WEST BENGAL STATE UNIVERSITY

B.A./B.Sc. Honours 1st Semester Examination, 2022-23

GEOACOR01T-GEOGRAPHY (CC1)

GEOTECTONICS AND GEOMORPHOLOGY

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable
All symbols are of usual significance.

FOR REGULAR SYLLABUS

CATEGORY-A

Answer any *one* question from the following within 600 words 10×1 = 10

1. What is Isostasy? Elucidate the difference between Airy's and Pratt's view on Isostasy. 2+8

2. Explain with suitable sketches the characteristic features of erosional landforms produced by sea waves. What are the favourable conditions for the development of limestone topography? 7+3

CATEGORY-B

Answer any *four* questions from the following within 150 words each 5×4 = 20

3. Write a brief account on the system of classification of fault.
4. Explain the process of solifluction.
5. Describe the formation of recumbent fold and nappe.
6. Briefly describe the time-dependent model of landscape evolution.
7. Describe the formation of Island Arc in the context of Plate Tectonics.
8. Discuss the formation of Tor and Bornhardt in the granite region.
9. Describe the evolution of drainage network on unielinal structure.

CATEGORY-C

Answer any *five* questions from the following within 50 words each 2×5 = 10

10. What is rotational slump?
11. Define Magnetic anomaly.
12. What is a seismic Shadow Zone?
13. How does Oceanic trenches form?
14. What is the difference between Tombolo and spit?

15. Mention different types of duricrust.
16. What is anthropogenic Weathering?
17. Mention two features of rejuvenated land.
18. What are Tarn and Paternoster Lake?

For Truncated Syllabus

CATEGORY-A

Answer any *one* question from the following within 600 words 10×1 = 10

1. How are mass movements classified? Explain with examples the different processes of mass movements. 3+7

2. How do you define plate? Explain different plate boundaries and their associated landforms with suitable sketches.

CATEGORY-B

Answer any *four* questions from the following within 150 words each 5×4 = 20

3. How is weathering different from Erosion? How do salt and ice crystals mechanically weather rocks? 2+3
4. Discuss the structure of earth's interior with reference to surface and body waves.
5. Classify dunes. Elucidate the formation of different types of dune.
6. Describe with diagrams different stages of the formation of inversion of relief in folded structure.
7. What is the role of asthenosphere in plate movement?
8. State the importance of Palaeozoic Era.
9. Write a short note on moraine.

CATEGORY-C

Answer any *five* questions from the following within 50 words each 2×5 = 10

10. What is "Monadnock"?
11. What is anti-dip stream?
12. Explain "Moho" discontinuity.
13. What is hanging valley?
14. Explain Seismic-shadow zone.
15. What is solifluction and how to determine it?
16. Explain the process of hydrolysis.
17. Explain the formation of hotspot.
18. Give an example of convergent plate boundary (continent-continent) and name one resultant landform.

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WEST BENGAL STATE UNIVERSITY

B.A./B.Sc. Honours 1st Semester Examination, 2022-23

GEOACOR02T-GEOGRAPHY (CC2)

CARTOGRAPHIC TECHNIQUES

Time Allotted: 2 Hours

Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
All symbols are of usual significance.

FOR REGULAR SYLLABUS

CATEGORY-A

Answer any *one* question from the following (within 600 words) 10×1 = 10

1. (a) Explain polar coordinate system for locating a point on our spherical earth. 4+6
   (b) Describe in brief the basics of UTM projection and its grid system.

2. Explain the process of coding system in old series topographical maps published by the Survey of India using relevant sketches. Mention the major information on the margins of such maps. 6+4

CATEGORY-B

Answer any *four* questions from the following (within 150 words each) 5×4 = 20

3. What is constant of cone? Explain.
4. Classify Map Projections based on the plane of the projection.
5. Explain the advantages and disadvantages of Representative Fraction.
6. Distinguish between perspective and non-perspective projections.
7. The northing of two points M and P in a UTM zone are 8200 m N and 9,999,900 m N respectively. Find out the linear distance of these two points with respect to the equator.
8. Distance between two points AB measures 6 cm on a map which is drawn on a scale 1:75000. The same distance AB is measured as 10 cm in another map. Calculate the RF of the second map and also determine the magnitude of enlargement or reduction of the second map.
9. Classify maps on the basis of object and content.

CATEGORY-C

Answer any *five* questions from the following (within 50 words each) 2×5 = 10

10. What is meant by WGS 84 datum? Explain.
11. Define Generating Globe.
12. Discuss the use of Mercator's Projection.
13. Define spot height on a topographic map.

14. Define thematic map.
15. Describe the utility of 'index of sheets'.
16. A map is produced by reducing $1/9^{th}$ of the original area of a map. If the scale of the old map is 1:50000 then what will be the scale of the new map?
17. What is vernier constant?
18. What is false easting and northing?

FOR TRUNCATED SYLLABUS

CATEGORY-A

Answer any *one* question from the following (within 600 words) 10×1 = 10

1. Define scale. Compare and contrast between Linear Scale and Diagonal Scale with suitable examples. 2+8

2. (a) Explain the process of coding system in open series topographic map published by Survey of India. 6+4

   (b) The scale of a map was 1 cm to 160.5 km and it has been redrawn on a new scale of 1 cm to 119.5 km, now calculate the magnitude of enlargement in percentage.

CATEGORY-B

Answer any *four* questions from the following (within 150 words each) 5×4 = 20

3. Discuss the major characteristics of perspective projection with suitable example.
4. How does R.F. determine the scale of a toposheet number 64 D/14?
5. Differentiate between radial scale factor and Tangential scale factor in a projection.
6. Explain the principle of construction of diagonal scale.
7. Prove that the radius of any parallel on polar zenithal stereographic projection is $2R\tan\left(\frac{90-\Phi}{2}\right)$.
8. Explain significance of UTM projection in geographical studies.
9. List the main information provided in the sides of a toposheet.

CATEGORY-C

Answer any *five* questions from the following (within 50 words each) 2×5 = 10

10. Write a short note on Generating Globe.
11. What is WGS-84 datum?
12. Write a short note on Cadastral Map.
13. Find the polar co-ordinates of a point having Cartesian Co-ordinates (–1, –1).
14. What is legend?
15. Differentiate Zenithal and Cylindrical Projection.
16. What is standard parallel?
17. What is developable surface?
18. What is polar-co-ordinate?

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WEST BENGAL STATE UNIVERSITY

B.A./B.Sc. Honours 1st Semester Examination, 2021-22

GEOACOR01T-GEOGRAPHY (CC1)

GEOTECTONICS AND GEOMORPHOLOGY

Time Allotted: 2 Hours | Full Marks: 40

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CATEGORY-A

Answer any *one* question from the following within 600 words 10×1 = 10

1. Elucidate the structure and composition of earth's interior layers with special reference to seismological evidences. What is meant by surface waves or L waves? 8+2

2. Explain with suitable sketches the characteristic features of erosional landforms produced by glacier. What is erratic? 8+2

CATEGORY-B

Answer any *four* questions from the following within 150 words each 5×4 = 20

3. Briefly describe the factors which control landslides.
4. How 'Inselberg' is formed in arid regions?
5. Briefly discuss the landforms of arid and semi-arid regions caused by fluvio-aeolian action.
6. Distinguish between slump and slide.
7. Explain the formation of island arcs.
8. Explain the role of Asthenosphere in plate movement.
9. What are the characteristics of convergent plate margins?

CATEGORY-C

Answer any *five* questions from the following within 50 words each

10. What do you mean by migration of dunes?
11. What is chelation?
12. What is bio-geo-chemical weathering?
13. Explain duricrust.
14. Differentiate between crevasse and bergschrund.
15. Define lahar.
16. State the significance of the Quaternary Period.
17. What is epoch?
18. How deflation hollow is formed?

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WEST BENGAL STATE UNIVERSITY

B.A./B.Sc. Honours 1st Semester Examination, 2021-22

GEOACOR02T-GEOGRAPHY (CC2)

CARTOGRAPHIC TECHNIQUES

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
All symbols are of usual significance.

CATEGORY-A

Answer any *one* question from the following 10×1 = 10

1. Classify map projection based on plane of projection and location of tangent plane. Discuss the relative importance of tangential scale and radial scale of a point on any projection. 4+6

2. Compare the Reference schemes of Old and Open Series topographical maps. Mention the characteristics of polar co-ordinate system. 6+4

CATEGORY-B

Answer any *four* questions from the following 5×4 = 20

3. Find the Polar co-ordinates of a point whose Cartesian co-ordinates are (–1, –1).

4. If the measured distance from x to y on a Map 'A' with a scale of 1:10,000 is 10 cm, then what would be the scale of Map 'B', if the distance between x and y on that map is 2 cm?

5. Why is UTM co-ordinate system not used beyond 84°N and 80°S Parallels?

6. Prove that the height of any parallel from the equator on Cylindrical Equal Area Projection is $R \sin \phi$.

7. Explain why deformation occurs in map projection.

8. What does UTM grid 58 J refer to? Find out the Easting and Northing of A in UTM grid while it lies 6055 m west of central meridian and 33665 m south of equator.

9. Why is Mercator's Projection regarded as Cylindrical Orthomorphic Projection? Why is this projection useful for navigation?

CATEGORY-C

Answer any *five* questions from the following 2×5 = 10

10. State the relation between primary, secondary and tertiary divisions of a diagonal scale.

11. What is the significance of Transect Chart?

12. Differentiate between Polar Coordinate and Rectangular Coordinate.

13. Write a short note on Cadastral Map.

14. Mention the advantages of linear scale.

15. Mention the projection of datum of OSMs.

16. A Bonne's Projection is drawn on a scale 1:50,000,000. Calculate the radius of the standard parallel which is 40°S in this Projection.

17. Mention the RF of the following SOI Topographical Maps: 1+1
    (a) 76D
    (b) 74D/9.

18. Find out the rectangular co-ordinates of M, while its polar co-ordinates are $\{36\,m, (\pi - \pi/3)\}$.

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7. The scale of a map was 1 cm to 180 km and it has been redrawn on a new scale i.e. 1 cm to 80 km. Now calculate the magnitude of enlargement in percentage.

8. 15 cm × 16.5 cm area on the map represents 180 km × 120 km ground area. What will be the R. F.? 5

9. In a UTM zone two points C and D are located at a distance of 800 m from the central meridian to the west and 200 m from the central meridian towards east on the same latitude respectively. What are the easting values of C and D? 5

Category-III

Answer any *five* questions from the following $2 \times 5 = 10$

10. The contour interval on a topographical map is 20 m. There are 150 contour lines between foot and peak of a mountain. The peak of the mountain is 2 km away. Find out the slope of the mountain.

11. The length of 45° parallel on the reduced globe is 6671.22 cm. Calculate the R.F.

12. What is loxodrome?

13. What is false easting and northing?

14. What is WGS 84 datum?

15. Mention the properties and uses of Bonne's projection.

16. What is the relationship between primary, secondary and tertiary divisions of a diagonal scale?

17. Make a correlation between standard parallel and constant of a cone in Bonne's projection.

18. Differentiate between perspective projection from non-perspective projection.

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WEST BENGAL STATE UNIVERSITY

B.A./B.Sc. Honours 1st Semester Examination, 2018

GEOACOR02T-GEOGRAPHY (CC2)

CARTOGRAPHIC TECHNIQUES

Time Allotted: 2 Hours | Full Marks: 40

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All symbols are of usual significance.

Category-I

Answer any *one* question from the following $10 \times 1 = 10$

1. Explain the principle of grid system of Universal Transverse Mercator Projection. Determine the UTM zone where point A having Easting 352,669, Northing 7,322,444 is located. 7+3

2. Explain the process of the coding system in open series topographical map of Survey of India with sketches. Mention the latitudinal and longitudinal extension (Old Series) of the following SOI topographical sheets. 7+3

(i) 76 A (ii) $76\frac{A}{12}$ (iii) 76 / B / 5 / SW

Category-II

Answer any *four* questions from the following $5 \times 4 = 20$

3. Prove that the vernier constant is the ratio between the least count of main scale (d) and the number of vernier scale division (n). 4+1

Calculate vernier constant while reading on vernier scale is 0.04 mm and 14^{th} mark of vernier division coincides with any one division of the main scale.

4. Classify map projection according to the properties of projection with example. 5

5. What do you mean by Radial scale factor and tangential scale factor of a projection? 5

6. Calculate the Cartesian co-ordinates of point A whose polar co-ordinates is $(-2, 30°)$. 5

CATEGORY-C

Answer any *five* questions from the following within 50 words

10. What are the different epochs of the Cenozoic era? 2

11. What is meant by 'shadow zone'? 2

12. How are 'hot spots' formed? 2

13. What is exfoliation? 2

14. What do you understand by the term nevé? 2

15. How are ventifacts formed? 2

16. What is blind valley? 2

17. What is 'primarumpf'? 2

18. What do you understand by 'non-cyclic theory of landform evolution'? 2

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WEST BENGAL STATE UNIVERSITY

B.A./B.Sc. Honours 1st Semester Examination, 2018

GEOACOR01T-GEOGRAPHY (CC1)

GEOTECTONICS AND GEOMORPHOLOGY

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.

CATEGORY-A

Answer any *one* question from the following within 600 words 10×1 = 10

1. What are the different types of plate margin? Explain the characteristics and related landforms of divergent plate margins with the help of suitable diagrams. 2+8

2. What are the erosional processes operating in a coastal area? Discuss with diagrams the landforms produced by coastal erosion. 3+7

CATEGORY-B

Answer any *four* questions from the following within 150 words 5×4 = 20

3. Explain the concept of 'level of compensation' as put forward by Pratt. 5

4. Distinguish between 'strike-slip-fault' and 'dip-slip-fault' with the help of diagrams. 5

5. What are the differences between solifluction and soil creep? 5

6. Explain the development of trellis drainage pattern on uniclinal structure. 5

7. Discuss in brief the typical landforms developed on basaltic terrain. 5

8. Discuss with diagrams the formation of pediment and bajada. 5

9. What do you understand by "interruption of the normal cycle of erosion"? 5

CATEGORY-III

Answer any *five* questions from the following

10. Define principal scale and scale factor.

11. Mention the R.F. of the following SOI Topographical Maps:
(A) 78 G (B) 78 G/6 (C) 78 G/NE (D) 78 G/10/4

12. In a Vernier scale, the Vernier constant is 30 seconds and the smallest main scale division is 15 minutes. How many divisions are there in the Vernier scale?

13. Given that the radius of the earth is 6367 km. and the length of the equator on the generating globe is 25 cm. Calculate the R.F.

14. Why the size of India is much smaller than Greenland in Mercator's projection?

15. Why UTM Zones are limited to 80°S and 84°N latitude?

16. Name two projections suitable for showing the distribution of sugarcane producing areas on a world map and justify your choice.

17. What is WGS 84 datum?

18. What is the latitudinal and longitudinal extension of the quadrilateral named 5N on the UTM Grid System?

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WEST BENGAL STATE UNIVERSITY

B.A./B.Sc. Honours 1st Semester Examination, 2019

GEOACOR02T-GEOGRAPHY (CC2)

Time Allotted: 2 Hours

Full Marks: 40

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Candidates should answer in their own words and adhere to the word limit as practicable
All symbols are of usual significance

CATEGORY-I

Answer any *one* question from the following 10×1 = 10

1. Differentiate between polar and rectangular coordinate systems. Calculate the polar coordinate of a point P whose rectangular coordinates are (–5, +12). 7+3

2. Explain the principle of grid system of Universal Transverse Mercator Projection. Find the UTM co-ordinate of Place A (80°13'E, 13°4'N) when it lies 79060 m West from Central meridian and 1446393 m North of the equator of the UTM Grid. 6+4

CATEGORY-II

Answer any *four* questions from the following 5×4 = 20

3. Find the Cartesian co-ordinates of a point whose polar co-ordinates is $(-4, -60°)$.

4. Classify map projections on the basis of plane of projection.

5. A map of area 121 sq. cm. covers an area of 253009 sq. km. on the ground. The map is reduced to half its original size. Find the R.F. of the reduced map.

6. Prove that the length of any parallel ϕ on the generating globe is $2\pi R\cos\phi$.

7. How is the property of orthomorphism maintained in the Mercator's Projection?

8. Calculate the distance AB, in the same UTM Zone if the co-ordinate of A is 640,220 (Easting), 2,496,800 (Northing).

9. Calculate how much length is required in a diagonal scale to represent 3 km. 5 hectometres 20 metres when the R.F. is 1:40,000.

WEST BENGAL STATE UNIVERSITY

B.A./B.Sc. Honours 1st Semester Examination, 2019

GEOACOR01T-GEOGRAPHY (CC1)

GEOTECTONICS AND GEOMORPHOLOGY

Time Allotted: 2 Hours

Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
All symbols are of usual significance.

CATEGORY-A

Answer any *one* question from the following within 600 words $10\times1=10$

1. Elucidate the structure and composition of the earth's mantle and core with reference to seismological evidences. Define level of compensation. 8+2=10

2. What do you mean by degradational processes? Discuss the various processes of mechanical weathering and the resultant landforms with the help of suitable diagrams. 2+8=10

CATEGORY-B

Answer any *four* questions from the following within 150 words each $5\times4=20$

3. Briefly discuss the theory of isostasy as proposed by Airy. 5
4. Differentiate between isoclinal fold and recumbent fold with suitable diagrams. 5
5. Discuss the formation of island arcs in the light of Plate tectonics. 5
6. Explain how tors are formed in granitic area. 5
7. Briefly state the Dynamic Equilibrium Concept after Hack. 5
8. Distinguish 'eskers' from 'Kames'. 5
9. Discuss the mode of formation of longitudinal and transverse dunes. 5

CATEGORY-C

Answer any *five* questions from the following within 50 words each $2\times5=10$

10. What is the Benioff Zone? 2
11. State the significance of the Pleistocene epoch. 2
12. What are the characteristics of reverse fault? 2
13. How are gloup's formed? 2
14. Explain the term 'Chelation'. 2
15. How are pyramidal peaks formed? 2
16. Briefly describe the formation of Yardang. 2
17. What do you mean by 'stage' as mentioned by Davis? 2
18. What are the characteristics of rock fall? 2

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WEST BENGAL STATE UNIVERSITY

B.A./B.Sc. Honours 1st Semester Examination, 2020, held in 2021

GEOACOR01T-GEOGRAPHY (CC1)

GEOTECTONICS AND GEOMORPHOLOGY

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
All symbols are of usual significance.

CATEGORY-A

Answer any *one* question from the following within 600 words each 10×1 = 10

1. What is meant by 'Plate Tectonics'? Explain the characteristics and related landforms of convergent plate margins with suitable diagrams. 2+8 = 10

2. Discuss the factors that affect weathering process. Explain different processes of mechanical weathering. 3+7=10

CATEGORY-B

Answer any *four* questions from the following within 150 words each 5×4 = 20

3. Briefly write an account on the temporal span, classification and significance of quaternary period.
4. Differentiate the nature of primary and secondary waves.
5. Identify the different forms of interruption in a cycle of erosion.
6. Classify 'Moraines'.
7. How inversion of relief is formed?
8. Distinguish between Yardang and Zeugen.
9. Describe the formation of 'hot spot'.

CATEGORY-C

Answer any *five* questions from the following within 50 words each 2×5 = 10

10. Define global isostatic adjustment.
11. How is kame terrace formed?
12. What is meant by seismic shadow zones?
13. Distinguish between hydration and hydrolysis.
14. What is Exfoliation?

15. What are pediments?

16. What is colloidal plucking?

17. Mention the forces responsible for plate motion.

18. What is meant by steady state?

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WEST BENGAL STATE UNIVERSITY

B.A./B.Sc. Honours 1st Semester Examination, 2020, held in 2021

GEOACOR02T-GEOGRAPHY (CC2)

CARTOGRAPHIC TECHNIQUES

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
All symbols are of usual significance.

CATEGORY-A

Answer any *one* question from the following (within 600 words) 10×1 = 10

1. (a) What is false easting and northing? 3+7

   (b) Coordinates of two points A and B in the same zone of UTM projection are as follows:

   A = Easting 420,760, Northing 5,449,670

   B = Easting 420,710, Northing 5,449,630.

   Find the distance of AB.

2. Explain the process of coding system in open series topographical map published by Survey of India with sketches. Mention the latitudinal and longitudinal extension of the following old series topographical maps: 4+6

   (i) 76B

   (ii) 65 L /11

   (iii) 65/D/5/SW

CATEGORY-B

Answer any *four* questions from the following (within 150 words each) 5×4 = 20

3. Differentiate between Perspective and Non-Perspective Projection. 5

4. What are the uses of Mercator's Projection? 5

5. Why is RF scale a unit free scale? Calculate the possible number of primary, secondary and tertiary divisions to read 3.324km on diagonal scale. 2+3

6. How does a projection retain its equal-area property? 5

7. Give a comparative study between linear scale and diagonal scale.

8. Prove that the radius of any parallel on Polar Zenithal Stereographic Projection is $2R \tan((90°-\Phi)/2)$.

9. How do you classify maps taking the scale as the criterion? 5

CATEGORY-C

Answer any *five* questions from the following (within 50 words each) 2×5 = 10

10. After 16 times enlargement, the R.L. of the reproduced map is 1:25000. Calculate the R.F. of the original map.

11. Discuss the relevance of conventional signs in maps.

12. What is meant by WGS 84?

13. What is the difference between a normal geographic map and a topographical (toposheet) map?

14. You have two maps, one of 1:1000 scale and the other of 1:200,000 scales. Which is the larger scale map and how much?

15. Compare Cylindrical Equal Area Projection and Mercator's Projection.

16. Define Loxodrome.

17. What is a thematic map?

18. Write a short note on 'Generating Globe'.

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