



‘সামান্যে মন্ত্র: সন্নিহিত: সামান্যী’

UNIVERSITY OF NORTH BENGAL

PG 4th Semester Examination, 2026

GEOGRAPHY AND APPLIED GEOGRAPHY

POPULATION GEOGRAPHY AND REGIONAL PLANNING AND DEVELOPMENT

PAPER: GEOGCCT0402N

Time Allotted: 3 Hours

Full Marks: 75

The figures in the margin indicate full marks.

SECTION-I

Answer all the questions

15×2 = 30

1. (a) Discuss Boserup's theory of population growth and agricultural intensification and briefly explain how her ideas differ from Malthus's view on population and food supply.

OR

- (b) Critically analyse the National Population Policy (2000) of India.

2. (a) Explain the concept of Core and Periphery. Discuss the 'Core-Periphery Model' as given by Friedman.

OR

- (b) Discuss in detail the Metropolitan Area Development Plan adopted in India.

SECTION-II

Answer all the questions

$7\frac{1}{2} \times 2 = 15$

3. (a) Critically discuss the 'Ravenstein laws of Migration'.

OR

- (b) Explain the applicability of various factors of migration listed by Duncan in his theory of migration.

4. (a) Differentiate between formal and functional region.

OR

- (b) Discuss the scheme of economic regionalisation of India proposed by V. Nath.

SECTION-III

Answer all the questions

5×4 = 20

5. (a) What are the major assumptions on which David Ricardo based his theory?

OR

- (b) What are the major points of contradiction laid down by Sadler against Malthus?

6. (a) Discuss the relationship between 'Demographic Transition Theory' and 'Duncan's Mobility Transition Model'.

Zelinsky

OR

- (b) What are the measures of Human Development Index?

7. ✓(a) Discuss the various criticism faced by Export Based Theory.

OR

(b) Explain the concept of forward and backward linkages in growth pole theory with suitable examples.

8. ✓(a) Write a short note on NITI Aayog.

OR

(b) Concept of Regional Planning.

SECTION-IV

Choose the correct answer

1×10 = 10

9. According to World Population Data Sheet, 2025, China is in the
(a) Second (b) ✓Third (c) Fourth (d) Fifth
stage of Demographic Transition as per C.P. Blacker's Five Stage model.
10. Ester Boserup opposed Malthus by arguing that
(a) Population growth always reduces productivity
(b) Agricultural methods remain unchanged
(c) ✓Human Innovation can expand food production
(d) Population growth has no economic impact
11. What is the rank of India in the HDI, 2023 in the UN Development Programme's?
(a) 128th out of 193 Countries (b) 129th out of 193 Countries
(c) ✓130th out of 193 Countries (d) 131st out of 193 Countries
12. Transhumance is a type of
(a) ✓Seasonal (b) Regional
(c) Longitudinal (d) Internal migration
13. 'Theory of Migration' was written by
(a) Ravenstein (b) Everett Lee (c) ✓Duncan (d) Zelinsky
14. (a) Perroux (b) Friedman (c) North (d) ✓Hirschman
said creating imbalances in the system is the best strategy for growth of economy.
15. Boudeville modified Francois Perroux abstract growth pole theory in the year
(a) 1962 (b) 1964 (c) ✓1966 (d) 1968
16. Pradhan Mantri Kaushal Vikash Yojana was launched in the year
(a) 2013 (b) 2015 (c) ✓2018 (d) 2020
17. Pradhan Mantri Garib Kalyan Yojana was launched in the year
(a) 2016 (b) ✓2017 (c) 2018 (d) 2019
18. S.P. Chatterjee divided India into
(a) ✓7 (b) 8 (c) 9 (d) 10
major physiographic division.

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PG Fourth Semester Examination 2026
Optional Paper Practical: Fluvial Geomorphology
Course Code: GEOGDEP0401E
Department of Geography and Applied Geography
University of North Bengal
NBU Main Campus

Time: 3 Hours

Full Marks: 42

1. Find out relationship using Bivariate Linear Regression method between a 3rd Order river basin area (A_3) and Drainage Density (D_3) and interpret the result. 8+3+3=14

3 rd Order river basin area (A_3) in Sq. Km	20	11	15	10	10	17	13	12
Drainage Density (D_3) in Km/Sq. Km	82	25	25	74	38	37	25	13

2. Draw a geomorphological map identifying the fluvial processes followed by a relevant index for the geomorphological signatures and interpret the map. 7+3=10

3. Calculate Froude's Number using the following database and comment on the flow type

Mean Velocity of Flow ($\bar{v}$): 0.46659 m/s

Depth of Water (y): 1.3 m

Site specific Gravitational Acceleration (g): 9.810000 m/s²

6+1=7

4. Calculate stream velocity by using Chézy's flow equation for the flow of an Open channel based on following database:

Hydraulic Radius of the channel cross section (R): 0.60 m

Bed slope of the Open Channel: 0.05 m/m

Chézy coefficient (C): 10.00

7

5. Laboratory Note Book and Viva Voce

2+2=4

COURSE CODE: GEOGGE10401A
DEPARTMENT OF GEOGRAPHY & APPLIED GEOGRAPHY
UNIVERSITY OF NORTH BENGAL
NBU CAMPUS

Time: 4 Hours

Full Marks: 75

- ✓ Prepare a population density map of Hooghly district using the given data and shape file. 22

Blocks	Total Population (2011)
Goghat I	140030
Goghat II	160585 ✓
Arambag	285207 ✓
Pursura	173437
Tarakeswar	179148
Dhaniakhali	320534 ✓
Pandua	316197
Balagarh	228998 -
Chinsurah-Mogra	247055 -
Polba-Dadpur	263555 ✓
Haripal	261073
Singur	276413 ✓
Serampur Uttarpara	152266
Chanditala I	179825
Chanditala II	158396
Jangipara	221578
Khanakul I	254434
Khanakul II	184734 ✓

✓ 2. Answer the following questions:

3x 4=12

- Principles of Remote Sensing
- ✓ Key elements of image Interpretation
- ✓ Application of Remote Sensing in Agriculture
- ✓ Application of Remote Sensing in Coastal Monitoring

✓ 3. From the given Landsat 8 image prepare the Normalized Difference Built-up Index (NDBI) and interpret the same.

(6-5) (6+5) 10+2=12

✓ 4. a. Write about the stepwise flow chart for preparing drainage network after Strahler by using the given base maps following DEM Hydro processing. (Barin-5)¹⁵

b. Define the terms 'Projected Coordinate System', 'WGS1984' and Image processing.

3x2=6

5. Laboratory Note Book & Viva Voce

4+4=8

(6-5) / (6+5)



UNIVERSITY OF NORTH BENGAL
PG 4th Semester Examination, 2026

GEOGRAPHY AND APPLIED GEOGRAPHY
OCEANOGRAPHY AND APPLIED GEOMORPHOLOGY
COURSE: GEOGCCT0401N

Time Allotted: 3 Hours

Full Marks: 75

The figures in the margin indicate full marks

SECTION-I

Answer all the questions

15×2 = 30

1. (a) Explain the major features of a mid-oceanic ridge with suitable illustrations.
OR
(b) Classify marine deposits on the basis of their sources, giving suitable examples for each category.
2. (a) Discuss the Scope and Contents of Applied Geomorphology.
OR
(b) Write in detail the method of assessing river bank erosion in hydrolithologically active Channel Sections following the Bank Erosion Hazard Index (BEHI) by Dave Rosgen.

SECTION-II

Answer all the questions

$7\frac{1}{2} \times 2 = 15$

3. (a) Describe techniques for determination of ocean water salinity.
OR
(b) Describe the causes of Sea level changes.
4. (a) Explain with suitable examples, the step-by-step procedure for computing the weightage of each criterion required for preparing a groundwater potential zone map using AHP based MCDM approach.
OR
(b) Discuss the Causes and Consequences of water logging in urban areas.

SECTION-III

Answer all the questions

5×4 = 20

5. (a) Write a short note on Carbonate Compensation Depth (CCD).
OR
(b) What are the differences between active and passive Continental margin of the ocean?

6. (a) Write a short note on genesis of tides.

OR

(b) Write in brief the laws and agreements that regulate the use of marine resources.

7. (a) Write briefly on toe erosion.

OR

(b) Explain in brief the term 'Cavitation' in the Context of bank erosion.

8. (a) Write a short note on accelerated Siltation in alluvial channel.

OR

(b) Describe the criteria for delineating areal unit for groundwater recharge estimation as per GEC-97 methodology.

SECTION-IV

Choose the correct answer

1×10 = 10

9. The Coastal Zone Regulation notification was issued by Govt. of India in the year 1991/1992/1993/1994.
10. At the Surface average density of Sea Water is about 0.025/1.025/1.045 /1.095 gcm^{-3} .
11. 'Map of the Gulf Stream' was published by L.C. King/Benjamin Franklin/ Arthur Holmes/R.J. Small.
12. The term 'Pelagic' is derived from greek word 'Pelagikos' meaning open sea/near sea/shore/shallow sea.
13. Phosphates are the hydrogeneous/biogeneious/lithogeneious/cosmogeneious marine deposits.
14. Bank height ranging in between 1.0-1.1/1.1-1.2/1.2-1.3/1.3-1.4 is considered as very low category in BEHI model of Rosgen.
15. The sub-factors considered in AHP based MCDM approach are known as Criteria/Parameters/Indicators/Components.
16. Specific yield/Specific retention/hydraulic conductivity/transmissivity is a parameter in GEC-97 methodology for ground water recharge estimation.
17. The Construction of embankment along riverside was started by the Britishers in Bengal in the year 1770/1771/1772/1773.
18. Ground Water Resources Estimation Committee (GEC) was formed in 1990/1995/1997/1998.

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PG Fourth Semester Examination 2026
Optional Paper Practical: Applied Pedology
Course Code: GEOGDEP0401C
Department of Geography and Applied Geography
University of North Bengal

Time: 03 Hours

Full Marks: 42

1. Determine the Organic Matter (in percent) of the given soil sample based on Walkley and Black's Rapid Titration Method. 15
2. Determine the pH value of the given soil sample by Kuhn's Colorimetric Method. 15
3. Determine the Colour of the given soil sample with the help of Munsell's Soil Colour chart. 4
4. Find out the Nitrogen Content of the given soil sample using the Soil Test Kit Box. 4
5. Laboratory Note Book and Viva Voce. 2+2=4

PG FOURTH SEMESTER EXAMINATIONS, 2026
DIGITAL THEMATIC MAPPING
COURSE CODE: GEOGGEP0401A
DEPARTMENT OF GEOGRAPHY & APPLIED GEOGRAPHY
UNIVERSITY OF NORTH BENGAL
JALPAIGURI CAMPUS

Time: 4 Hours

Full Marks: 75

1. Prepare a population density map of Nadia district using the given data and shape file.

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Blocks	Total Population (2011)
1 Karimpur I	183556
2 Karimpur II	217136
3 Tehatta I	244322
4 Tehatta II	151231
5 Kaliganj	334881
6 Nakashipara	386569
7 Chapra	310652
8 Krishnagar II	139472
9 Nabadwip	135314
10 Krishnagar I	314833
11 Krishnaganj	146705
12 Hanskhali	293040
13 Santipur	241080
14 Ranaghat I	232282
15 Ranaghat II	368681
16 Chakdah	405719
17 Haringhata	231068
18 Kalyani	100575

2. Answer the following questions:

3x4=12

- Type of Resolutions in Remote Sensing
- Types of Radiation Laws
- Application of Remote Sensing in Forestry
- Application of Remote Sensing in Geology

3. From the given Landsat 8 image prepare the Normalized Difference Vegetation Index (NDVI) and interpret the same.

10+2=12

4. a. Write the step to step flow chart of preparing channel network after Strahler by using the given base maps by DEM Hydro processing.

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- b. Define the terms: Flow accumulation, Raster calculation and Spatial Resolution.

3x2=6

5. Laboratory Note Book & Viva Voce

4+4=8