowledge Platform: sustainabledevelopment.un.org