

**2020**

**GEOGRAPHY — HONOURS**

**Fifth Paper**

**Full Marks : 100**

*The figures in the margin indicate full marks.*

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

**Module - IX**

**(Population and Settlement Geography)**

**Marks : 50**

**Category - A**

Answer **any one** question (within **600** words).

1. Analyze the influencing factors behind the uneven distribution of population over the world. 30
2. Describe the causes and effects of migration with special reference to India. 15+15
3. Discuss the Malthusian theory of population growth along with its merits and demerits. 20+10
4. Analyze the different types of rural houses with reference to India. 30
5. Analyze the classical models of urban morphology by Burgess and Hoyt. 15+15

**Category - B**

6. Answer **any two** questions (each within **150** words) : 10×2
  - (a) Explain the relation between age-sex structure and economic development.
  - (b) Differentiate between ethnicity and race.
  - (c) Enumerate the factors responsible for decline in fertility rate.
  - (d) Differentiate between stable and stationary population.
  - (e) Briefly discuss the economic composition of the population of a developing country.
  - (f) Bring out the significance of site and situation in the location of rural settlements.
  - (g) What do you mean by 'City Region'?
  - (h) How does a rural settlement differ from an urban settlement as per Indian Census?

**Please Turn Over**

**Module - X**  
**(Regional Geography of India)**

**Marks : 50**

**Category - A**

Answer **any one** question (within **600** words).

7. Identify the basis of deliniation of physiographic regions in India with the help of suitable examples. 30
8. Critically discuss the characteristics of Gujarat as an economic region. 30
9. Divide India into agricultural regions according to I.C.A.R.'s classification and discuss the cropping zones. 30
10. Explain the concept of Planning Regions with special reference to the D.V.C. Region. 30
11. Define a biotic region and analyze the problems and prospects of the Sundarban Biotic Region. 6+12+12

**Category - B**

12. Answer **any two** questions (each within **150** words) : 10×2
- (a) Give a brief account of the physiography of the Deccan Trap.
- (b) Enumerate the salient characteristics of the rivers of peninsular India.
- (c) Differentiate formal regions from functional regions.
- (d) Explain the concept of a compage region.
- (e) Locate the laterite soil regions of India and mention its salient features.
- (f) Divide India into climatic regions after Koppen.
- (g) Highlight the problems of slums with reference to Kolkata.
- (h) Comment on the major agricultural crops of Western Rajasthan in the context of its physical environment.
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ZOOLOGY — HONOURS

Fifth Paper

(Unit - II)

Full Marks : 50

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1. Answer **any two** questions from the following : 10×2
- (a) What is  $\gamma$ -globulin? State its importance.
  - (b) Distinguish between Amastigote and Promastigote forms of *Leishmania donovani*.
  - (c) State the cause of chill and rigour in Malaria.
  - (d) State differences between gram positive and gram negative bacteria.
  - (e) Write structural features of IgM and IgG.
  - (f) What is opsonisation?
  - (g) What is PKDL? Mention its symptoms.
  - (h) What do you mean by Humoral immunity?

**Group - A**

Answer **any one** question from the following.

2. (a) Discuss the Life cycle of *Plasmodium vivax* in mosquito with a schematic diagram. What is signet ring stage? 6+3+6
- (b) Discuss the transmission and control measures of *Ascaris lumbricoides*.
3. (a) Discuss the morphology and importance of Cercaria in *Fasciola hepatica*. 7+4+4
- (b) Distinguish among Carrier, Vector and Host.
- (c) State the stages of development of *Wuchereria bancrofti* in mosquito.
4. Write on the following (**any three**) : 5×3
- (a) Hypnozoites and Haemozoin.
  - (b) Phases of bacterial growth.
  - (c) Sterilization and pasteurization.

**Please Turn Over**

- (d) Rhabditiform larva.
- (e) Parasitism and Commensalism.
- (f) Parasitic adaptations of helminth parasites.

**5.** Write short notes on **any two** of the following :

7½×2

- (a) Vector potentiality of *Anopheles culicifacies*.
- (b) Life cycle and pathogenicity of *Shigella* sp.
- (c) Encystation and excystation of *Entamoeba histolytica*.
- (d) Classification of bacteria on the basis of staining and its importance.

**Group - B**

Answer **any one** question from the following.

**6.** Write short notes on (**any two**) :

7½×2

- (a) Activation and differentiation of B-cell.
- (b) Structure of a typical Antibody molecule.
- (c) Macrophage and its function.
- (d) Innate Immunity in Invertebrates.

**7.** (a) What is ADCC? Discuss in brief the ADCC in man.

- (b) Discuss how exogenous and endogenous Antigens are processed and presented to the Immune system.

2+6+7

**8.** (a) Distinguish between T<sub>H</sub> and T<sub>cyt</sub> cells.

- (b) State the importances of : (i) TNF (ii) IFN-γ (iii) Adjuvants.

3+3+9

**9.** Write on the following (**any three**) :

5×3

- (a) Complements and its function.
  - (b) Properties and function of Cytokines.
  - (c) Role of HAT medium in monoclonal antibody production.
  - (d) Bursa of Fabricius and its function.
  - (e) Cell mediated immunity in molluscs.
  - (f) Structures of MHC 1 and MHC 2 with suitable diagram.
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**ZOOLOGY — HONOURS**

**Fifth Paper**

**(Unit - I)**

**Full Marks : 50**

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as far as practicable.*

Answer **question no. 1** and **any two** questions from the rest.

1. Answer **any two** questions : 10×2
- (a) What is Philadelphia chromosome?
  - (b) Define APC / cyclosome.
  - (c) State the use of SDS in SDS-PAGE.
  - (d) Why P53 is regarded as tumour-suppressor gene?
  - (e) Distinguish Taq DNA polymerase and DNA polymerase-I.
  - (f) What are 'chi sites'?
  - (g) Comment on the function of RecA.
  - (h) What is Cooley's Anemia?
2. Write short notes on (**any two**) : 7½×2
- (a) Western Blot
  - (b) Expression vector
  - (c) Genetic cause of Thalassemia
  - (d) Histone acetylation
  - (e) LINE and SINE
  - (f) Genomic DNA Library.
3. (a) Define restriction endonuclease.
- (b) What are 'iso-schizomer' and 'neo-schizomer'?
- (c) Explain the process and utility of 'Colony hybridization' process in RDT (Recombinant DNA Technology). 3+(3+3)+(5+1)

**Please Turn Over**

4. (a) Delineate any one process of conversion of proto-oncogene to oncogene.  
(b) Explain the extrinsic pathway of apoptosis.  
(c) State two important properties of transformed cells. 6+6+3
5. (a) Briefly describe the principle, procedure and application of affinity chromatography.  
(b) Explain with suitable diagram, the process of homopolymer tailing and its significance. (3+3+3)+(5+1)
6. (a) Explain the principle of electrophoresis.  
(b) State the characteristic features of IS element with diagram.  
(c) How does TGE induce 'Inversion'?  
(d) State the characteristic features of Ty element. 3+(3+2)+4+3
7. (a) Describe the basic steps of PCR with suitable diagram (allele specific).  
(b) Explain catebolite repression with reference to lac operon.  
(c) 'O<sup>c</sup>' mutation is epistatic but I<sup>s</sup> hypostatic. – Explain. (5+3)+4+3
8. (a) Explain with suitable diagram DNA damage checkpoint in eukaryotes.  
(b) Explain how sickle cell anemia and sickle cell trait can be distinguished experimentally.  
(c) What is transpositional recombination? 6+5+4
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