

**M.Sc. 3rd Semester Examination, 2019**

**GEOGRAPHY**

*( Advance Geomorphology )*

**PAPER—GEOG-303**

*Full Marks : 40*

*Time : 2 hours*

**Answer all questions**

*The figures in the right-hand margin indicate marks*

*Candidates are required to give their answers in their own words as far as practicable*

*Illustrate the answers wherever necessary*

**GEO-303 A.1**

**( Special Paper : Process Geomorphology )**

**GROUP — A**

1. Answer any *one* question : 8 × 1

- (a) Elucidate the mechanism of drainage network development with suitable illustrations.
- (b) Critically discuss the theories on flood plain development.

GROUP – B

2. Answer any *two* questions : 4 × 2

- (a) How do different geomorphic thresholds determine slope stability ?
- (b) State the major geomorphic features of the Mars.
- (c) Briefly explain the process-form relationships on different slope elements.
- (d) What landforms are developed by weathering ?

GROUP – C

3. Answer any *two* questions : 2 × 2

- (a) Define Froude Number.

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- (b) Define meander inflection point.
- (c) Define 'Cis' link.
- (d) Define 'belt of no erosion' after Horton.

GEO-303 A.2

( Special Paper : *Process Geomorphology-II* )

GROUP – A

4. Answer any *one* question from the following : 8 × 1
- (a) Discuss the processes involved in the long term evolution of landform with reference to planation surfaces development.
  - (b) Trace out the role of human intervention in modifying the natural forms and processes of fluvial system in India.

GROUP – B

5. Answer any *two* questions from the following : 4 × 2
- (a) Examine the types of sea level change resulted from the quaternary fluctuation of environment.

- (b) Compare between supraglacial and subglacial drift.
- (c) Examine the theories on formation of drumlin.
- (d) Make an outline of the peri-glacial processes shaping the landform.

GROUP – C

6. Answer any *two* questions from the following :  $2 \times 2$
- (a) What is Hanging Valley ?
  - (b) Define Etchplanation.
  - (c) What is Quaternary Period ?
  - (d) Define 'Land Reclamation'.

GEO-303 B.1

( Special Paper : *Coastal Management* )

GROUP – A

1. Answer any *one* question : 8 × 1

- (a) Elucidate the mechanism of wave breaking with relevant illustrations.
- (b) Explain the mechanisms for the formation of carbonate platforms and beach rocks along the coastal part of Andaman and Nicobar islands.

GROUP – B

2. Answer any *two* questions : 4 × 2

- (a) Briefly discuss ecological importance of coast.
- (b) How do rip cells develop ?
- (c) Assess the role of beach as an energy buffer.
- (d) Distinguish between tide dominated and wave dominated coastal environment citing examples from Indian Coast.

GROUP – C

3. Answer any *two* questions : 2 × 2
- (a) Define coast as a system.
  - (b) What is wave refraction ?
  - (c) How do you define shallow sea ?
  - (d) Which are the major agents of bio-tidal accretion ?

GEO-303 B.2

( *Coastal Environments : Focus on  
Indian Regions* )

GROUP – A

4. Answer any *one* question from the following : 8 × 1
- (a) Describe the role of tides and tidal currents in the formation and modification of deltaic shores with special reference to the Hugli River and Ichamati River estuaries in West Bangal.

- (b) Discuss the reasons of coastal erosion and associated problems along the coasts of West Bengal and Odisha.

GROUP – B

5. Answer any *two* questions from the following :  $4 \times 2$

- (a) How do you study coastal hazards following USGS.
- (b) What is the role of sandy beaches and barrier coasts in the prospects of tourism and recreational activities ?
- (c) Explain the geomorphic significance of carbonate shore platforms.
- (d) Discuss briefly the morphodynamic behaviour of coastal systems with feedback mechanisms.

GROUP – C

6. Answer any *two* questions from the following :  $2 \times 2$

- (a) What is beachrock ?

- (b) What is the significance of scale in coastal geomorphology ?
- (c) Identify major human activities in modification of shoreline processes.
- (d) What are the impacts of land reclamations in the Indian Sundarban ?

GEO-303 C.1

( *Foundation of Urban Geography* )

GROUP – A

1. Answer any *one* from the following : 8 × 1

- (a) Give a brief account on trends of urbanization with special reference to India since independence.
- (b) Critically discuss the process of gentrification and its impact on the urban sociology.



GROUP – B

2. Answer any *two* questions from the following :  $4 \times 2$

- (a) Identify the salient features of smart growth of cities.
- (b) 'The green city refers to increase the sustainability of urbanized area' – Justify the statement.
- (c) 'Urbanism is the way of life' – who gave this concept and why.
- (d) Briefly discuss the eco-environmental consequences of suburban sprawl.

GROUP – C

3. Answer any *two* from the following :  $2 \times 2$

- (a) Comment on the importance of National Urban Policy.
- (b) What is Urban Livability Index ?
- (c) Differentiate census town from statutory town.

- (d) What are the characteristics of urban downtown ?

GEO-303 C.2

( *Contemporary Urban Issues* )

GROUP – A

4. Answer any *one* from the following questions : 8 × 1
- (a) Briefly describe the changing pattern of metropolitisation in India after Independence.
- (b) Highlight the major objectives and framework of the smart city programme in India.

GROUP – B

5. Answer any *two* from the following questions : 4 × 2
- (a) Explain the concepts of urban pathology and malaise.
- (b) Highlight the major aspects of Solid Waste Management Act, 2016.

- (c) Elucidate briefly the strategies for the mitigation of urban heat island effects.
- (d) What are the major objectives of AMRUT project ?

GROUP – C

6. Answer any *two* from the following questions : 2 × 2

- (a) Distinguish between basic and non-basic economic functions in urban areas.
- (b) What do you mean by urban ecological footprint ?
- (c) Mention the submissions of JNNURM.
- (d) What is urban flood ?

GEO-303 D.1

GROUP – A

1. Answer any *one* question : 8 × 1

- (a) Describe the processes of energy matter

interaction of an incoming light beam when it passes through the atmosphere and interact with the Earth's surface.

- (b) A satellite wishes to orbit the Earth at a height of 100 km above the surface of the Earth. Determine the speed and orbital period of the satellite.

$$\left[ \mu_{\text{Earth}} = 5.98 \times 10^{24} \text{ kg}, R_{\text{Earth}} = 6.37 \times 10^6 \text{ m} \right]$$

$$\left[ G = 6.673 \times 10^{-11} \text{ Nm}^2/\text{kg}^2 \right]$$

### GROUP – B

2. Answer any *two* questions : 4 × 2

- (a) What are the factors that controls the emission in thermal infrared region for an object.
- (b) Graphically explain the mechanisms of available space borne remote sensing sensors.

(c) What is emissivity ? Why is it an important parameter in thermal remote sensing ?

(d) Describe the path radiance ? Why is it important in remote sensing ?

GROUP – C

3. Answer any *two* questions : 2 × 2

(a) Calculate  $\lambda_{\max}$  if  $T$  is 6000 °K.

(b) What is aparent thermal inertia ?

(c) What is blackbody temperature ?

(d) What is photoelectric effect ?

GEO-303 D.2

GROUP – A

4. Answer any *one* questions : 8 × 1

(a) How do you find the height of a building in an air photo from relief displacement ?

- (b) Graphically explains the working mechanism of a microwave remote sensing system. How do you compute the azimuth and range resolution.

GROUP – B

5. Answer any *two* questions : 4 × 2
- (a) Explain the concept of image parallax.
- (b) What are the conditions for having stereovision ?
- (c) Classify the aerial photo based on the axial tilt.
- (d) How characteristic curve been used in aerial photography to chose optimum film for a particular purpose.

GROUP – C

6. Answer any *two* questions : 2 × 2
- (a) What is aperture of a camera ?

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- (b) What is a negative plane ?
  - (c) Why the size of the silver halide crystals is decisive for quality of image in an air photo ?
  - (d) What is conjugate principle point ? What is the use of it ?
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