

# BIOLOGY



## Important Questions

### ➤ Multiple Choice Questions:

- The method of directly injecting a sperm into ovum in assisted reproductive technology is called:
  - GIFT
  - ZIFT
  - ICSI
  - ET
- Increased IMR and decreased MMR in a population will:
  - Cause rapid increase in growth rate
  - Result in decline in growth rate
  - Not cause significant change in growth rate
  - Result in an explosive population.
- Intensely lactating mothers do not generally conceive due to the:
  - Suppression of gonadotropins
  - Hyper secretion of gonadotropins
  - Suppression of gametic transport
  - Suppression of fertilisation.
- Sterilisation techniques are generally foolproof methods of contraception with least side effects. Yet, this is the last option for the couples because:
  - It is almost irreversible
  - Of the misconception that it will reduce sexual urge/drive
  - It is a surgical procedure
  - Of lack of sufficient facilities in many parts of the countryChoose the correct option:
  - i and iii
  - ii and iii
  - ii and iv
  - i, ii, iii and iv
- A national level approach to build up a reproductively healthy society was taken up in our country in:
  - 1950s
  - 1960s
  - 1980s
  - 1990s.
- Emergency contraceptives are effective if used within:
  - 72 hrs of coitus

- (b) 72 hrs of ovulation  
(c) 72 hrs of menstruation  
(d) 72 hrs of implantation
7. Choose the right one among the statements given below:
- (a) IUDs are generally inserted by the user herself  
(b) IUDs increase phagocytosis reaction in the uterus  
(c) IUDs suppress gametogenesis  
(d) IUDs once inserted need not be replaced.
8. The following statements are given regarding MTP. Choose the correct options given below:
- (i) MTPs are generally advised during first trimester  
(ii) MTPs are used as a contraceptive method  
(iii) MTPs are always surgical  
(iv) MTPs require the assistance of qualified medical personnel
- (a) i and iii  
(b) ii and iii  
(c) i and iv  
(d) i and ii
9. From the sexually transmitted diseases mentioned below, identify the one which does not specifically affect the sex organs:
- (a) Syphilis  
(b) AIDS  
(c) Gonorrhoea  
(d) Genital warts
10. Condoms are one of the most popular contraceptives because of the following reasons:
- (a) These are effective barriers for insemination  
(b) They do not interfere with coital act  
(c) These help in reducing the risk of STDs  
(d) All of the above.
11. Choose the correct statement regarding the ZIFT procedure:
- (a) Ova collected from a female donor are transferred to the fallopian tube to facilitate zygote formation  
(b) Zygote is collected from a female donor and transferred to the fallopian tube  
(c) Zygote is collected from a female donor and transferred to the uterus  
(d) Ova collected from a female donor and transferred to the uterus

12. The correct surgical procedure as a contraceptive method is:

- (a) Ovariectomy
- (b) Hysterectomy
- (c) Vasectomy
- (d) Castration.

13. Diaphragms are contraceptive devices used by females. Choose the correct option from the statements given below:

- (i) They are introduced into the uterus
  - (ii) They are placed to cover the cervical region
  - (iii) They act as physical barriers for sperm entry
  - (iv) They act as spermicidal agents
- (a) i and ii
  - (b) i and iii
  - (c) i, ii and iii
  - (d) iii and iv

14. A procedure that finds use in testing for genetic disorders, but is also misused for female foeticide is:

- (a) Lactational amenorrhea
- (b) Amniocentesis
- (c) Artificial insemination
- (d) Parturition

➤ **Very Short Question:**

1. Give the term for prenatal diagnostic technique aimed to know the sex of developing foetus and to detect congenital disorders.
2. After a successful in vitro fertilisation, the fertilised egg begins to divide. Where is this egg transferred before it reaches the 8-celled stage and what is this technique called?
3. Give the term for rapid population growth.
4. Name the fluid from which foetal cells are extracted for chromosomal analysis.
5. Give technical name of female used to bring up in vitro fertilized egg to maturity.
6. Name the oral contraceptive developed by CDRI, Lucknow.
7. What is the WHO's interpretation of reproductive health?
8. Why has the Government imposed a statutory ban on amniocentesis?
9. Expand MTP and ICSI.
10. What is lactational amenorrhoea?

### ➤ Short Questions:

1. What are implants? How do they help in preventing fertilisation?
2. Briefly explain two natural barriers for birth control.
3. Enlist any four possible reasons for infertility in human beings.
4. What does GIFT represent?
5. How does Cu- T act as a contraceptive?
6. Mention any four probable reasons for the rapid rise of population in our country?
7. Identify the device used for the following methods of birth control: Barrier, IUD, Surgical technique and Administering hormone.
8. What are STDs? Mention any two of it.

### ➤ Long Questions:

1. Suggest the aspects of reproductive health that need to be given special attention in the present scenario.
2. Briefly give an account of various intra-uterine contraceptive (IUD) measures. What are their advantages? How do they function?
3. What are the measures one has to take to prevent contracting STDs?

### ➤ Assertion and Reason Questions:

**1)** For two statements are given-one labelled Assertion and the other labelled Reason. Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below.

- a) Both assertion and reason are true, and reason is the correct explanation of assertion.
- b) Both assertion and reason are true, but reason is not the correct explanation of assertion.
- c) Assertion is true, but reason is false.
- d) Both assertion and reason are false.

**Assertion:** Generally, a woman does not conceive during the lactation period.

**Reason:** The hormone 'prolactin' initiates and maintains lactation in a postpartum woman.

**2)** For two statements are given-one labelled Assertion and the other labelled Reason. Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below.

- a. Both assertion and reason are true, and reason is the correct explanation of assertion.
- b. Both assertion and reason are true, but reason is not the correct explanation of assertion.
- c. Assertion is true, but reason is false.

d. Both assertion and reason are false.

**Assertion:** In GIFT, fertilisation takes place in vivo.

**Reason:** The results of GIFT are less better than in vitro fertilisation.

### ➤ Case Study Questions:

1. Read the following and answer any four questions from (i) to (v) given below:

A woman unable to conceive after many years of regular unprotected coitus went to specialised infertility clinic. On complete examination, woman was found to be normal, while male partner was diagnosed with infertility. Male partner is unable to copulate the female. Couple was advised to opt for assisted reproductive technology (ART).

(i) Which ART could have been useful for this couple?

- a. ZIFT
- b. IUT
- c. AI
- d. GIFT

(ii) In which of the following infertility issues could this technique be used?

- a. Anovulation.
- b. Oligospermia.
- c. Low fructose content in seminal fluid.
- d. All of these.

(iii) Which among the following techniques is useful to conceive when there is very low sperm count?

- a. GIFT
- b. Test-tube baby
- c. IUT
- d. JCSI

(iv) **Assertion:** Artificial insemination (AI) is intra-uterine insemination.

**Reason:** In AI, sperms collected from donor are introduced into the uterus.

- a. Both assertion and reason are true, and reason is the correct explanation of assertion.
- b. Both assertion and reason are true, but reason is not the correct explanation of assertion.
- c. Assertion is true, but reason is false.
- d. Both assertion and reason are false

(v) Success rate of artificial insemination technique is:

- a. 20-40%
- b. 60-70%
- c. 40-50%

d. 5-7%

2. Read the following and answer any four questions from (i) to (v) given below:

Oral administration of small doses of hormones is contraceptive method used by the females. They are used in the form of tablets and hence called the pills. The oral pills are two types; mini pills and combined pills.

(i) Mini pills contain:

- a. Estrogen only.
- b. Progestin only.
- c. Combination of progesterone-estrogen.
- d. Inhibin.

(ii) How do hormonal pills prevent pregnancy?

- a. By phagocytosing the sperms.
- b. By inhibiting ovulation.
- c. By preventing sperms from entering the vagina.
- d. All of these.

(iii) Pill containing non-steroidal preparation, centchroman is:

- a. Mala D.
- b. Mala N.
- c. I-Pill.
- d. Saheli.

(iv) Which among the following is incorrect for oral contraceptives?

- a. Oral pills alter the uterine endometrium and make it unsuitable for implantation.
- b. Oral pills have to be taken daily for 7 days starting within first five days of menstrual cycle.
- c. Oral pills increase the risk of intravascular clotting.
- d. Oral pills contain either progestin alone or combination of progestogen and estrogen.

(v) **Assertion:** Mala D, a combined contraceptive pill, have to be taken daily without a break.

**Reason:** Mala D contains synthetic progesterone and estrogen.

- a. Both assertion and reason are true, and reason is the correct explanation of assertion.
- b. Both assertion and reason are true, but reason is not the correct explanation of assertion.
- c. Assertion is true, but reason is false.
- d. Both assertion and reason are false.

## ✓ Answer Key-

## ➤ Multiple Choice Answers:

1. (c) ICSI
2. (c) Not cause significant change in growth rate
3. (a) Suppression of gonadotropins
4. (d) i, ii, iii and iv
5. (a) 1950s
6. (a) 72 hrs of coitus
7. (b) IUDs increase phagocytosis reaction in the uterus
8. (c) i and iv
9. (b) AIDS
10. (d) All of the above.
11. (b) Zygote is collected from a female donor and transferred to the fallopian tube
12. (c) Vasectomy
13. (c) i, ii and iii
14. (b) Amniocentesis

## ➤ Very Short Answers:

1. Amniocentesis.
2. Fallopian tube; Zygote intra fallopian transfer (ZIFT)
3. Population explosion.
4. Amniotic fluid.
5. Surrogate mother.
6. Saheli
7. WHO defines reproductive health as total well being in all respects of reproduction including physical, emotional, behavioural and social.
8. The Government has banned amniocentesis to check on the incidences of female foeticides.
9. MTP: Medical Termination of Pregnancy.  
ICSI: Intra Cytoplasmic Sperm Injection.
10. It refers to absence of menstruation during period of intense lactation.

## ➤ Short Answer:



1. The structures which contain hormones like progesterone and estrogen and are placed under the skin.
2. Periodic abstinence – couple should avoid coitus from 10th to 17th day of menstrual cycle. Coitus interruptus – Male partner withdraws his penis from the vagina just before ejaculation of semen.
3. Physical, congenital disease, Drugs, Immunological and even psychological (any four).
4. It is the introduction of two unfertilized oocytes and several sperms into the fallopian tube of a woman desirous to be a mother through laproscope. The eggs may be hers or a donor's. The sperms may be of her husband's or of a donor. Fertilisation occurs in vivo and the development of the foetus takes place through natural process.
5. It is an intrauterine device having ionized copper. The copper diffuses into the uterus and brings about the release of toxic cytokines. They inhibit sperm motility and therefore fertilization of ovum.
6. The probable reasons could be:
  - Steady decline in the death rate due to improved health services.
  - Early marriages especially in certain rural areas.
  - Lack of education among the poor and they fail to understand the ill effects of a large family.
  - Longer life span.
7. Barrier: Condom, IUD: Copper –T, Surgical technique: Vasectomy or Tubectomy, Administering Hormone : Oral Pill.
8. Diseases or infections transmitted through sexual intercourse are collectively called Sexually Transmitted Diseases or STDs. Ex: Syphilis and Gonorrhoea.

### ➤ Long Answer:

1. Conferring upon the demands of the present situation of our country, the following aspects of reproductive health should be given special attention:
  - i. Control of the human population.
  - ii. Creation of awareness about reproduction-related aspects among people including sex education to the students.
  - iii. Implementation of various action plans to attain reproductive health and building a reproductively healthy society.
  - iv. Continued research on reproduction-related areas.
  - v. Providing medical assistance and care to people especially during pregnancy, delivery, STDs, abortions, contraception, menstrual problems, infertility, etc.
  - vi. Measures of birth control.

2. Different types of IUDs are presently available such as the non-medicated IUDs (e.g. Lippes loop), copper releasing IUDs (CUT, CU 7, Multiload 375), and the hormone-releasing ones (Progestasert, LNG-20). Functions. IUDs increase phagocytosis of sperms within the uterus and the Cu ions released by some suppress sperm motility and the fertilizing capacity of the sperms. The hormone-releasing IUDs, in addition, make the uterus unsuitable for implantation and the cervix hostile to the sperms. Advantages. IUDs are ideal contraceptives for females who want to delay pregnancy and/or space children. It is one of the most widely accepted methods of contraception in India.
3. STDs are sexually transmitted diseases that are transmitted from an infected person to a normal person through sexual intercourse. STDs are a major threat to a healthy society and can be prevented by adopting the following practices:
  - i. Avoidance of sex with multiple partners.
  - ii. Avoidance of sex with unknown partners.
  - iii. Complete abstinence from sex with infected individuals.
  - iv. Use of condoms during sexual intercourse.
  - v. In case of doubt, a qualified doctor should be consulted.

### ➤ Assertion and Reason Answers:

1) (b) Both assertion and reason are true, but reason is not the correct explanation of assertion.

#### Explanation:

Milk secretion is maintained as long as breast feeding, and hence hormone production continues. A woman does not conceive during the lactation period because lactation stimulates prolactin secretion and there is evidence that prolactin inhibits GnRH secretion, and antagonises the action of gonadotrophins on the ovaries. Ovulation is inhibited, and the ovaries are inactive, so estrogen and progesterone output falls to low levels. Thus, during lactation a woman does not conceive. Only 5-10% chances are there during lactation period. This can also be interpreted as mechanism devised by nature so that mother can look after the new born child by providing it with milk.

2) (c) Assertion is true, but reason is false.

#### Explanation:

GIFT is a more expensive and invasive procedure than IVF (in vitro fertilisation) but its results are better than IVF.

### ➤ Case Study Answers:

1.

(i) (c) AI

**Explanation:**

Artificial Insemination (AI) is done in infertility cases, either due to inability of male partner to copulate the female or due to very low sperm count in the semen of male partner.

(ii) (b) Oligospermia.

**Explanation:**

Oligospermia is very low sperm count.

(iii) (d) ICSI

**Explanation:**

ICSI is intra cytoplasmic sperm injection.

(iv) (a) Both assertion and reason are true, and reason is the correct explanation of assertion.

(v) (a) 20-40%

2.

(i) (b) Progestin only.

**Explanation:**

Mini pills contain progestin only, with no estrogen.

(ii) (b) By inhibiting ovulation.

**Explanation:**

Oral contraceptive pills inhibit ovulation and implantation.

(iii) (d) Saheli.

**Explanation:**

Saheli contains non-steroidal preparation called centchroman.

(iv) (b) Oral pills have to be taken daily for 7 days starting within first five days of menstrual cycle.

**Explanation:**

Oral pills have to be taken daily for 21 days starting within first five days of menstrual cycle.

(v) (b) Both assertion and reason are true, but reason is not the correct explanation of assertion.