Example Short Answer Questions with model answers

Please note that some of the model answers presented here give more information than is expected of candidates. This has been done in order to provide some explanation of the answers in the examples.

Micromanipulation

a)	Give two possible indications for intracytoplasmic sperm injection that are not identified from the semen analysis? [2]	Eg: Previous failed fertilisation Oocyte factor (eg thick zonas)
b)	What action would you take if all oocytes were identified as immature after cumulus denudation in preparation for ICSI. [4]	• Possible further culture for IVM, especially if GVBD already occurred. • Check whether hCG was given. • Check previous cycles for evidence of oocyte maturity. • Inform patients if no prospect of injecting on day 0.
c)	State one advantage and one disadvantage of taking 2 cells from an 8-cell embryo for pre-implantation genetic testing (PGT-M), in comparison with taking just one cell. [4]	**Advantage**: Increased chance for diagnosis. Double amount of DNA for analysis. Less risk of cell being non-representative. **Disadvantage**: More invasive. More likely to reduce implantation potential. Removes more of embryo.
d)	In each situation below, state whether PGT by fluorescence in situ hybridisation (FISH) would be an appropriate diagnostic method (i) Trisomy 21 Down Syndrome (ii) Translocation (iii) Cystic Fibrosis, deltaF508 mutation? [6]	(i) yes (ii) yes, with careful selection of probes. (iii) no, needs amplification method.
e)	What might be the consequences of injecting a motile sperm at ICSI? [4]	Damage to oocyte from sperm movement. Slower incorporation of sperm because of intact membrane.

Ovarian control and follicular stimulation

a)	Which two hormones are used in 'hormone replacement therapy' (HRT)? [2]	Oestrogen and Progesterone
b)	Which hormones, administered to stimulate the growth of multiple follicles in preparation for oocyte collection, act directly upon the ovary? [4]	FSH, LH or hCG
c)	Which cells produce inhibin in women? [2]	Granulosa cells
d)	What are the characteristic features of the ovary in a patient with polycystic ovarian syndrome? [4]	Multiple small peripheral follicles, not growing. Central stroma. Increased blood flow by Doppler.
e)	What is meant by 'pituitary down-regulation' in the context of ovarian stimulation programmes? [4]	Pituitary is no longer responsive to GnRH stimulation, due to the action of a long acting GnRH agonist.
f)	Explain how oestrogen assays may be used to detect incipient ovarian hyperstimulation syndrome. [4]	Oestrogen is produced by growing follicles, excess oestrogen indicates high number of growing follicles. Assays can assess extent of follicle recruitment and repeat assays can detect whether situation is improving or worsening.

Legal and ethical considerations

a)	List two situations where it is a requirement for those concerned to speak to a counsellor [2]	Sperm or egg donor/recipient. Surrogacy
b)	A man aged 42, about to start treatment for cancer, wishes to store sperm for his own use in future. For how long may it be stored? [4]	The law permits sperm storage for use in his treatment for any period up to a maximum of 55 years from the date that the sperm is first placed in storage. Need renew consent every 10 years.
c)	What issues arise, in relation to assessing the welfare of a child to be born through IVF, where the prospective father is in prison? [4]	Access of child to his/her father. Nature of offence. Relationship with mother/family home. Support structure around lone mother.
d)	A man has split up with his wife and wishes to avoid her using the frozen embryos they created during treatment together. The embryos were created using donor sperm. What would you advise this man to do? [4]	He should withdraw consent to being considered the partner of the woman, but he cannot require disposal of the embryos as they are not his genetic material. His ex-wife could still use them, subject to donor agreement, as a single woman, or with another partner, subject to appropriate consent forms.
e)	There has been a mistake and a letter intended for the General Practitioner (GP) of a patient has been sent to another GP of the same name, by accident. Explain why this is considered a breach of the Act? [2]	Breaches confidentiality of patient
f)	You are introducing a new method in the lab, and want to randomise patients' embryos between two media, to see which is most effective. Whose approval do you need? [4]	• Local Research Ethics Committee (as this is a trial where randomisation/allocation is involved) • Hospital Research and Development body (eg to ensure that hospital indemnity covers the activity). • Patients (as this represents a change from normal protocol). • HFEA approval not required unless the trial uses methods that would not be normal in treatment (eg fixing and staining embryos instead of discard at end of procedure).

Quality Management

a)	State four examples of key performance indicators (KPI) used in the IVF laboratory? [4]	Eg, fertilisation rate, pregnancy rate with gold standard patients, individual ICSI fertilisation rate, good quality embryo rate, multiple pregnancy rate, early cleavage rate, used or cryopreserved embryo rate…
b)	For two KPIs named above, provide approximate ranges of acceptable tolerances and state what action you would take if results fell outside your acceptable range? [4]	Eg, fertilisation rate for ICSI might be avg 66% (range 61-71) Action if results outside range to check notes and dataset for reasons, alert staff and improve awareness. Take appropriate action (eg retraining, further monitoring, change reagents) as appropriate.
c)	You identify that an incubator is not recovering properly from door opening. How would this be evidenced and what action would you take? [4]	Prolonged slow return of gas to required level. Check supply vessels/valves/change if necessary. Monitor further. Take out of use until meeting acceptable criteria.
d)	One of your liquid nitrogen storage tanks is using more nitrogen than the others. What might be the possible reasons? [4]	High level of use/lid opening. Incipient tank failure/loss of vacuum. Different design of tank (eg neck diameter)
e)	How would you check the identity of a patient who you needed to telephone to discuss fertilisation results? [4]	Confirmation of full name and at least two identifiers. Ideally one that only the patient would know, eg hospital no. or agreed code word.