Master degree in (Medical Biochemistry and Molecular Biology)

Blueprint of (Reproductive Biochemistry) course (Master) : Course Code : (BIC504RB)

The total marks of this course are 100, divided as:

- Workplace-based assessment (20 marks)
- Written exam (80 marks), distributed as follows:

Course content	Teaching hours	Relative weight to the total marks	Total Marks	MCQ Marks	No of exam Q (MCQ)	Short essay questions Marks	No of exam Q (short essay questions)
1- A molecular view of ovulation a) Dynamics of ovulation b) The signaling pathway & transcriptional regulation of ovulation c) The mediators of ovulation & their roles in ovulatory process including: • Progesterone • Eicosanoids • Angiogenic factors • Epidermal growth factors (EGF) • Proteases & their inhibitors • Matrix metalloproteinases (MMP) • Plasmin / Plasminogen activator system • ADAMTS (a disintegrin-like and metalloprotease with	**5**	**16.67%**	**13**	9		4	

Course content	Teaching hours	Relative weight to the total marks	Total Marks	MCQ Marks	No of exam Q (MCQ)	Short essay questions Marks	No of exam Q (short essay questions)
thrombospondin) enzymes • Immune cells • Cytokines & Chemokines							
2-An overview of the molecular mechanisms involved in human fertilization a) Sperm transport in the female tract including: • Sperm capacitation - Sperm thermotaxis & chemotaxis b) Sperm-egg interaction including: • Sperm binding to zona pellucida (ZP) - Acrosomal exocytosis (AE) - Sperm penetration through the ZP • Sperm fusion to the oolemma • In vitro assays to evaluate sperm-egg interaction	**6**	**20%**	**16**	11		5	
3-Molecular mechanisms of implantation a) The role chemokines in implantation b) The role of DNA microarray in gene expression of endometrium	**7**	**23.33%**	**19**	13		6	
4- Reproductive messengers a) Reproductive hormones including:	**4**	**13.33%**	**11**	8		3	

Course content	Teaching hours	Relative weight to the total marks	Total Marks	MCQ Marks	No of exam Q (MCQ)	Short essay questions Marks	No of exam Q (short essay questions)
• Lipid hormones • Protein hormones • Monoamines b) Different mechanisms of action of reproductive hormones)							
5- Evaluation of sperm function a) Tests that evaluate the sperm motility • Viability assays (Dye exclusion assays & Hypo-osmotic sperm swelling assay) • Electron microscopy b) The postcoital test (PCT) c) The acrosome reaction (AR) test d) Sperm penetration assay (SPA) e) The significance of hemizona assay f) The importance of semen ROS, the significance of its high level & how to assess sperm DNA damage • The causes of DNA damage (1ry testicular & extra-testicular factors) • The influence of sperm DNA damage on reproductive outcomes	**4**	**13.33%**	**10**	7		3	

Course content	Teaching hours	Relative weight to the total marks	Total Marks	MCQ Marks	No of exam Q (MCQ)	Short essay questions Marks	No of exam Q (short essay questions)
• The clinical value of sperm DNA damage tests g) Sperm chromosomal abnormalities • the sperm chromosomal abnormalities (structural & numerical abnormalities) • The role of FISH in the assessment of sperm chromosomal abnormalities							
6- The assessment of oocyte quality a) The correlation between the biochemical features of the follicular fluid (FF) & the oocyte quality b) The physicochemical features of FF c) The role of metabolomic techniques in the assessment of oocyte quality	**4**	**13.33%**	**11**	8		3	
Total	**30**	**100%**	**80**	56		24	

Head of Biochemistry & Molecular Biology Department
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