MAHATMA GANDHI UNIVERSITY
of
MEDICAL SCIENCES & TECHNOLOGY
JAIPUR

Syllabus

M. Sc. Clinical Embryology

2 Year (4 Semester) Postgraduate Degree Course

2023-24

Recommended by Committee of Courses Paramedical Sciences & Medical technology at its meeting held on 03/03/2023 and approved by Academic Council at its meeting held on 28/04/2023.

Notice

- The university reserves the right to make changes in the Rules / Regulations / Syllabus / Books / Guidelines / Fees-Structure or any other information at any time without prior notice. The decision of the University shall be binding on all.

- The Jurisdiction of all court cases shall be Jaipur Bench of Hon'ble Rajasthan High Court only.

RULES & REGULATIONS OF
M. Sc. Clinical Embryology

PROGRAM CODE: M. Sc. Clinical Embryology -23
2 Years (4 Semester) Postgraduate Degree Course

1. INTRODUCTION:

The postgraduate course M. Sc (Clinical Embryology) should enable a medical graduate to become a competent embryologist, acquire knowledge and skills in educational technology and conduct research in bio-medical sciences.

GOALS OF THE COURSE:

1. Understand the basic concepts of embryology.
2. Should be well versed setting up an IVF laboratory according to standards available and well versed in quality control measures.
3. Demonstrate knowledge of basic and systemic embryology including human genetics, genetic inheritance, gene regulation, immunology and stem cell therapy.
4. Develop a basic understanding of biochemistry, endocrinology, and pharmacology.
5. Independently handle semen and its processing for both techniques –Intrauterine Insemination (IUI) and in – vitro fertilization (IVF).
6. Be acquainted with mouse anatomy and physiology also to identify and handle their gametes in the scenario of IVF and ICSI.
7. Assess viability of embryos and their developmental competence with fair acuracy.
8. Observation of cryopreservation of human gametes and embryos, thaw them and subsequently development to transfer into the uterus.

COURSE OUTCOME: At the end of the course, a Postgraduate in Clinical Embryology shall be able to:

1) Demonstrate comprehensive knowledge and understanding of gross and microscopic structure of the human gametes and embryos 2) Independently handle Andrology lab and embryology lab doing skilled procedures like oocyte screening, conventional IVF and ICSI and cryopreservation of human gametes and embryos. 3) Independently maintain records and documents in an IVF lab as well maintain QA/QC records of labs.

LEARNING ACTIVITIES:

- Self-learning, use of computers and library
- Participation in departmental activities;
- Journal review meetings
- Seminars
- Clinical presentation
- Clinical rounds
- Dissertation work
- Participation in conference
- Rotation and posting in Department

2. TITLE OF THE COURSE:

M. Sc Clinical Embryology

3. DURATION OF THE COURSE:

The duration of M. Sc. Clinical Embryology course shall be 2 two continuous academic years (4 Semester) on a full-time basis in each specialization.

4. MEDIUM OF INSTRUCTION:

English shall be the medium of instruction for all the subjects of study and for examination of the course.

5. ELIGIBILITY:

MBBS, BDS, B. Sc Biotechnology, B. Sc Microbiology, B. Sc Nursing, BAMS, BHMS, B. Sc Medical Laboratory Technician, B. Sc Life science, B. Sc with zoology major

6. PROCESS OF ADMISSION:

Admission to M. Sc. Clinical Embryology program shall be made on the basis of written entrance examination conducted for the purpose.

7. RESERVATION POLICY:

Reservation in admissions shall be applicable as per policy of the State Government.

8. ATTENDANCE:

Minimum 75 % attendance is required in each Semester, both for theory and practical classes separately, student with deficient attendance will not be permitted to appear in End of Semester Examination (EoSE).

9. WORKING DAYS:

Each semester shall consist of not less than 130 working days including examination.

10. SYLLABUS:

The curriculum and the scheme of examination for the course shall be as prescribed by the University from time to time.

11. COMMENCEMENT OF THE COURSE:

The Course shall commence from the 1st August of every Academic year.

12. ENROLMENT:

Every candidate who is admitted to M. Sc. Clinical Embryology Degree Program in Mahatma Gandhi Institute of Allied Health Sciences shall be required to get himself/herself enrolled with the Mahatma Gandhi University of Medical Sciences & Technology (MGUMST) after paying the prescribed eligibility and enrolment fees.

A candidate shall deposit enrolment fees along with tuition fees at the time of his/her admission to the course. Such a candidate who fails to submit, to the college/Institute Principal/Director, duly filled enrolment form along with original documents including migration certificate required for enrolment within prescribed period then after he/she shall pay late fee applicable at that time. No student will be allowed to appear in the End of Semester Examination (EoSE) without his/her enrollment.

13. REGISTRATION:

A candidate admitted to this course shall register with this University by remitting the prescribed fee along with the application form for registration duly filled in and forwarded to the University through the Principal/Director of the College/Institute within the stipulated time.

14. GUIDE:

Criteria for recognition of M. Sc. Clinical Embryology teacher / guide:

- Guide should be at least Assistant Professor having qualification of M. Sc. Clinical Embryology in the concern subject/ Specialty.
- The guide student ratio should be 1:5

15. CHANGE OF GUIDE:

In the event of registered guide leaving the college for any reason or in the event of death of guide, guide may be changed with prior permission from the University.

16. DISSERTATION

- Every candidate pursuing M. Sc. Clinical Embryology degree course is required to carry out work on a selected research project under the guidance of a recognized postgraduate teacher. The results of such a work shall be submitted in the form of dissertation.
- The dissertation is aimed to train a graduate student in research methods and techniques. It includes identification of a problem, formulation of a hypothesis search and review of literature getting acquainted with recent advances, designing of a research study, collection of data, critical analysis, and comparison of results and drawing conclusions.
- Every candidate shall submit to the Registrar of university in the prescribed Proforma, a synopsis containing particulars of proposed dissertation work beginning of second semester. The synopsis shall be sent through the proper channel i.e., the Principal/Director of the College/Institute. Before submitting the synopsis, it shall be ensured by the Principal/Director of the College/Institute that it has been cleared by the Ethics Committee (DRC & IEC). The university will register the dissertation topic. No change in the

dissertation topic or guide shall be made without prior approval of the university.

- Guide will be only a facilitator, advisor of the concept and responsible in correctly directing the candidate in the methodology and not responsible for the outcome and results.

The dissertation should be written under the following headings.

1. Introduction
2. Aims or objectives of study
3. Review of literature
4. Material and methods
5. Results
6. Discussion
7. Conclusion
8. References
9. Appendices

The written text of dissertation shall not be less than 50 pages and shall not exceed 100 pages excluding references, tables, questionnaires and other annexure. It should be neatly typed in double line spacing on one side of paper (A4 size, 8.27" x 11.69") and bound properly maroon color with golden color typed. Spiral binding should be avoided. The Guide and Principal/Director of the College/Institute shall certify the dissertation.

- Four copies of dissertation thus prepared shall be signed by the candidate and the guide and then submitted for evaluation to the principal/director of the college/institute, one month before the commencement of final theory paper End of Semester Examination (EoSE).
- The dissertation shall be examined by minimum of two examiners one Internal and one External.
- Evaluation of the dissertation would be done jointly by the external and internal examiners, who will be appointed by the President of University.
- The examiners appointed for the practical shall also evaluate dissertation and take viva-voce based on the dissertation of the candidate to assessing depth of knowledge, logical reasoning, confidence & oral communication skill. Special emphasis shall be given to dissertation work during the semester-IV M. Sc. Clinical Embryology course.
- The marks of viva-voce examination shall be included in the clinical examination.
- A candidate will be required to secure minimum 50% marks to pass viva-voce examination of dissertation.
- Even if the candidate fails in the Theory/Practical End of Semester Examination (EoSE) his / her dissertation marks shall still be carried over to the subsequent examinations.

17. CONDUCTION OF THE END OF SEMESTER EXAMINATION (EOSE):

University semester examination shall be conducted twice in a year with an interval of six months. Even semester examination shall be conducted after 6 months of odd semester examination.

18. ELIGIBILITY TO APPEAR FOR END OF SEMESTER EXAMINATION (EOSE):

Student is required to have minimum 75% attendance (in theory and practical separately), to make him/her eligible to student failing in one or more, subject in a semester will be required to appear in their failing subject in the next examination of the same semester next year.

A candidate will have to clear all the subjects of First to Third semester before appearing at Fourth End of Semester Examination.

19. PAPER SETTER/EXAMINER:

- All the examiners - Paper setters, Theory examination answer books evaluators, Internal and External Examiners for Practical examinations shall be appointed by the President of the University from the panel submitted by Principal/Director/ through Convenor of the respective COC through concern dean of the faculty.
- Paper setters shall be external examiner who will assess the answer sheets of their respective papers.
- Qualification of the Paper setter / Examiner (Internal/external)
  (All examiners should possess at least master's qualification in relevant field of necessary and examiner shall be a teaching or non-teaching staff in a medical college)

i. Assistant professor and above with at least 3 years of working experience (Clinical or academic)
ii. Tutor/demonstrator with at least 5 years of working experience (Clinical or Academic)
iii. M. Sc. Clinical Embryology and above with at least 3 years of working experience (Clinical or Academic)

20. SCHEME OF EXAMINATION:

- The End of Semester Examination (EoSE) (End of Semester Examination or EOSE) for the Course shall be conducted semester wise at the end of every semester.
- There shall be four semester examinations of (semester I, II, III & IV) Course in two academic years.

- A candidate who has completed a regular course of study prescribed for semester I, II, III for one academic year shall be eligible to appear at semester IV examination.
- A candidate failing in any number of subjects at the 1st semester examination shall be allowed to appear in the failing subjects at the ensuing next semester examination.
- A candidate who has not passed even a single subject (theory & practical) in a semester I, II, III examination shall not be promoted to semester IV.
- A candidate who has passed one or more subject(s) of semester I, II, III examination will be promoted to semester IV course. After completion of regular course of study for one semester of M. Sc. Clinical Embryology course he/she shall be eligible for semester IV examination only after passing all the due papers of semester I, II, III i.e. a candidate shall be eligible to appear for

semester IV examination only when all the prescribed papers of semester I, II, III examination have been passed by him/her, even if he/she has attended all the theory and practical classes of semester IV.

- A candidate will be permitted to avail any number of attempts to pass all the papers of semester I, II, III & IV course but he/she will be required to complete the entire M. Sc. Clinical Embryology course within four years of his/her admission to M. Sc. Clinical Embryology course.

I. INTERNAL ASSESSMENTS (Continuous Assessment)-

- There shall be two Continuous Assessment (CA) Examinations in each semester in theory and practical at the college/Institute level. These shall carry 30% of total marks assigned to Theory and Practical Examination.
- Candidates failing to secure 40% marks in the aggregate of two Continuous Assessment (CA) tests in any subject shall not be allowed to appear in concerned subject (s) in the ensuing university semester examination.
- Two Continuous Assessment (CA) examinations will be held in each subject (Theory and Practical separately) before the commencement of the end of semester examination.
- In case the examination forms have already been filled and submitted in the university, the principal/director will detain such students from appearing in the End of Semester Examination (EoSE) of concerned subject(s). Mode and number of Continuous Assessment (CA) tests will be determined at the level of the principal/director of the college.
- A candidate may improve his/her Continuous Assessment (CA) marks whenever he/she reappears. In case the candidate does not opt for improvement or doesn't improve, his/her earlier Continuous Assessment (CA) marks would be conveyed by the principal/director to the university.

A. Theory Examination

Mode of examination: Tests can be taken by the concerned teacher as and when he /she requires, which includes written test, pro seminars, quizzes, assignments, group discussion etc.

B. Practical Examination

Continuous Assessment (CA) of the practical examination is based on the monthly report of the clinical posting obtained from the student, case discussions held from time to time and practical examination held in respective ward

Distribution of Practical Marks

Question type	**Marks Distribution**
Case Demonstration on Patient/ Model (1 Long Case & 1 Short Case)	10
Practical Record Book + Seminar Presentation	10
Viva	10
Total Marks	**30**

C. Oral Examination

Marks of the Continuous Assessment (CA) will be given on the basis of the oral exam conducted after the practical examination.

II. UNIVERSITY SEMESTER EXAMINATION: (End of Semester Examination) EoSE

At the end of every academic semester, after completion of the course of study there shall be University end Semester theory and practical examination. These shall carry 70% of total marks assigned to Theory Examination.

A. Theory:

Paper carrying 70 Marks:

Long answer (essay type) questions (2 out of 4) 2x15= 30
Short answer questions (5out of 8) 5x8= 40

Distribution of Theory Marks

Question Type	Total No of Questions	Questions Need to be attempted	Marks per Question	Total Marks
Long answer Essay Type questions	4	2	15	30
Short answer questions	8	5	8	40
Total Marks	**-**	**-**	**-**	**70**

B. Practical Examination including viva-voice:

- These shall be related to assessments, investigations and clinical embryology management. The End of Semester Examination (EoSE) shall carry 70% of total marks assigned to practical including viva-voce.
- Mode of examination: long case assessment, short case, written, Demonstration, Investigations & Viva
- Examiners: 02 (One internal and one external from the panel of Examiners from University)

Paper Carrying 70 marks
Distribution of Practical Marks

Question type	Marks Distribution
Case Demonstration on Patient/ Model (1 Long Case & 1 Short Case)	20
Practical Record Book + Seminar Presentation	20
Viva	30
Total Marks	**70**

C. DISSERTATION

Mode	Presentation and viva voice
Examiners	02 (One internal and one external from the panel of examiners from the university

21. RESULT:

CRITERIA FOR PASS:
In order to pass an examination a candidate must secure 50% marks in each theory subject (inclusive of Continuous Assessment (CA)) and practical (inclusive of Continuous Assessment (CA)) & Dissertation viva-voce separately.

22. GRACE MARKS:

No grace marks will be awarded in University Postgraduate examinations.

23. REVALUATION/SCRUTINY

Revaluation of answer books is not permissible. Scrutiny of marks in any number of papers/subjects shall be permissible as per University Rules.

24. SUPPLEMENTARY EXAMINATION:

There shall be a supplementary examination of IV semester only within two months of the declaration of the result of the main examination of IV Semester.

25. PROMOTION TO THE NEXT SEMESTER

1. A candidate who has passed or failed in one or more subjects shall be promoted to respective next semester.

2. A candidate will be allowed to appear for the IV semester examination only when the backlog of all papers (theory papers and practical) of I semester to III semester exams including elective papers (if any) is cleared.

26. AWARD OF DEGREE

The candidate shall be awarded a degree only when he/she has earned a total of ---------- credit of the program on successful completion of all the courses and the submission and approval of the dissertation

Table 1: Grades and Grade Points:

Letter Grade	Grade Point	Percentage of Marks
O (Outstanding)	10	100%
A+ (Excellent)	9	90-99.99%
A (Very Good)	8	80-89.99%
B+ (Good)	7	70-79.99%
B (Above Average)	6	60-69.99%
C (Average)	5	50-59.99%
F (Fail)/ RA (Reappear)	0	0 Less than 50%
Ab (Absent)	0	0 Absent

Grades Qualifying for Pass:

Theory and Practical Examination

1. **Minimum 5 Grade** in the End of Semester Examination (EoSE) and **5 Grade** in Continuous Assessment (CA) evaluated by the department are required to pass **who fails to obtain 5 Grade shall be declared failed.**

2. A student obtaining **Grade F** shall be considered **failed** and will be required to reappear in the examination.

3. Letter Grade **Ab (Absent)** will be showing the absent of the candidate in examination and will berequired to reappear in the examination.

Credit Weightage Distribution (%)

Item	**Credit Weight (%)**
Continuous Assessment (CA)	
Class participation/presentation, study records	10.00%
Assignment, quizzes and summer training report	10.00%
Departmental Postings, case studies, project reports	10.00%
End of Semester Exam (EoSE)	
70.00%	
Total	**100%**

27. AUTHORITY TO ISSUE TRANSCRIPT;

The Controller of Examination of the University shall be the authority for issuing transcript after receivingthe described fee from the candidate.

28. WORKING HOURS/DAYS

Duration	**2 Years (4 Semesters)**
Working Days	6 Days in a Week
Working Hours	42 Hours in a Week

29. TYPES OF COURSES IN M. Sc. CLINICAL EMBRYOLOGY: -

1. **Core Course-**course designed under this category aim to cover the basics that a student is expected to imbibe in the discipline of M.Sc. Clinical Embryology A course, which should compulsorily be studied by a candidate as a core requirement is termed as a Core course.

2. **Elective Course-**it is a course which can be chosen from a pool of courses it is specific or specialized or advanced or supportive to the discipline of M.Sc. Clinical Embryology Students have to **CHOOSE ANY ONE/TWO COURSE IN EACH SEMESTER** from

the pool of course given to that semester.

3. **Ability Enhancement Courses (AEC) /Practical:** The Ability Enhancement (AE) Courses or practical are the courses based upon the content that leads to Knowledge enhancement. They are skill-based and are aimed at providing hands-on-training, competencies, skills, etc.

30. Computation of SGPA and CGPA

The UGC recommends the following procedure to compute the Semester Grade Point average (SGPA) and Cumulative Grade Point Average (CGPA):

i. The SGPA is the ratio of sum of the product of the number of credits with the grade points scored by a student in all the courses taken by a student and the sum of the number of credits of all the courses undergone by a student, i.e

SGPA $(Si) = \sum(C_i \times G_i) / \sum C_i$

where C_i is the number of credits of the ith course and G_i is the grade point scored by the student in the ith course.

ii. The CGPA is also calculated in the same manner taking into account all the courses undergone by a student over all the semesters of a program, i.e.

CGPA = $\sum(Ci \times Si) / \sum Ci$

where Si is the SGPA of the semester and Ci is the total number of credits in that semester.

iii. The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts.

Illustration of Computation of SGPA and CGPA and Format for Transcripts

i. Computation of SGPA and CGPA

Illustration for **SGPA**

Course	**Credit**	**Grade letter**	**Grade point**	**Credit Point** (Credit x Grade
Course 1	5	A	8	5X8=40
Course 2	5	B+	7	7X5=35
Course 3	4	B	6	6X4=24
Course 4	5	O	10	10X5=50
Course 5	8	C	5	8X5=40
Course 6	2	B	6	2X6=12
	29			201

Thus, **SGPA =201/29 = 6.93**

Illustration for **CGPA**

Semester 1	**Semester 2**	**Semester 3**	**Semester 4**
Credit: 29 SGPA: 6.93	Credit: 2 SGPA:6.93	Credit: 29 SGPA: 6.93	Credit: 29 SGPA: 6.93

Thus, CGPA = $\frac{29 \times 6.93 + 29 \times 6.93 + 29 \times 6.93 + 29 \times 6.93}{116} = 6.93$

31. VACATION:

The Principal of the College may declare vacation in an academic year to the students as per the academic calendar.

32. CLINICAL TRAINING:

The candidate has to undergo the compulsory clinical training over the span of four semesters from the recognized institution/hospital

33. LOG BOOK/WORK DIARY:

- Every candidate shall maintain a work diary and record his/her participation in the training programs conducted by the department such as clinical training, case studies, general reviews, seminars, etc.
- Special mention maybe made of the presentations by the candidate as well as details of the nickel or laboratory procedures, if any conducted by the candidate. The work diary shall be scrutinized and certified by the head of the department and head of the institution and presented in the End of Semester Examination (EoSE).

Recommended Teaching Hours of Instruction for each subject

M. Sc Clinical Embryology (I- Semester) Examination
Core Course

Course Code	Subject	Theory	Practical	Total	Hours/ Week	Credit
MSC0423101	Paper - I: Clinical Biochemistry, Biophysics	60	-	60	6	4
MSC0423102	Paper - II: Basics of Assisted Reproduction	60	-	60	6	4
MSC0423103	Paper - III: Clinical Andrology	60	-	60	6	4
MSC0423104	Paper - IV: Microbiology	60	-	60	6	4
MSC0423105	Practical/Clinical posting	-	330	330	12	11
	Total	**240**	**330**	**570**	**36**	**27**

- **Practical (Based on Viva, Case presentation, seminar of clinical postings)**

Elective Course (Elect any one)

Elective Code	Subject	Theory	Practical	Total	Hours/ Week	Credit
MSC0423106	Clinical Nutrition	45	-	45	02	3
MSC0423107	Disaster Management	45	-	45	02	
MSC0423108	Yoga therapy	45	-	45	02	
	Total	**45**		**45**		**3**

M. Sc. Clinical Embryology (II- Semester) Examination Core Course

Course Code	Subject	Theory	Practical	Total	Hours/ Week	Credit
MSC0423201	Paper - I: Embryo Culture System	60	-	60	6	4
MSC0423202	Paper - II: Clinical embryology in ART	60	-	60	6	4
MSC0423203	Paper - III: Quality Control in IVF lab	60	-	60	6	4
MSC0423204	Paper – IV: Advanced ART	60	-	60	6	4
MSC0423205	Practical/Clinical posting	-	330	330	12	11
	Total	**240**	**330**	**570**	**36**	**27**

- **Practical (Based on Viva, Case presentation, seminar of clinical postings)**

Elective Course (Elect any one)

Elective Code	Subject	Theory	Practical	Total	Hours/ Week	Credit
MSC0423206	Medical ethics and law in public health	45	-	45	02	3
MSC0423207	Medical record science	45	-	45	02	
MSC0423208	Basic Computers	45	-	45	02	
	Total	**45**		**45**		**3**

M. Sc. Clinical Embryology (III- Semester) Examination Core Course

Course Code	Subject	Theory	Practical	Total	Hours/ Week	Credit
MSC0423301	Paper - I: Micromanipulation in ART	60	-	60	6	4
MSC0423302	Paper - II: ART Techniques	60	-	60	6	4
MSC0423303	Paper - III: Research methodology	60	-	60	6	4
MSC0423304	Practical /Clinical posting		360	360	6	12
	Total	**180**	**360**	**540**	**24**	**24**

Practical (Based on Viva, Case presentation, Data collection, seminar of clinical postings)

Elective Course (Elect any two)

Course Code	Subject	Theory	Practical	Total	Hours/ Week	Credit
MSC0423305	First aid and emergency help	45	-	45	02	3+3=6
MSC0423306	Medical Terminology	45	-	45	02	
MSC0423307	Clinical Psychology	45	-	45	02	
	Total					6

M. Sc. Clinical Embryology (IV- Semester) Examination
Core Course

Elective Code	Subject	Theory	Practical	Total	Hours/ Week	Credit
MSC0423401	Paper - I: Ethics & regulation in ART	60	-	60	6	4
MSC0423402	Paper - II: Cryobiology and Preimplantation Genetic test (PGT)	60	-	60	6	4
MSC0423403	Paper - III: Recent advances in ART	60	-	60	6	4
MSC0423404	Paper - IV: Practical/ Clinical posting		360	360	6	12
	Total	**180**	**360**	**540**	**24**	**24**

- **Practical (Based on Viva, Case presentation, Data collection, seminar of clinical postings)**

Elective Course (Elect any two)

Elective Code	Subject	Theory	Practical	Total	Hours/ Week	Credit
MSC0423405	Basic life support	45	-	45	02	3+3=6
MSC0423406	Scientific writing	45	-	45	02	
MSC0423407	healthcare	45	-	45	02	
	Total					6

Marks Distribution

M. Sc. Clinical Embryology (I- Semester) Examination - Core Course

Theory Core Course					
Paper Code	**Subject**	**Credit**	**End of Semester Exam**	**Continuous Assessment**	**Total Marks**
MSC0423101	Paper-I: Clinical Biochemistry, Biophysics	4	70	30	100
MSC0423102	Paper-II: Basics of Assisted Reproduction	4	70	30	100
MSC0423103	Paper-III: Clinical Andrology	4	70	30	100
MSC0423104	Paper-IV: Microbiology	4	70	30	100
MSC0423105	Paper-V Practical/Clinical posting	11	140	60	200
Total		**27**	**420**	**180**	**600**
Elective Course (Elect any one)					
Paper Code	**Subject**	**Credit**	**End of Semester Exam**	**Continuous Assessment**	**Total Marks**
MSC0423106	Clinical Nutrition	3	70	30	100
MSC0423107	Disaster Management		70	30	100
MSC0423108	Yoga therapy		70	30	100
Total		3	**70**	**30**	**100**

M. Sc. Clinical Embryology (II- Semester) Examination - Core Course

Theory Core Course					
Paper Code	**Subject**	**Credit**	**End of Semester Exam**	**Continuous Assessment**	**Total Marks**
MSC0423201	Paper - I: Embryo Culture System	4	70	30	100
MSC0423202	Paper - II: Clinical embryology in ART	4	70	30	100
MSC0423203	Paper - III: Quality Control in IVF lab	4	70	30	100
MSC0423204	Paper – IV: Advanced ART	4	70	30	100
MSC0423205	Paper-V-Practical/ Clinical posting	11	140	60	200
Total		**27**	**420**	**180**	**600**
Elective Course (Elect any one)					
Paper Code	**Subject**	**Credit**	**End of Semester Exam**	**Continuous Assessment**	**Total Marks**
MSC0423206	Medical ethics & law in public health	3	70	30	100
MSC0423207	Medical record science		70	30	100
MSC0423208	Basic Computers		70	30	100
Total		3	**70**	**30**	**100**

M. Sc. Clinical Embryology (III- Semester) Examination - Core Course

Theory Core Course					
Paper Code	**Subject**	**Credit**	**End of Semester Exam**	**Continuous Assessment**	**Total Marks**
MSC0423301	Paper - I: Micromanipulation in ART	4	70	30	100
MSC0423302	Paper - II: ART Techniques	4	70	30	100
MSC0423303	Paper - III: Research methodology	4	70	30	100
MSC0423304	Paper-IV-Practical	12	140	60	200
Total		24	250	150	**500**
Elective Course (Elect any two)					
Paper Code	**Subject**	**Credit**	**End of Semester Exam**	**Continuous Assessment**	**Total Marks**
MSC0423305	First aid and emergency help	3+3=6	70	30	100
MSC0423306	Medical Terminology		70	30	100
MSC0423307	Clinical Psychology		70	30	100
Total		6	**70**	**30**	**100+100=200**

M. Sc. Clinical Embryology (IV- Semester) Examination - Core Course

Theory Core Course					
Paper Code	**Subject**	**Credit**	**End of Semester Exam**	**Continuous Assessment**	**Total Marks**
MSC0423401	Paper - I: Ethics & regulation in ART	4	70	30	100
MSC0423402	Paper - II: Cryobiology and Preimplantation Genetic test (PGT)	4	70	30	100
MSC0423403	Paper - III: Recent advances in ART	4	70	30	100
MSC0423404	Paper – IV Practical/Clinical posting	12	140	60	200
	Paper – V Thesis Viva-Voice				200
Total		24	**250**	**150**	**700**
Elective Course (Elect any Two)					
Paper Code	**Subject**	**Credit**	**End of Semester Exam**	**Continuous Assessment**	**Total Marks**
MSC0423405	Basic life support	3+3=6	70	30	100
MSC0423406	Scientific writing		70	30	100
MSC0423407	healthcare		70	30	100
Total		6	**70**	**30**	**100+100=200**

M.Sc Clinical Embryology

Syllabus

1st year

Semester - I

Paper – I: Clinical Biochemistry, Biophysics

Paper – II: Basics of Assisted Reproduction

Paper - III: Clinical Andrology

Paper - IV: Microbiology

Paper - I: Clinical Biochemistry, Biophysics

UNIT- I Clinical Biochemistry

1	General biochemistry – chemistry of carbohydrates, lipids, proteins
2	Nucleic acid – nucleotides, structure of DNA & RNA
3	Vitamins (general, classification) and Minerals
4	Water & electrolyte balance and body fluids
5	Acid base balance and pH
6	Free radicals and antioxidants
7	Detoxification and biotransformation of xenobiotics
8	Nutrition and environmental pollution
9	Bioenergetics
10	Over view of Metabolism – metabolism of carbohydrates, lipids, proteins
11	Enzymology
12	Hormones
13	Hemoglobin and plasma proteins

14	Immunoglobulins
15	Lipoproteins
16	Molecular biology – nucleotides, DNA, transcription and translation, inheritance, mutations, cell cycle and control of gene expression, r-DNA technology and Gene Therapy, molecular diagnostic
17	Structures of atoms, molecules and bonds, chemical foundations of biology. Covalent and non-covalent interactions, Vander —Wall forces, electrostatic and Hydrogen bonding and hydrophobic interactions.
18	Advance biochemistry: mechanisms of action of hormones, immunochemistry, biochemistry of AIDS and cancer, biochemistry Aging, Clinical laboratory practices

UNIT- II Biophysical Techniques

- Introduction to Biophysics: Scope of Biophysics, chemical foundations of Biophysics.
- Microscopic techniques: Principle and application of light, Phase contrast, Dark field, Fluorescence microscopy, Scanning and Transmission Electron Microscopy.
- Centrifugation – Basic Principle of Centrifugation, Instrumentation of Ultracentrifuge (Preparative, Analytical), Factors affecting Sedimentation velocity, Standard Sedimentation Coefficient, Centrifugation of associating systems, Rate-Zonal centrifugation, sedimentation equilibrium Centrifugation.
- Electrophoresis and Blotting Techniques, Principle and application of PAGE, SDS- PAGE, and Agarose gel, Southern, Northern and Western Blotting techniques.

Paper - II: Basics of Assisted Reproduction

UNIT– I: General Physiology (Department of Physiology)

- General physiology
- Immunology of pregnancy
- Endocrine physiology & puberty
- Reproductive physiology & reproductive ageing

UNIT–II: Reproductive Physiology

- Female reproductive system
- Male reproductive system
- Oogenesis & folliculogenesis
- Regulation of menstrual cycle
- Spermatogenesis
- Ultrastructure of human gametes fertilization & embryos in assisted reproduction
- Endometrial receptivity
- Implantation

UNIT– III: Endocrinology

- Hyperprolactinemia & thyroid disorders
- Hirsutism
- Primary & secondary amenorrhea
- Luteal phase defect
- Anovulatory infertility
-

Paper – III: Clinical Andrology

UNIT - I

- Andrology: Detailed Composition of seminal plasma.
- Setting up of an IUI Laboratory.
- Equipment and safety: Basic supplies needed in and andrology laboratory.
- Potential biohazards in andrology laboratory, safety procedure.
- Safety Procedure of laboratory Equipments, Precaution while handling liquid nitrogen
- Brief Account of equipments: laminar airflow, various types of microscope, stereo zoom microscope, inverted microscope, Incubator used for IUI /dry bath, Centrifuge unit, Refrigerator, Makler chamber, Neuber chamber, sperm concentration
- Quality Control in the andrology laboratory.
- Assessment of the acrosome reaction.

- Assessment of nuclear decondensation of sperm and other functional test.
- Measurement of reactive oxygen species generated by leukocytes and sperm suspension.
- Preparation of retrograde ejaculation sample.
- Antisperm antibody test.
- Biomedical waste Management.

Paper – IV: Microbiology

UNIT - I

- Introduction & history of microbiology
- Microscopy
- Bacteria
- Growth and maintenance of microbes
- Identification of colony
- Sterilization and disinfection
- Culture media
- Staining methods
- Collection and transportation of specimen
- Disposal of laboratory / hospital waste
- Hand hygiene
- Nosocomial infection / hospital acquired infections (HAI)
- Identification of contaminant & various growth in culture media
- Bacteria genetics
- Microbiology pathogenicity
- Antigen antibody reaction

PRACTICALS

Clinical Andrology

- Handling of different types of Microscopes.
- Semen Examination; Introduction, sample collection methods, sample collection for

diagnostic or research purposes.

- Sterile collection of semen for assisted reproduction and microbiological analysis.
- Sample collection at home, collection of semen by condom
- Safe handling of specimens.
- Initial examination: Liquefaction, semen viscosity, semen appearance, semen volume and pH.
- Ultrastructure of spermatozoa.
- Semen analysis as per WHO criteria.
- Sperm preparation techniques: Introduction, Choice of method, Efficiency of sperm separation from seminal plasma and infectious organism, simple washing procedure, Direct swim-up, Diffuse density gradient.
- Preparation of HIV/HBsAg infected semen sample.
- Semen examination with Kruger's criteria.
- Assessment of sperm chromatin: aniline blue test alcidine orange test
- Initial Microscopic examination: Thorough mixing of the sample, making wet preparation, Cellular elements other than spermatozoa
- Sperm motility: categories of sperm movements, preparation and assessment of sperm motility.
- Sperm vitality test: using eosin- nigrosin, eosin alone and hypo-osmotic swelling test.
- Sperm Concentration estimation: Types of counting chambers.
- Sperm Morphology assessment: Preparation of sperm smear, assessment of sperm. morphology, staining procedures for sperm morphology.
- Assessment of specific sperm defects.
- Assessment of sperm leukocytes in semen
- Assessment of immature germ cells in semen
- Biomedical assay for accessory sex organ function: measurement of fructose and zinc in seminal plasma.
- Semen cryopreservation protocol: standard procedure, modified freezing protocols for poor semen samples, labeling of straws

and record.

- Sperm survival test.
- IUI preparation

Biochemistry

- Introduction to Clinical Biochemistry Laboratory
- Diffusion, Adsorption & Surface Tension
- Buffer & pH
- Urine Analysis
- Principles of Colorimetry
- Blood Sugar
- Urinary Proteins
- pH Meter
- Paper Chromatography
- Paper Electrophoresis
- Slide Gel Electrophoresis
- Serum Electrolytes
- HCG by ELISA
- DNA- Isolation & Quantification

Microbiology

- Operation of microscope and handling of equipments and instruments required for routine lab work
- Preparation of media
- Identification of culture media & its uses
- Demonstration of autoclave & sterilization of media
- Demonstration of glassware used in microbiology
- Preparation of smear
- Staining: gram &ziehl – nelson staining
- Identification of instruments
- Identification of common microbes & fungus
- Hospital acquired microbiology infection in culture media
- Preparation of swabs / sterile tubes & bottles

ELECTIVE COURSES

Paper-VI CLINICAL NUTRITION

SOURCES OF FOOD

(1) Nutritive value of foods,
(2) Food Sources from which key vitamins are derived

DIGESTIVE SYSTEM

(1) Digestion and absorption –Digestion at each stage of the digestive system
(2) Dietary guidelines- Factors affecting food requirements. Planning and serving of family meals. Meals for all ages and occupations.

COMPOSITION OF FOOD

Composition and value of the main foods in the diet - Milk, meat, fish, cheese, eggs, margarine and butter cereals (wheat, rice, maize, millets, oats) fruits and vegetables

PROCESSING OF FOOD

(1) Cooking of food -Transfer of heat by conduction, convection and radiation.
(2) Principles involved in the different methods of cooking – boiling, stewing, grilling, baking, roasting, frying, steaming, pressure cooking, cooking in a microwave oven.

FOOD PREPARATION

(1) Convenience foods- Foods partly or totally prepared by a food manufacturer – dehydrated, tinned, frozen, ready to eat. Intelligent use of these foods.
(2) Advantages and disadvantages

Paper-VII – DISASTER MANAGEMENT

Introduction to Disasters

A. Concepts, and definitions (Disaster, Hazard, Vulnerability, Resilience, Risks)
B. Disasters
C. Classification Causes, Impacts (including social, economic, political, environmental, health, psycho social, etc.)
D. Different impacts – in terms of caste, class, gender, age, location, disability Global trends in disasters. urban disasters, pandemics, complex emergencies, Climate Change

Approaches to Disaster Risk reduction

Disaster cycle-its analysis, Phases, Culture of safety, prevention, mitigation and preparedness community based DRR, Structural – non structural ensures, roles and responsibilities of-community, Panchayati Raj Institutions/Urban Local Bodies (PRIs/ULBs), states, Centre, and other stake – holders.

Inter – relationship between Disasters and Development
Factors affecting Vulnerabilities, different impacts, impact of Development projects such as dams, embankments, changes in Land-use etc. Climate Change Adaptation. Relevance of indigenous knowledge, appropriate technology and local resources

Disaster Risk Management in India
Hazard and Vulnerability profile of India Components of Disaster Relief: Water, Food, Sanitation, Shelter, Health, Waste Management institutional Arrangements (Mitigation, Response and Preparedness, DM Act and Policy, Other related policies, plans, programmed and legislation).

Project Work: (Field Work, Case Studies)
The project /fieldwork is meant for students to understand vulnerabilities and to work on reducing disaster risks and to build a culture of safety. Projects must be conceived creatively based on the geographic location and hazard profile of the region where the college is located

Paper-VIII - YOGA THERAPY

Introduction to Yoga

(a) Introduction to Yoga
(b) Principles of Yoga

Patanjali

(a) History of Yoga
(b) Yoga in Ancient and Modern India

Folds of Yoga

(1) Types & Forms of Yoga
(2) Asanas & its physiological effects

Yogic Science

(a) Scientific background of Yoga
(b) Yoga in modern world

Advantages of Yoga

(1) Physiological Effects of Yoga

Therapeutic Uses of YogaUnit 1: Multidisciplinary nature of environmental studies a. Definition, scope and importance b. Need for public awareness.

M. Sc Clinical Embryology

Syllabus

1st year

Semester – II

Paper - I: Embryo Culture System

Paper - II: Clinical embryology in ART

Paper - III: Quality Control in IVF Lab

Paper – IV: Advanced ART

Paper - I: Embryo Culture System

UNIT - I

- Historical background of gametes and embryo culture.
- Composition of culture medias.
- Salts and osmolarity, energy source and metabolism.
- amino acids and cellular homeostasis.
- Macromolecules and embryo growth.
- Antioxidant chelator and cellular function.
- pH and buffers, Growth factors.

UNIT - II

- Culture system: Single step and sequential.
- Embryo co-culture.
- Low-Oxygen Culture.
- Culture system: Embryo density.
- Culture system: air quality.
- Culture system mineral oil overlay.
- Embryo culture and epigenetics.
- Embryo culture media effect on offsprings
- Spent culture media
- Infection in Embryo culture Media
- Micro RNAs in cell culture media

UNIT – III

- Biomedical background of Bourn Hall Clinic.
- The Bourn Hall story.
- History of in vitro fertilization
- Basics of In vitro fertilization
- Analysis of fertilization
- Oocyte grading
- Oocyte retrieval and selection
- Ultrastructure of oocyte

Paper - II: Clinical embryology in ART

UNIT – I

- Human early embryology development.
- Fertilization.
- Early Cleavage
- Blastocyst.
- Implantation.
- Gastrulation and Placentation.

Topic	
Introduction	Introduction to embryology
	Cell division – mitosis, meiosis, cell cycle
	Gametogenesis – spermatogenesis, Oogenesis and ovarian cycle
	Menstrual cycle
1st week	Fertilization
	1st week of development with implantation
2nd week	2nd week of development – amniotic cavity, yolk sac, Bilaminar germ disc
3rd week	Gastrulation, Primitive streak and three germ layers
	Notochord
	Neural tube development
4th week	Fate of germ layers and derivatives of germ layers
	Folding of embryo
Trophoblast and twinning	Development of trophoblast and its derivatives
	Development of placenta
	Twinning
CVS	Development of Cardiovascular system
	Fetal circulation
Urinary system	Development of Urinary system
MRS	Development of Male reproductive system
FRS	Development of Female reproductive system Female
Teratogenesis	Teratogenesis

UNIT - II

- Quality control, quality assurance and trouble shooting in IVF lab.
- Equipments to control air quality in Embryology laboratory.
- Sterilization methods.
- Good laboratory practice(GLP)
- Culture system: Open and close culture advantages and disadvantages.
- Intracytoplasmic Morphologically selected Sperm Injection (IMSI).
- Physiological selection of Sperm and intra Cytoplasmic sperm injection(PICSI).
- Spindle view (Polo-scope)

Paper - III: Quality Control in IVF Lab

UNIT: I

- Quality and quality management in ART laboratory.
- Regulation, licensing and accreditation.
- Risk and risk management in ART laboratory.
- Quality and risk management tool.
- Risk education/risk minimization.
- Developing risk management program.
- How are we doing benchmarking.
- Parameters to run a successful laboratory.
- Record keeping.
- SOP.
- Lab maintenance protocols.
- Maintenance and calibration of Lab instruments.
- Quality improvement techniques.
- Trouble shooting in IVF Lab.
- KPI

Paper - IV: Advanced ART

UNIT– I: Male factor infertility

- Etiology & pathophysiology of male infertility

- Clinical & endocrinological evaluation of infertile male
- Male genital tract infection
- Sexual dysfunction in male infertility
- Medical management of male infertility
- Evaluation & treatment of azoospermia
- Sperm retrieval techniques

UNIT– II: Female factor infertility

- Evaluation of infertile female patients
- Uterine and cervical factors in infertility
- The role of the uterus in reproduction
- Tubal factor of infertility and assisted reproduction
- Evaluation of fallopian tube infertility
- Infection and infertility
- Genital tuberculosis and infertility
- Assessment of ovarian reserve
- Endometriosis in infertility
- Interventional and surgical management of fibroids with infertility
- Obesity in infertility practice
- Unexplained infertility
- Fertility preservation in female patients

UNIT–III: Ovulation induction

- Drugs for controlled ovarian stimulation
- Superovulation strategies in assisted conception
- Agonists in reproductive medicine
- GnRH antagonists
- Monitoring of ovulation induction
- Ovulation triggers and the role of gonadotropin – releasing hormone agonist trigger in assisted reproduction
- Individualized ovarian stimulation
- Mild approaches in assisted reproduction

- Role of LH in ovarian stimulation
- Progesterone in ovarian stimulation
- Understanding the prognostic factor and optimizing in vitro fertilization outcome
- Luteal phase support

PRACTICAL

Embryo Culture System

- Operation of microscope and handling of equipments and instruments required for routine lab work
- Preparation of media
- Identification of culture media &its uses
- Demonstration of autoclave & sterilization of media
- Demonstration of glassware
- Preparation of smear
- Identification of instruments
- Identification of common microbes & fungus
- Hospital acquired microbiology infection in culture media
- Preparation of swabs / sterile tubes & bottles
- IVF witnessing.
- Dish preparation for IVF: close and open culture system.
- Sperm concentration calculation for IVF.
- Insemination of IVF droplet with sperm and co-incubation.
- Follicular fluid screening.
- Identification of oocytes, washing and pre-incubation.
- Oocyte denudation.
- Assessment of Oocyte quality, IVF and fertilization check.
- Pronucleus grading
- Fragmentation and grading the embryo
- Setting up of ART Unit with various facilities and a detailed Account on embryology laboratory and equipments.
- Tissue culture techniques.
- Preparation for follicular fluid aspiration, culture medium disposables.

- Insemination of processed sample, Conventional IVF.

Clinical embryology in ART

- Preparation for IVF procedure: Going through patient file to know about type of stimulation protocol, Gonadotrophins used.
- Culture Medium in ART: Media preparation for ART, detailed account of culture medium, sperm survival test, media preparation for intrauterine insemination (IUI) and IVF-ET.
    - Method of fertilization, number of good quality oocytes, fertilization and number of embryos, and quality of embryos available.
    - Grading of oocyte
    - Grading of embryos.
- Preparation for the IVF procedure: Medium aliquoting into sterile tube, Dish preparation for IVF and ICSI

Advanced ART

- Observation of OPD procedures-
- Hysterosalpingography (HSG)
- Saline infusion sonography (SIS)
- Pelvic scan
- Techniques of pap smear
- Techniques of cryocauterization
- Techniques of endometrial biopsy
- Techniques of PRP instillation
- Observation of hystrolaparoscopy procedure
- Viva Voca

ELECTIVE COURSES

Medical ethics & law in public health

UNIT-I

Medical ethics – Definition – Goal – Scope

Introduction to Code of conduct.

UNIT-II

Basic principles of medical ethics – Confidentiality

Malpractice and negligence – Rational and irrational drug therapy

UNIT-III

Autonomy and informed consent – Right of patients

Care of the terminally ill – Euthanasia

Organ transplantation

UNIT-IV

Medico legal aspects of medical records _ Medico legal case and type – Records and documents related to MLC – ownership of medical records – Confidentiality Privilege communication – Release of medical information – Unauthorized disclosure – retention of medical records – other various aspects.

Professional Indemnity insurance policy.

Development of standardized protocol to avoid near miss or sentinel events

Obtaining and informed consent.

Medical record science

A. Medical Record - History, Introduction and Definition

B. Medical Record its values, purposes and uses

C. Medical Record contents and components

D. Indexes and registers

E. Medical Record department and its function

F. Numbering and filing of medical records

G. Birth and Death registration

H. Computer – Scanning of medical records

I. Electronic Medical Record

J. Medical ethics and legal aspects of medical record

K. Legal aspects of hospital, patient and doctors

L. Medical Record & Law

BASIC COMPUTERS

Introduction to computer:

Introduction, characteristics of computer, block diagram of computer, generations of computer, computer languages.

Input output devices:

Input devices(keyboard, point and draw devices, data scanning devices, digitizer, electronic card reader, voice recognition devices, vision-input devices),output devices(monitors, pointers, plotters, screen image projector, voice response systems).

Processor and memory:

the Central Processing Unit (CPU), main memory.

Storage Devices:

Sequential and direct access devices, magnetic tape, magnetic disk, optical disk, mass storage devices.

Introduction of windows:

History, features, desktop, taskbar, icons on the desktop, operation with folder, creating shortcuts, operation with windows (opening, closing, moving, resizing, minimizing and maximizing, etc.).

Introduction to MS-Word:

Introduction, components of a word window, creating, opening and inserting files, editing a document file, page setting and formatting the text, saving the document, spell checking, printing the document file, creating and editing of table, mail merge.

Introduction, about worksheet, entering information, saving workbooks and formatting, printing the worksheet, creating graphs.

Introduction to power-point:

Introduction, creating and manipulating presentation, views, formatting and enhancing text, slide with graphs.

Introduction of Operating System:

Introduction, operating system concepts, types of operating system.

Computer networks:

Introduction, types of network (LAN, MAN, WAN, Internet, Intranet), network topologies (star, ring, bus, mesh, tree, hybrid), components of network.

Internet and its Applications:

Definition, brief history, basic services (E-Mail, File Transfer Protocol, telnet, the World Wide Web (WWW)), www browsers, use of the internet. Application of Computers in clinical settings.

M. Sc Clinical Embryology

Syllabus

2nd year

Semester – III

Paper - I: Micromanipulation in ART

Paper - II: ART Techniques

Paper - III: Research Methodology

Paper - I: Micromanipulation In ART

UNIT - I

- History of micromanipulation.
- Various kinds of micromanipulation unit.
- Detailed Account of all micro manipulation unit.
- Micro tool preparation equipments.
- Micro tool alignment.
- Brief Account on Poly Vinyl Pyrrolidone (PVP) and hyaluronidase.
- Indication & contraindication for ICSI (physics).
- Risk of anomalies in ICSI.
- Identification of normal & abnormal sperms.
- Patients counseling.

UNIT – II

- Evaluation of Embryo Quality : Analysis and physiology
- Evaluation of Embryo Quality : Time lapse imaging to assess embryo Morphokinesis
- Evaluation of Embryo Quality : Proteomic strategies
- Blastocyst Culture and transfer
- Advantages and disadvantages of Embryo transfer on day 2, day 3 and blastocyst stage
- Embryo Grading
- Artificial oocyte activation
- Sperm Retrieval techniques

Paper - II: ART Techniques

UNIT–I: Artificial insemination

- Intrauterine insemination
- Optimizing success in intrauterine insemination

UNIT–II: Assisted reproductive technologies

- Anesthesia and in vitro fertilization
- Oocyte retrieval
- Embryo transfer

UNIT–III: Third party reproduction

- Oocyte and embryo donation
- Oocyte sharing program
- Surrogacy
- Challenges faced in setting up of a surrogate house within the ICMR guidelines
- Adoption

Paper – III: Research methodology

- Introduction to health research
- Descriptive study
- Analytical study
- Experimental study trials
- Clinical trials / clinical research
- Randomized control trials
- Review of literature
- Formulating research question, hypothesis and objectives – I
- Formulating research question, hypothesis and objectives – II
- Measurement of disease frequency
- Validity of studies
- Qualitative research method

- Measurement of study variables
- Sampling methods
- Calculating sample size and power
- Selection of study population / study plan
- Test of significance
- Writing discussion
- Bibliography
- Protocol for research studies
- Publication ethics
- Informed consent and procedure

PRACTICAL

Micromanipulation in ART

- Preparation of standard operation protocol for all procedures in the IVF laboratory.
- Intra Cytoplasmic Sperm Injection (lCSl) dish preparation.
- Oocyte denudation.
- Oocyte assessment.
- Sperm immobilization with various techniques.
- Intra Cytoplasmic sperm injection
- Short term insemination and long-term insemination, fertilization check, observation of fertilized Oocyte till Blastocyst development.
- Cleavage stage embryo grading.
- Blastocyst grading.
- Blastocyst culture advantages and disadvantages.
- Preparation of testicular and epididymal spermatozoa (MESA, PESA, TESE, TESA)
- Oocyte markers of competence. Nuclear maturity, Cytoplasmic maturity, Polar bodies, Zona Pellucida, Cumulus cells.
- Advanced types of sperm preparation for ART.

ART Techniques

- Observation of Intrauterine insemination
- Observation of oocyte retrieval
- Observation of embryo transfer technique
- IVF OT setup
- Instruments used in IVF OT
- Viva Voca

Research Methodology

- Critical analysis of a literature paper

ELECTIVE COURSES

First aid and emergency help

A. Basic first aid and techniques

B. Respiratory system and breathing

C. Heart, blood circulation and shock

D. Wounds and injuries

E. Injuires to bones, joints and muscles

F. Nervous system and unconsciousness

G. Skin, burns, heat exhaustion, fever and hypothermia

H. Poisoning

I. Bites and stings

J. Senses, foreign bodies in eye, ear, nose or skin and swallowed foreign objects

Medical Terminology

UNIT I

Introduction to medical terminology - Word formation & syntax - Greek alphabet - Greek & Latin prepositional & adverbial prefixes - Singular & plural endings

UNIT II

Human Anatomy and Physiology – Structure & functions of following systems:

a. DigestiveSystem

b. Respiratorysystem

c. Circulatorysystem

d. CentralNervous system

UNIT III

HumanAnatomyand Physiology– Structure &functions of followingsystems:

a. MuscularSkeletalsystem

b. Reproductivesystem

c. Excretorysystem

UNIT IV

Commonly used prefixes in medical terminology - Commonly used suffixes in medical terminology - Commonly used root words in medical terminology.

Common Latin term used in prescription writing - Study of standard abbreviations- Commonly used medical terms to define different parts of the body

UNIT V

Medical terminology used by Cardiologist - Medical terminology used by Neurologist Medical terminology used by Nephrologist - Medical terminology used by Gastroenterologist - Medical terminology used by ENT surgeon - Medical terminology used by Dentist - Medical terminology used by Orthopedic Ian - Medical terminology used by Gynecologist - Medical terminology used by Oncologist - Medical terminology used by Dermatologist - Medical terminology used by Endocrinologist

Clinical Psychology

UNIT I

Introduction: Definition of Psychology; Domains of behaviour; Nature; Goals of Psychology; History of Psychology: Different schools of Psychology; Branches of Psychology; Application of Psychology; Role of a psychologist in society

UNIT II

Sensation and Perception: Sensation, Nature of perception, Attention and Perception, Perceptual organization.

UNIT III

Learning, Remembering and Thinking: Concept of learning: Definition, Nature of Learning, Verbal learning: Nature, Materials and Experimental methods, Procedures of learning; Conditioning: Classical conditioning and Operant conditioning; Trial and Error, Insightful Learning, Learning Curve; Basic principles of learning, Acquisition delayed conditioning, trace conditioning, Shaping, role of Reinforcement, schedule of reinforcement.

UNIT IV

Remembering and Forgetting: Nature of Remembering: Retention and Forgetting: STM and LTM, Basic nature, Methods of measuring Short Term Memory and Long Term Memory; Retention, Forgetting and factors involved in forgetting, Factors of forgetting- Level of original learning, interpolated activity, testing situation, Experimental procedure of Retroactive Inhibition. Thinking: Nature of Thinking, Problem Solving: Methods and Materials.

UNIT V

Transfer of Learning: Transfer of learning: Nature & Types of transfer, Design of Transfer Experiment.

UNIT VI

Emotion:Definition; Nature; Types; Physiological responses-Arousal and emotional intensity; Theories of Emotion – James Lange Theory, Cannon Bard Theory and Schacter Singer Theory, Richard Lazarus' theory; Communication of Emotion – Emotional expression ,Characteristics, Innate Expression of Emotions, Social Aspects of Emotional Expressions, Biology of emotion.

UNIT VII

Motivation: Definition; Motivation Cycle; Nature of Motivation, Need, Drive and Incentive, Primary and Secondary Motives; Types of motivation-Physiological Motivation – Hunger, Thirst, Psychological motivation – Achievement, Affiliation, Power, Parenting; Theories of Motivation – Need theories ;Drive Reduction Theories; Current status of motivational Psychology

UNIT VIII

I: Personality:Definition; Determinants; Approaches –Dispositional approaches – Type approach – Hippocrates, Sheldon, Kretchmer, Jung's typology, Trait theory Allport, Catell, Eysenck & BIG Five; Psychoanalytic –Freud; Assessment of personality – Objective, Subjective and Projective.

UNIT IX

Intelligence: Nature of Intelligence, Nature vs Nurture, Theories of intelligence; Individual Differences in Intelligence, Intellectual disability and Gifted children; Measurement of intelligence: Verbal, Non-verbal, Individual and Group Tests.

UNIT X

Language: Definition, stages in the development of language; Theories of language

References:

1. Fernald (2018). Munn'sIntroduction to Psychology (5/Ed.) AITBS Publishers, India

2. Kendler, H. H. Basic psychology (2nd ed.). New York: AppletonCentury-Crofts, 1968.

3. Munn, N., Fernald, L. D., Jr., & Fernald, P. S. lntroduction to psychology (3rd ed.). Boston: Houghton-Mifflin. 1972.

M. Sc Clinical Embryology

Syllabus

2nd year

Semester – IV

Paper - I: Ethics and Regulations in ART

Paper - II: Cryobiology and Preimplantation Genetic test (PGT)

Paper - III: Recent advances in ART

PROJECTWORK

Paper - I: Ethics and Regulations in ART

UNIT - I

- Indian Council of Medical Research (ICMR)guideline for ART unit, and regulation in assisted reproduction.
- Surrogacy Bill.
- Pre-Conception and Pre-Natal Diagnostic Techniques (PCPNDT)Act.
- Regulation and ethics in clinical practice
- Gamete and embryo donation.
- Regulation of ART Bank.
- ART Guideline worldwide
- Third party reproduction.
- Ethics in ART.
- Legal uses in ART practice.
- National societies.
- Consent forms.
- Social & ethical responsibilities with regard to patient case.

UNIT - II

- Basics of counseling
- Infertility counseling.
- Psychology of infertility.

- Medical aspects of the infertility for the counselor.
- Cross cultural issues in infertility counseling.
- Psychological evaluation of the infertility couple.
- Evidence based approach to infertility counseling.
- Individual counseling and psychotherapy.
- Counseling the infertile couple.

UNIT - III

- Group approach to infertility counseling.
- Sexual counseling and infertility.
- Recipient counseling for donor insemination
- Recipient counseling for egg donation.
- Embryo donation counseling.
- Ethical aspects of infertility counseling
- Legal issues in infertility counseling.
- Assisted reproductive technology and the impact on children.

Paper - II: Cryobiology and Preimplantation Genetic test (PGT)

UNIT - I

- History of Gamete cryopreservation.
- Psychological and psychosocial issues surrounding sperm and egg banking
  - Legal and ethical aspects of gamete banking.
  - Detailed Account of cryoprotectant for slow freezing and vitrification method.
  - Advantages and disadvantages of slow freezing and Vitrification method
  - Trouble shooting in vitrification.
  - Various equipments used for slow freezing.

UNIT -II

- History of PGS: Animal studies and preclinical work, development of human embryo biopsy.
- Prenatal screening and diagnosis.
- Preimplantation embryo development.

- Preimplantation genetics.
- Clinical aspects of Preimplantation genetics.

UNIT - III

- Polar body biopsy.
- Cleavage stage embryo biopsy.
- Blastocyst biopsy.
- Preimplantation genetic screening (PGS).
- Preimplantation genetic diagnosis (PGD) for sex-linked disease and sex selection for nonmedical reasons.

UNIT - IV

- Role of genetics in infertility.
- Molecular and cellular biology.
- Chromosomal and genetic analysis in IVF
- Genetic techniques.
- FISH.
- Embryo biopsies
- Preparation of blastomeres for FISH
- Karyotyping.
- Role of genetics in OATS
- Genes and RPL (Recurrent Pregnancy Losses)

Paper - III: Recent advances in ART

UNIT - I

- Recent development in cryobiology.
- Cord blood & tissue banking
- Proteomics and Metabolomics.
- Precision of IVF procedure.
- Time lapse video monitoring of developing embryo.
- Method of sperm retrieval and banking in cancer patients.
- Ovarian tissue cryopreservation: Harvesting ovary.
- Preparation and processing of ovarian cortex.

- Vitrification of ovarian cortex.
- Storage of vitrified ovarian cortex.
- Warming of ovarian cortex.

UNIT - II

(A) Dilemmas in assisted reproductive technologies

- Recurrent implantation failure
- Empty follicle syndrome
- Elective single embryo transfer
- Role of aneuploidy screening in preimplantation embryos
- Epigenetics, imprinting errors and IVF
- Embryo biopsy for preimplantation genetic diagnosis
- In vitro maturation of oocytes: a practical approach
- Ovarian tissue cryopreservation

(B) Future clinical application

- Endometrial stem cells and reproduction

(C) Advances in assisted reproductive technologies

- Assisted hatching
- Embryo biopsy for preimplantation genetic diagnosis
- In vitro maturation of oocytes: a practical approach
- Ovarian tissue cryopreservation
- Time-lapse video for assessing the embryos
- Polarization microscopy and its clinical applications
- OMICS
- IMSI and its clinical significance
- Microfluidics in assisted reproductive technology
- Fertility preservation in Male & Female patients

Practical

Recent advances in ART

- Time lapse video monitoring of developing embryo.
- Method of sperm retrieval and banking in cancer patients.
- Elective single embryo transfer
- Embryo biopsy for preimplantation genetic diagnosis

- Assisted hatching: Zona drilling, Zona thinning, Chemical and laser assisted hatching.

Cryobiology and Preimplantation Genetic test (PGT)

- Dish preparation for freezing/vitrification.
- Dish preparation for thawing/warming.
- Oocyte/Sperm vitrification.
- Cleavage stage embryo vitrification.
- Blastocyst collapse and vitrification.
- Embryo biopsy for preimplantation genetic diagnosis
- PGD/PGS

ELECTIVE COURSES

Basic Life Support

1. Introduction

2. Basic life support for adults

3. Basic life support for infants and children

4. Defibrillator

5. Respiratory arrest

6. Management of choking in adults, infants & children

7. Team dynamics

8. Summary of CPR guidelines

Scientific Writing

1. Key elements of scientific writing

Quality information, Nature of language, Structure

Characteristics of scientific writing- Clear and precise use of language, Accessibility to the intended audience, Correct information, Logical sequencing of information, Use of correct grammar, Appropriate use of technical terms, illustrations or diagrams

2. Drafting a scientific document

Research the document, Gather information, Plan the format, Create an outline, Write first

draft, Check the accuracy, Revise and amend the document

Type of academic journal articles- Letters/communications, Research notes, Articles, Supplemental articles, Review articles

3. Writing effective scientific documents

Reports (Research/Progress), Scientific paper (Journal/Conference), Review paper, Abstracts, Theses, Electronic/Web based document

Elements of scientific documents- Sections/subsections, Headings/subheadings, Front matter (Title, Title page, Abstract, Table of contents, List of figures, List of tables, List of terms, Acknowledgement), Body (Introduction, Review of literature, Methodology, Results, Discussions, Summary, Conclusion, Recommendations), End Matter (References, Appendices, Indices)

4. Ethics and scientific publication

Permission, Data fabrication and falsification, Plagiarism, Redundant and duplicate publication, Conflict of interest, Authorship issues, Animal and human welfare concerns, Reviewer responsibility

Oral Presentation- Format of oral presentation (Informal/formal), Visual aids (LCD projector, overhead projector OHP and transparencies or other display media), Delivery (Voice projection, Body language, Spoken v. written language, Notes, Time limit).

5. Writing a project proposal for grants

Rationale and importance of research, Empirical and Theoretical conceptualization, Presenting pilot study/ data, Research proposal and time frame, Clarity and specificity of method, Clear organization, Outcome of research and its implications, Budgeting, Available infrastructure and resources, Executive summary

Healthcare

Introduction to Health

Definition of Health, Determinants of Health, Health Indicators of India, Health Team Concept.

National Health Policy

National Health Programmes (Briefly Objectives and scope) Population of India and Family welfare programme in India

Introduction to Nursing

What is Nursing? Nursing principles. Inter-Personnel relationships. Bandaging: Basic turns; Bandaging extremities; Triangular Bandages and their application.

Nursing Position, Bed making, prone, lateral, dorsal, dorsal re-cumbent, Fowler's positions, comfort measures, Aids and rest and sleep.

Lifting and Transporting Patients: Lifting patients up in the bed. Transferring from bed to wheel chair. Transferring from bed to stretcher.

Bed Side Management: Giving and taking Bed pan, Urinal: Observation of stools, urine. Observation of sputum, understand use and care of catheters, enema giving.

Methods of Giving Nourishment: Feeding, Tube feeding, drips, transfusion Care of Rubber Goods

Recording of body temperature, respiration and pulse, Simple aseptic technique, sterilization and disinfection. Surgical Dressing: Observation of dressing procedures

First Aid:

Syllabus as for Certificate Course of Red Cross Society of St. John's Ambulance Brigade.

PROJECT WORK

Students pursuing M.Sc. in ART course is required to carry out work on a selected research project under the guidance of the faculty. This is to train a post graduate student in research methods and techniques. Project work includes identification of a problem, formulation of a hypothesis, search and review of literature, getting acquainted with recent advances, designing research study, collection of data, data analysis and comparison of results and finally drawing conclusions.

The project should be written under the following headings

- Introduction.
- Aims of objective of the study.
- Review of literature
- Material and Methods
- Results

- Discussion
- Conclusion
- Summary.
- Tables.
- Annexure

Four copies of the project report have to be prepared and submitted to the department/university before the final examination date notified and it has to be evaluated by the examiners with project presentation and viva.

Method of Training:

The candidates shall attend all the undergraduate Theory and Practical Classes regularly.

Seminars & Journal Review Meetings:

The postgraduate students should actively participate in departmental seminars

and journal reviews.

Periodical Assessment and Progress Report:

The postgraduate students have to be assessed periodically (Three months) by conducting written, practical and viva voce examination. The assessment should be based also on participation in seminars, journal review, and performance in the teaching and use of teaching aids and progress in dissertation work.

The assessment will be done by all the recognized P.G teachers of department and the progress records be maintained by the head of the department.

Project work:

During the course of study every candidate has to prepare a project individually, on a selected topic under the direct guidance and supervision of a recognized postgraduate teacher.

The suggested time schedule for dissertation work is:

1. Preparation work for dissertation synopsis including pilot study and submission of the synopsis to the University within 6 months from the commencement of course or as per the dates notified by the University from time to time.
2. Data collection for project and writing the project.
3. The candidates shall report the progress of the project work to the concerned guide periodically and obtain clearance for the continuation of the project work.

4. Submission of the project six months prior to the final examination or as dates notified by the University from time to time.

Books for Study

1. A – Z Encyclopedia on Infertility Sulochana Ganasheela 2005.
2. A Practical Guide to Setting Upan IVF Lab, Embryo Culture Systems and Running the Unit Alex C Varghese,Peter Sjoblom, K.Jayaprakasan, April 2013.
3. Oogenesis GiovanniCoticchio, DavidAlbertini, Lucia DeSantisDecember 2012.
4. Sperm Chromatin Biological &Clinical Applications in MaleInfertility& Assisted ReproductionNini, Armand;Agarwal, Ashok(Eds.)September2011.
5. Practical Manual of In VitroFertilization:Advanced Methods and NovelDevicesNagy, ZsoltPeter;Varghese, Alex C;Agarwal, Ashok(Eds)September2011.
6. Preservation of Human Oocytes Dr. Andrea Borini& Dr. GiovanniCoticchioDecember 2009.
7. Human Preimplantation EmbryoSelectionKayElder,Jacques CohenFebruary2008.
8. In Vitro Fertilization: A PracticalApproachDavid K. Gardner February2008.
9. Textbook of AssistedReproductiveTechniquesDavid K. Gardner,ArielWeissman,Colin M. Howles,ZeevShoham, 4th Edition.
10. A Textbook of in Vitro Fertilizationand Assisted Reproduction: theBourn Hall Guide to Clinical andLaboratoryPracticePeterBrindsen 3rd Edition 2004.
11. Quality & Risk Management inthe IVF LaboratoryDavid Mortimer February 2008.
12. A Color Atlas for Human AssistedReproduction: Laboratory &Clinical Insights (Hardcover)Pasquale Patrizio,Michael J Tucker,VanessaGuelmanAugust 2006.
13. The Developing Human:Clinically Oriented EmbryologyKeith L. Moore, 7th edition January2003.
14. Principles and Practice of Assisted Reproductive Technology, Vol. 2, Lab. Aspects of IVF &Andrology, 2nd Edition - Kamini Rao.
15. Infertility Diagnosis, Management & IVF – Dr. Anil Dubey.

MODEL PAPER

M.Sc. Cl. Embryology Semester-I **Cl.Bio.Bphy**

Code: MSC0423101

M. Sc. Clinical Embryology

Semester – I

Examination Month Year

Paper – I

Clinical Biochemistry, Biophysics

Time: Three Hours

Maximum Marks: 70

Students shall be allowed to take only one supplementary

copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book

Draw diagrams wherever necessary

Attempt all questions

Long question ((Any 2 out of 4)). (15x2=30)

Q1. Describe the structure of Immunoglobulin with the help of a labeled diagram. Write a note on types of Immunoglobulin's with their specific functions

Q2. .Describe the regulation of blood glucose levels. Enumerate various complications of chronic diabetes mellitus.

Q3. Write in detail about Biochemical functions and deficiency manifestations of Vitamin-A. Describe Calcium deficiency disorder.

Q4. Discuss about the steps of Glycolysis with energetics. Write in Detail the role of buffer in regulation of Blood Ph.

Short Notes (any 5 out of 8) (5x8=40)

Q5. Northern & Western blotting

Q6. Mechanism of action of steroid hormone

Q7. Calcium homeostasis

Q8. Urea cycle

Q9. Principle of Centrifugation

Q10. Antioxidants

Q11. Ketosis

Q12. Balance Diet

MODEL PAPER

M.Sc. Cl. Embryology Semester -I **Bas. Asst. Rep.**

Code: MSC0423102

M.Sc. Clinical Embryology

Semester – I

Examination Month Year

Paper - II

Basics of Assisted Reproduction

Time: Three Hours

Maximum Marks: 70

Students shall be allowed to take only one supplementary

copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book

Draw diagrams wherever necessary

Attempt all questions

Long question (Any 2 out of 4). (15x2=30)

Q1. Write a note on spermatogenesis. Describe with flow chart as well.
Q2. Write note on ovarian cycle. Describe with flow chart as well.
Q3. Write in detail about Endometrial receptivity. Write down the stages of implantation
Q4. Discuss about Immunology of pregnancy. Write a note on endocrine physiology & puberty.

Short Notes (any 5 out of 8) (5x8=40)

Q5. Hirsutism – definition, diagnosis.
Q6. Luteal phase defect.
Q7. Sex linked inheritance.
Q8. Ultrastructure of embryos in ART.
Q9. Describe female reproductive system.
Q10. Primary & secondary amenorrhea
Q11. Anovulatory infertility
Q12. Hyperprolactinemia

MODEL PAPER

M.Sc. Cl. Embryology Semester - I **Cl. And.**

Code: MSC0423103

M.Sc. Clinical Embryology

Semester – I

Examination Month Year

Paper - III

Clinical Andrology

Time: Three Hours

Maximum Marks: 70

Students shall be allowed to take only one supplementary copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book

Draw diagrams wherever necessary

Attempt all questions

Long question (Any 2 out of 4). (15x2=30)

Q1. Setting up of IUI lab.
Q2. Detailed Composition of seminal plasma.
Q3. Discuss in details various of process of Semen preparation methods.
Q4. Write a note on different Types of microscope and incubators . Describe inverted microscopy.

Short Notes (any 5 out of 8) (5x8=40)

Q5. Anti-sperm antibody test
Q6. Measurement of reactive oxygen species in sperm suspension.
Q7. Quality control in andrology lab.
Q8. Preparation of retrograde ejaculation sample
Q9. DFI Test.
Q10. Biomedical waste Management.
Q11. Structure and maintenance of laminar air flow.
Q12. Microscopic evaluation of semen sample. Mention reference limit according to WHO.

MODEL PAPER

M.Sc. Cl. Embryology Semester- I **Micro.**

Code: MSC0423104

M. Sc. Clinical Embryology

Semester – I

Examination Month Year

Paper - IV

Microbiology

Time: Three Hours

Maximum Marks: 70

Students shall be allowed to take only one supplementary copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book

Draw diagrams wherever necessary

Attempt all questions

Long question (Any 2 out of 4). (15x2=30)

Q1. Define Staining. Enumerate the different types of Staining. Explain the principle, procedure and interpretation of Acid Fast Staining.

Q2. Define sterilization & disinfection. Enumerate the methods of sterilization & disinfection discuss the moist heat sterilization in detail.

Q3. Define Hospital Acquired Infections. Discuss the various sources of infection and prevention and control of Hospital Acquired Infections.

Q4. Define antigen antibody reaction write and detail about types of antigen antibody reaction. Also describe ELISA.

Short Notes (any 5 out of 8) (5x8=40)

Q5. Noscomial infections.

Q6. Bacterial cell wall.

Q7. Acid fast staining.

Q8. Microbiology pathogenicity.

Q9. Collection of Urine & Blood Samples

Q10. Contributions of Louis Pasteur

Q11. Bacterial Growth Curve

Q12. Culture Media

MODEL PAPER

M.Sc. Cl. Embryology Semester - I **Cl. Nutri.**

Code: MSC0423106

M. Sc. Clinical Embryology

Semester – I

Examination Month Year

Paper - VI

Clinical Nutrition

Time: Three Hours

Maximum Marks: 70

Students shall be allowed to take only one supplementary copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book

Draw diagrams wherever necessary

Attempt all questions

Long question (Any 2 out of 4). (15x2=30)

Q1 Explain in detail about digestive system?
Q2 Mention the significance of food preparation?
Q.3 Discuss the importance of nutritive value of food?
Q.4. Describe in detail about the processing of food? .

Short Notes (any 5 out of 8) (5x8=40)

Q5 Balanced Diet
Q.6 Food sources from which key vitamins are derived
Q.7 Cooking in microwave oven
Q.8 Intelligent use of processed food
Q.9 Composition of food
Q.10 Meals for all ages and occupations
Q.11 Cooking of food
Q.12 Dietary Guidelines

MODEL PAPER

M.Sc. Cl. Embryology Semester- I **Dis. Man.**

Code: MSC0423107

M. Sc. Clinical Embryology

Semester – I

Paper – VII

Disaster Management

Time: Three Hours

Maximum Marks: 70

Students shall be allowed to take only one supplementary copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book

Draw diagrams wherever necessary

Attempt all questions

Long question (Any 2 out of 4). (15x2=30)

Q.1 Explain in detail waste management institutional arrangements?
Q.2 Mention the disaster cycle and its analysis?
Q.3 Define and classify disaster?
Q.4. Explain the different impacts in terms of caste, class, age and gender?

Short Notes (any 5 out of 8) (5x8=40)

Q.5 Climate change
Q.6 Pandemics
Q.7 Roles and responsibility of Panchayati Raj
Q.8 DM Act
Q.9 Changes in Land use
Q.10 Urban disasters
Q.11.Culture of Safety
Q.12 Factors Affecting Vulnerabilities

MODEL PAPER

M.Sc. Cl. Embryology - I **Yoga. Th.**

Code: MSC0423108

M. Sc. Clinical Embryology

Semester – I

Examination Month Year

Paper - VIII

Yoga Therapy

Time: Three Hours

Maximum Marks: 70

Students shall be allowed to take only one supplementary copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book

Draw diagrams wherever necessary

Attempt all questions

Long question (Any 2 out of 4). (15x2=30)

Q.1 Explain in detail about principles of yoga?
Q.2 Mention the significance of yoga in Occupational Therapy?
Q.3 Define asanas and its physiological effects?
Q.4. Describe in detail about the history of yoga? .

Short Notes (any 5 out of 8) (5x8=40)

Q.5 Yoga in modern world
Q.6 Physiological effects of Yoga
Q.7 Scientific background of yoga
Q.8 Yoga in ancient and modern India
Q.9 Principles of yoga
Q.10 Scientific background of Yoga
Q.11 Yoga
Q.12 Therapeutic uses of Yoga

MODEL PAPER

M.Sc. Cl. Embryology Semester- II **Emb. Cul.**

Code: MSC0423201

M. Sc. Clinical Embryology

Semester – II

Examination Month Year

Paper - I

Embryo Culture System

Time: Three Hours

Maximum Marks: 70

Students shall be allowed to take only one supplementary copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book

Draw diagrams wherever necessary

Attempt all questions

Long question (Any 2 out of 4). (15x2=30)

Q1. Culture system: (A) single step (B) sequential.

Q2. QA/QC in ART Lab.

Q3. Composition of culture media.

Q4. Regulation, licensing and accreditation of ART lab.

Short Notes (any 5 out of 8) (5x8=40)

Q5. SOP.

Q6. Trouble shooting in IVF Lab.

Q7. Lab maintenance protocol.

Q8. Record keeping.

Q9. Quality improvement techniques

Q10. Embryo culture and epigenetic.

Q11. Quality and risk management tools.

Q12. Embryo co-culture.

MODEL PAPER

M.Sc. Cl. Embryology Semester- II **Cli. Emb.**

Code: MSC0423202

M. Sc. Clinical Embryology

Semester – II

Examination Month Year

Paper - II

Clinical embryology in ART

Time: Three Hours

Maximum Marks: 70

Students shall be allowed to take only one supplementary copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book

Draw diagrams wherever necessary

Attempt all questions

Long question (Any 2 out of 4). (15x2=30)

Q1. Describe menstrual cycle. Draw a well labeled diagram

Q2. Fertilization & 1st week of development.

Q3. Write down good lab practices according to ESHRE guidelines.

Q4. Development of Cardiovascular system and Fetal circulation

Short Notes (any 5 out of 8) (5x8=40)

Q5. Teratogenesis, its causes & various disorders.
Q6. Neural tube development.
Q7. Development of placenta.
Q8. Fate & derivatives of germ cell.
Q9. Culture system: Open and close culture advantages and disadvantages.
Q10. Intracytoplasmic Morphologically selected Sperm Injection (IMSI).
Q11. Physiological selection of Sperm and intra Cytoplasmic sperm injection(PICSI).
Q12. Spindle view (Polo-scope)

MODEL PAPER

M.Sc. Cl. Embryology Semester-II **Qua. Con. IVF**

Code: MSC0423203

M. Sc. Clinical Embryology

Semester – II

Examination Month Year

Paper - III

Quality Control in IVF Lab

Time: Three Hours

Maximum Marks: 70

Students shall be allowed to take only one supplementary

copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book

Draw diagrams wherever necessary

Attempt all questions

Long question (Any 2 out of 4). (15x2=30)

Q1. Describe maintenance and calibration of lab instruments.
Q2. Lab maintenance protocols.
Q3. Trouble shooting in IVF lab.
Q4. Regulation, licensing and accreditation

Short Notes (any 5 out of 8) (5x8=40)

Q5. KPI's in IVF lab.
Q6. Record keeping in IVF lab.
Q7. Regulation and licensing of IVF lab.
Q8. SOP's of IVF lab.
Q9. Air quality control in IVFlab.
Q10. Maintenance and calibration of Lab instruments.
Q11. Risk minimization.
Q12. Parameters to run a successful laboratory

MODEL PAPER

M.Sc. Cl. Embryology Semester- II **Adv. ART**

Code: MSC0423204

M. Sc. Clinical Embryology

Semester – II

Examination Month Year

Paper - IV

Advanced ART

Time: Three Hours

Maximum Marks: 70

Students shall be allowed to take only one supplementary

copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book

Draw diagrams wherever necessary

Attempt all questions

Long question (Any 2 out of 4). (15x2=30)

Q1. Write about OHSS.
Q2. Write about various stimulation protocols in ART
Q3. Clinical & endocrinological evaluation of infertile male.
Q4. Sperm retrieval techniques.

Short Notes (any 5 out of 8) (5x8=40)

Q5. Mention different gonadotropins used in ART. Write a short note on any one.
Q6. Short note on IUI preparation & procedure.
Q7. Transvaginal oocyte retrieval technique
Q8. Causes of female infertility.
Q9. GnRH antagonists.
Q10. Genital tuberculosis and infertility
Q11. Assessment of ovarian reserve
Q12. Endometriosis in infertility

MODEL PAPER

M.Sc. Cl. Embryology Semester- II **Med. Eth. Pub.**

Code: MSC0423206

M. Sc. Clinical Embryology

Semester – II

Paper - VI

Medical ethics & law in public health

Time: Three Hours

Maximum Marks: 70

Students shall be allowed to take only one supplementary copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book

Draw diagrams wherever necessary

Attempt all questions

Long question (Any 2 out of 4). (15x2=30)

Q1.What are the fundamental principles of medical ethics, and how do they guide healthcare professionals?

Q2. Define rational drug therapy. If drugs are used irrationally, what effects can be seen on individual patients as well as in society. What is the role of health professionals in rational use of drugs?

Q3.What ethical principles guide the fair allocation of resources during public health emergencies

Q4. Purpose of a code of conduct in healthcare

Short Notes (any 5 out of 8) (5x8=40)

Q5. Medical negligence

Q6. informed consent

Q7. Rights of patient

Q8. Confidentiality

Q9. Medico-legal aspects crucial for healthcare professionals

Q10. key principles in providing care for terminally ill patients

Q11. organ transplantation

Q12. rational drug therapy.

MODEL PAPER

M.Sc. Cl. Embryology Semester- II **Med. Rec. Sci**

Code: Code: MSC0423207

M. Sc. Clinical Embryology

Semester – II

Examination Month Year

Paper - VII

Medical record science

Time: Three Hours

Maximum Marks: 70

Students shall be allowed to take only one supplementary

copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book

Draw diagrams wherever necessary

Attempt all questions

Long question (Any 2 out of 4). (15x2=30)

Q.1 Explain in detail about birth and death registration?
Q.2 Mention the legal aspects of hospitals, patient and doctors?
Q.3 Define electronic medical records and discuss its importance?
Q.4. Explain the medical record contents and components?.

Short Notes (any 5 out of 8) (5x8=40)

Q.5 Medical ethics
Q.6 Indexes and registers
Q.7 Numbering and filing of medical records
Q.8 Legal aspects of medical records
Q.9 Medical record department and its functions
Q.10 Purpose and uses of medical records
Q.11 Computer scanning of medical records
Q.12 significance of medical record history

MODEL PAPER

M.Sc. Cl. Embryology Semester - II **Bas. Comp.**

Code: MSC0423208

M. Sc. Clinical Embryology

Semester – II

Examination Month Year

Paper - VIII

Basic Computers

Time: Three Hours

Maximum Marks: 70

Students shall be allowed to take only one supplementary

copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book

Draw diagrams wherever necessary

Attempt all questions

Long question (Any 2 out of 4). (15x2=30)

Q1. Discuss about memory.
Q2. Discuss about input / output devices.
Q3. What to you understand about magnetic ink character recognition (MICR)?
Q4. Optical mark recognition (OMR).

Short Notes (any 5 out of 8) (5x8=40)

Q5. Monitor.
Q6. Computer software
Q7. Bar code reader
Q8. Word processing software.
Q9. Definition of Machine language..
Q10. Compiler & Interpreter
Q11. Interpreter.
Q12. Output Devices

MODEL PAPER

M.Sc. Cl. Embryology Semester-III **Mic. ART**

Code: MSC0423301

M. Sc. Clinical Embryology

Semester – III

Examination Month Year

Paper - I

Micromanipulation in ART

Time: Three Hours

Maximum Marks: 70

Students shall be allowed to take only one supplementary copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book

Draw diagrams wherever necessary

Attempt all questions

Long question (Any 2 out of 4). (15x2=30)

Q1. Give a detailed account of various kinds of micromanipulation systems.
Q2. ICSI : Indication , Contraindication & Risks.
Q3. Write down the step for micro tool alignment.
Q4. Various kind of micromanipulation unit.

Short Notes (any 5 out of 8) (5x8=40)

Q5. Micro tool alignment.
Q6. Use of PVP &hyaluronidase in IVF Lab.
Q7. Different micromanipulation units .
Q8. How to identify normal & abnormal sperm.
Q9. Patient counselling
Q10. Embryo grading
Q11. Risk of anomalies in ICSI.
Q12. History of micromanipulation.

MODEL PAPER

M.Sc. Cl. Embryology Semester-III **ART. Tec.**

Code: MSC0423302

M.Sc. Clinical Embryology

Semester – III

Examination Month Year

Paper - II

ART Techniques

Time: Three Hours

Maximum Marks: 70

Students shall be allowed to take only one supplementary copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book

Draw diagrams wherever necessary

Attempt all questions

Long question (Any 2 out of 4). (15x2=30)

Q1. Sperm preparation techniques in IUI. Describe the process of IUI.
Q2. Lab preparation before oocyte retrieval . Describe the process of oocyte retrieval.
Q3. Process of Adoption according to adoption law and various challenges faced during adoption.
Q4. Frozen embryo transfer v/s fresh embryo transfer.

Short Notes (any 5 out of 8) (5x8=40)

Q5. Cause of retained embryo and its management.
Q6. Cleavages stage embryo D0-D3.
Q7. Three parent IVF.
Q8. Embryo donation programme.
Q9. ICMR guidelines for oocyte sharing.
Q10. Indication for oocyte donation
Q11. Anesthesia and in vitro fertilization.
Q12. Sperm donation, its indication, concerns and complications

MODEL PAPER

M.Sc. Cl. Embryology Semester– III **Res. Meth**

Code: MSC0423303

M. Sc. Clinical Embryology

Semester – III

Examination Month Year

Paper - III

Research methodology

Time: Three Hours

Maximum Marks: 70

Students shall be allowed to take only one supplementary copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book

Draw diagrams wherever necessary

Attempt all questions

Long question (Any 2 out of 4). (15x2=30)

Q1. Experiment study trials
Q2. Randomized control trials.
Q3. Descriptive & analytical
Q4. Qualitative research methods.

Short Notes (any 5 out of 8) (5x8=40)

Q5. Sampling methods & test of significance
Q6. Types of research
Q7. Bias in research
Q8. Informed consent & procedure
Q9. Measurement of disease frequency
Q10. Validity of studies
Q11. Calculating sample size and power
Q12. Selection of study population / study plan

MODEL PAPER

M.Sc. Cl. Embryology Semester– III **Fst. AID. Emg. Hel**

Code: MSC0423305

M. Sc. Clinical Embryology

Semester – III

Examination Month Year

Paper - V

FIRST AID AND EMERGENCY HELP

Time: Three Hours

Maximum Marks: 70

Students shall be allowed to take only one supplementary copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book

Draw diagrams wherever necessary

Attempt all questions

Long question (Any 2 out of 4). (15x2=30)

Q.1 explain in detail nervous system and unconsciousness?
Q.2 Mention the foreign bodies in eye, ear and nose?
Q.3 What is Skin? Mention in brief the first aid procedure in burns?
Q.4. Explain the first aid techniques in bites and stings?

Short Notes (any 5 out of 8) (5x8=40)

Q5. What are wounds and injuries?
Q6. significance of basic first aid
Q.7 Fever and Hypothermia
Q.8 Blood circulation
Q.9 Poisoning
Q.10 Swallowed foreign object
Q.11 Heat exhaustion
Q.12 Respiratory system and breathing

MODEL PAPER

M.Sc. Cl. Embryology Semester– III **Med. Term.**

Code: MSC0423306

M. Sc. Clinical Embryology

Semester – III

Examination Month Year

Paper -VI

Medical Terminology

Time: Three Hours

Maximum Marks: 70

Students shall be allowed to take only one supplementary copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book

Draw diagrams wherever necessary

Attempt all questions

Long question (Any 2 out of 4). (15x2=30)

Q1. Define basic terms pertaining to the structure and function of body tissues.
Q2. Compare the location and function of smooth, cardiac, and skeletal muscle. Describe the mechanism of muscle contraction.
Q3. Describe and give the functions of the three types of blood cells.
Q4. Describe the process of breathing and mention few diseases of the respiratory tract.

Short Notes (any 5 out of 8) (5x8=40)

Q5. Meningitis
Q6. Name any four bones of lower extremity.
Q7. Electroencephalogram.
Q8. Role of ovary in reproductive system.
Q9. Function of liver and gall bladder
Q10. Well labeled diagram of digestive system
Q11. Function of WBC
Q12. Role of lungs in the body

MODEL PAPER

M.Sc. Cl. Embryology Semester– III **Cli. Psy.**

Code: MSC0423307

M. Sc. Clinical Embryology

Semester – III

Examination Month Year

Paper - VII

Clinical Psychology

Time: Three Hours

Maximum Marks: 70

Students shall be allowed to take only one supplementary copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book

Draw diagrams wherever necessary

Attempt all questions

Long question (Any 2 out of 4). (15x2=30)

Q1. Distinguish between behavioural model and Phenomenological model of Clinical Psychology.

Q2. Describe the clinical types of Psychological Test. Throw light on its diagnostic uses.

Q3. Describe the important stages involved in function of psycho-analytical therapy. Discuss its merits and demerits

Q4. Distinguish between medical research and psychotherapeutic research.

.**Short Notes (any 5 out of 8) (5x8=40)**

Q5. Ego-analytic therapy.
Q6. any one types of group therapy
Q7. Bias in research
Q8. Discuss the merits and demerits of Gestal therapy.
Q9. Write short note Minimal Brain Dysfunction (MBD)
Q10. Write short notes Bender-Gestalt Test
Q11. Distinguish between mental health and mental illness.
Q12. Explain Systematic desensitization

MODEL PAPER

M.Sc. Cl. Embryology Semester- IV **Eth. Reg. ART**

Code: MSC0423401

M. Sc. Clinical Embryology

Semester – IV

Examination Month Year

Paper - I

Ethics & regulation in ART

Time: Three Hours

Maximum Marks: 70

Students shall be allowed to take only one supplementary copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book

Draw diagrams wherever necessary

Attempt all questions

Long question (Any 2 out of 4). (15x2=30)

Q1. Infertility counselling & cross cultural issues in infertility counselling and write in detail about Embryo donation counselling

Q2. Ethical legal & social issue of modern assisted reproductive technology treatment

Q3. Write down Good lab Practices by ESHRE

Q4. Regulation of Surrogacy and Surrogacy Procedures according to Surrogacy bill

Short Notes (any 5 out of 8) (5x8=40)

Q5. Certification & accreditation of IVF centre

Q6. Legal issues in infertility counselling

Q7. Accreditation of ART Lab

Q8. Psychological evaluation of infertility couple

Q9. Donor oocyte counselling

Q10. Donor embryo counselling

Q11. Greif counselling

Q12. Donor sperm counselling

MODEL PAPER

M.Sc. Cl. Embryology Semester-IV **cry.PGT**

Code: MSC0423402

M.Sc. Clinical Embryology

Semester – IV

Examination Month Year

Paper - II

Cryobiology and Preimplantation Genetic test (PGT)

Time: Three Hours

Maximum Marks: 70

Students shall be allowed to take only one supplementary copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book

Draw diagrams wherever necessary

Attempt all questions

Long question (Any 2 out of 4). (15x2=30)

Q1. Enumerate the present practice of cryopreservation of human gametes & embryos
Q2. Give a detailed ascent of cryoprotections used for show freezing & nitrification.
Q3. Pre implantation genetics screening and pre implantation genetics diagnosis.
Q4. (a) Chromosomal and genetics analysis in IVF (b) Role of genetics in OATS.

Short Notes (any 5 out of 8) (5x8=40)

Q5. Polar body biopsy.
Q6. Screening before PGT.
Q7. Trouble shooting in vitrification.
Q8. Recent development in cryobiology.
Q9. Genetic techniques
Q10. Blastocyst biopsy
Q11. Genes and recurrent pregnancy loss.
Q12. Karyotyping

MODEL PAPER

M.Sc. Cl. Embryology Semester-IV **Rct. Adv.ART**

Code: MSC0423403

M. Sc. Clinical Embryology

Semester – IV

Examination Month Year

Paper - III

Recent advances in ART

Time: Three Hours

Maximum Marks: 70

Students shall be allowed to take only one supplementary copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book

Draw diagrams wherever necessary

Attempt all questions

Long question (Any 2 out of 4). (15x2=30)

Q1. (A) OMICS (B) Microfluidics in ART.
Q2. (A) Endometrial stem cell therapy (B) Assisted hatching.
Q3. (A) embryo biopsy for PGD (B) vitrification of ovarian cortex.
Q4. Preparation and processing of ovarian cortex.

Short Notes (any 5 out of 8) (5x8=40)

Q5. Ovarian tissue cryopreservation.
Q6. Time lapse video for assessing the embryos.
Q7. RIF (Recurrent implantation failure) .
Q8. Elective single embryo transfer.
Q9. Empty follicle syndrome
Q10. Proteomics and metabolomics
Q11. Polarization microscopy and its clinical application
Q12. Endometrial stem cells.

MODEL PAPER

M.Sc. Cl. Embryology Semester-IV **Bas.lif.Supp**

Code: MSC0423405

M.Sc. Clinical Embryology

Semester – IV

Examination Month Year

Paper - V

Basic Life Support

Time: Three Hours

Maximum Marks: 70

Students shall be allowed to take only one supplementary copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book

Draw diagrams wherever necessary

Attempt all questions

Long question (Any 2 out of 4). (15x2=30)

Q1. Describe basic life support for adults with diagrams
Q2. Describe basic life support for infants and children.
Q3. What is defibrillator? Explain in detail.
Q4. Make a flow chart for compression only life support algorythm.

Short Notes (any 5 out of 8) (5x8=40)

Q5. What is cardiac arrest?
Q6. What is respiratory arrest?
Q7. IHCA.
Q8. OHCA
Q9. Explain about pediatric chain of survival
Q10. Management of choking
Q11. Explain role of team leader.
Q12. basic life support for infants

MODEL PAPER

M.Sc. Cl. Embryology Semester-IV **Sci.Wrt.**

Code: MSC0423406

M. Sc. Clinical Embryology

Semester – IV

Examination Month Year

Paper - VI

Scientific Writing

Time: Three Hours

Maximum Marks: 70

Students shall be allowed to take only one supplementary copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book

Draw diagrams wherever necessary

Attempt all questions

Long question (Any 2 out of 4). (15x2=30)

Q1. Write in detail about characteristics of scientific writing

Q2. How would a effective scientific document be written? Explain with example

Q3. What are types of visual aids? Describe in detail.

Q4. Write about rationale & importance of an research

Short Notes (any 5 out of 8) (5x8=40)

Q5. Define data fabrication and falsification.

Q6. Describe elements of scientific documents

Q7. Conflict of Interest

Q8. What are the outcomes of research and its implications

Q9. Plagiarism

Q10. Budgeting

Q11. Abstracts

Q12. types of visual aids

MODEL PAPER

M.Sc. Cl. Embryology Semester-IV **Hlth.**

Code: MSC0423407

M. Sc. Clinical Embryology

Semester – IV

Examination Month Year

Paper - VII

Healthcare

Time: Three Hours

Maximum Marks: 70

Students shall be allowed to take only one supplementary copy along with one main answer book. All the parts of one question should be answered at one place. Different parts of one question should not be answered at different places in the answer book

Draw diagrams wherever necessary

Attempt all questions

Long question (Any 2 out of 4). (15x2=30)

Q.1 Explain in detail National Health Programmes?
Q.2 Mention the methods of giving nourishment?
Q.3 Define health and discuss its determinants and indicators?
Q.4. Describe in detail about bed side management?

Short Notes (any 5 out of 8) (5x8=40)

Q5. principles of bandaging
Q6. significance of National Health Policy
Q.7 Surgical dressing
Q.8 First Aid
Q.9 Nursing principles
Q.10 Lifting and Transporting Patients
Q.11 Fowler's positions
Q.12 Nursing position
Q.13 Use and care of catheters