Clinical Embryology Syllabus for PhD Entrance

Unit I: Basics in Reproduction & Embryology

- Gametogenesis, Fertilization
- Week 1,week 2, week 3 & week 4 embryonic development
- Development of Male and Female Reproductive System, Development of trophoblast, Implantation, Structure and functions of placenta, Placental abnormalities ,
- Abnormal sites of Fertilization and implantation
- Male & Female reproductive hormones

Unit II: Overview of Infertility

Causes & investigation of male and female infertility, Complication and OHSS, Patient Counselling, follicular study

Unit III: Basic & Advance Assisted Reproductive Technologies

- Stimulation protocol, Ovum Pickup, Intra Cytoplasmic Sperm Injection(ICSI), In Vitro Fertilization (IVF), Intrauterine Insemination (IUI)
- Semen Analysis
- Testicular biopsy, Endometrial biopsy, Embryo biopsy, Preimplantation Genetic Testing (PGT), Laser assisted procedures
- Embryo Grading , Embryo Transfer, Embryo Reduction
- Gamete & Embryo Cryopreservation
- Sperm cell Sorting, Microfluidics, IMSI (intra cytoplasmic morphologically selected sperm injection)

Unit IV: Quality control & Quality Assurance

- IVF Lab designing
- Errors in IVF Laboratories
- Adverse Events in IVF Lab
- Ethical Consideration of ART lab
- Risk management in IVF lab, KPIs
- Alarming system, Roster of work

Unit V: Micromanipulator & Embryo culture systems

- Micromanipulator
- Media used in preparation of gametes and embryo culture, Components of embryo culture media, Sequential culture system, Time Lapse imaging and embryo monitoring, Types of incubators, Quality control and advancement in culture technology