

**Surguja University, Ambikapur**  
**SYLLABUS FOR PH.D. ENTRANCE EXAM:2017-18**  
**BOTANY**

- 1. Cellular Organisation:**
  - A) Membrane structure and function.
  - B) Structural organization and function of cell wall & cell organelles.
  - C) Organisation of genes and chromosomes.
  - D) Cell Division & Cell Cycle (Mitosis & Meiosis)
  
- 2. Fundamental Processes:**
  - A) DNA replication, repair and recombination
  - B) RNA synthesis and processing.
  - C) Protein synthesis and processing.
  - D) Control of gene expression (at transcription and translation level)
  
- 3. Plant Biotechnology:**
  - A) Plant tissue culture
  - B) Morphogenesis and organogenesis in plants
  - C) Genomics and its application to health & agriculture.
  
- 4. Physiology:**
  - A) Photosynthesis
  - B) Respiration
  - C) Nitrogen Metabolism
  - D) Plant Hormones
  - E) Sensory Photobiology
  - F) Transport and Translocation
  - G) Secondary Metabolites
  - H) Stress Physiology.
  
- 5. Diversity of Life Forms:**
  - A) Principles and methods of taxonomy
  - B) Levels of structural organization
  - C) Classification of Plants
  - D) Biodiversity and conservation strategies
  
- 6. Ecology:**
  - A) Environment, Habitat and Niche
  - B) Population Ecology
  - C) Community Ecology
  - D) Species Interactions
  - E) Ecological Succession
  - F) Ecosystem Structure and Function
  - G) Bio-geographical Zones of India
  - H) Applied ecology (Pollution, monitoring and management etc.)

**7. Origin & Evolution:**

- A) Emergence of evolutionary thoughts.
- B) Origin of Cells
- C) Paleontology and evolutionary history of major groups of plants.
- D) Population genetics.

**8. Microscopic Techniques & Statistical Methods:**

- A) Different microscopes and image processing methods
- B) Measures of central tendency and dispersal, probability, sampling distribution, Analysis of variance,  $X^2$  test etc.

**9. Research Methodology:**

- A) Types of research
- B) Steps in research process
- C) Tools of research and sampling techniques.
- D) Methods of research
- E) Treatment of data
- F) Research report writing.