

Short Answer Questions-I (PY)

[2 Marks]

Q.1. At the time of Independence, the population of India was 350 million, which exploded to over 1 billion by May 2000. List any two reasons for this rise in population and any two steps taken by the government to check this population explosion.

Ans. Two reasons for increase in population are:

- (i) A rapid decline in death rate, maternal mortality rate and infant mortality rate.
- (ii) Increase in number of people in reproductive age.

Two steps for checking population explosion:

- (i) Statutory raising of marriageable age of the female to 18 years and male to 21 years.
- (ii) Incentives given to couples with small families.

Q.2. What is amniocentesis? Why has the government imposed a statutory ban in spite of its importance in the medical field?

Ans. Amniocentesis is a foetal sex determination test based on the chromosomal pattern in cells extracted from the amniotic fluid, surrounding the developing embryo. Amniocentesis is used for sex determination, which most people go for, to kill female foetus. Therefore, it has been banned.

Q.3. Describe the lactational amenorrhea method of birth control.

Ans. Lactational amenorrhea is based on the principle that during the period of intense lactation after parturition, menstrual cycle or ovulation does not occur.

Q.4. Name an oral pill used as a contraceptive by human females. Explain how does it prevent pregnancy.

Ans. 'Saheli' is an oral pill used as a contraceptive by females. Oral pills inhibit ovulation and implantation, as well as, alter the quality of cervical mucus to prevent or retard entry of sperms. Thus, fertilisation and further pregnancy is prevented.

Q.5. Why is 'Saheli' considered to be an improved form of oral contraceptive for human female?

Ans. "Saheli" contains a non-steroidal preparation and is a once-a-week pill, with high contraceptive value and very less side-effects. Therefore, it is considered an improved form of contraceptive pills.

Q.6. Why is CuT considered a good contraceptive device to space children?

Ans. CuT is an ideal contraceptive device for human females because

- (i) Cu^{2+} ions released suppress sperm motility and fertilising capacity of sperms.
- (ii) It increases phagocytosis of sperms within the uterus.

Q.7. How do copper and hormone releasing IUDs act as contraceptives? Explain.

Ans.

* The copper releasing IUDs release Cu ions, which suppress sperm motility and the fertilising capacity of sperms.

* The hormone releasing IUDs make the uterus unsuitable for implantation and the cervix hostile to the sperms.

Q.8. A couple where both husband and wife are producing functional gametes, but the wife is still unable to conceive, is seeking medical aid. Describe any one method that you can suggest to this couple to become happy parents.

Ans. Methods: IVF/ZIFT/AI

IVF (In vitro fertilisation): Ova from wife and sperm from the husband is collected. It is induced to form zygote under simulated laboratory conditions.

Q.9. A childless couple has agreed for a test tube baby programme. List only the basic steps the procedure would involve to conceive the baby.

Ans. The steps involved are:

- (i) Extraction of gametes from parents.
- (ii) In vitro fertilisation.
- (iii) Transfer of zygote (at 8 blastomere stage) into the fallopian tube.

Q.10. An infertile couple is advised to adopt test-tube baby programme. Describe two principle procedures adopted for such technologies.

Ans.

(i) IVF/In vitro fertilisation: It is the fertilisation of gametes outside the body in almost similar conditions as that in the body.

(ii) ET/Embryo transfer: Embryos formed by fusion of gametes is transferred into reproductive tract or uterus.

Q.11. After a brief medical examination a healthy couple came to know that both of them are unable to produce functional gametes and should look for an 'ART' (Assisted Reproductive Technique). Name the 'ART' and the procedure involved that you can suggest to them to help them bear a child.

Ans. Test tube baby programme can be done.

Test Tube Baby Programmes:

(i) In this method, ova from the wife/donor (female) and the sperms from the husband/donor (male) are collected and induced to form zygote under simulated conditions in the laboratory. This process is called in vitro fertilisation (IVF).

(ii) The zygote or early embryo with up to 8 blastomeres is transferred into the fallopian tube (process is called zygote intra fallopian transfer or ZIFT) and embryo with more than 8 blastomeres is transferred into the uterus (process is called intra uterine transfer or IUT).

(iii) In females who cannot conceive, embryos formed by fusion of gametes in another female (called in vivo fertilisation) are transferred.

Q.12. Explain how do the following act as contraceptives:

(a) CuT

(b) 'Saheli'

Ans.

(a) Cu^{2+} ions released suppress sperm motility, lowers the fertilising capacity of sperms.

(b) Inhibit ovulation, implantation, as well as alter the quality of cervical mucus to prevent or retard the entry of sperms.

Short Answer Questions-I (OIQ)

[2 Mark]

Q.1. Comment on the RCH programme of the government to improve the reproductive health of the people.

Ans. The basic aims of the RCH programmes are creating public awareness regarding reproduction related aspects and providing facilities to build up a healthy society with added emphasis on the health of mother and child.

Q.2. The alarming population growth is leading to scarcity of basic requirements. Suggest with reason, any two population control measures other than contraception to address the situation.

Ans. Population control measures other than contraception are:

(i) Advertisements in the media, to generate awareness among people about the harms of large population.

(ii) Statutory raising of marriageable age of the female to 18 years and that of males to 21 years, to delay the number of births.

(iii) Incentives given to couples with small families, to motivate others to comply.

Q.3. What does amniocentesis test? On what basis does it work? Is it justified to put a statutory ban on this process? Give reason.

Ans. Amniocentesis – A foetal sex diagnostic test based on the chromosomal pattern in the amniotic fluid surrounding the developing embryo is called amniocentesis.

It is justified to ban the process for diagnosis of sex to legally check the increasing female foeticides.

Q.4. Describe the technique by which genetic disorder in a developing foetus can be detected.

Ans. Amniocentesis is a technique by which genetic disorder in a developing foetus can be detected. This is based on the chromosomal pattern in the cells found in the amniotic fluid surrounding the developing embryo. Amniotic fluid contains cells and molecules shed by the foetus. The chromosomes of foetal cells can also be used to find out the sex of the foetus and abnormalities if any. So, if an abnormality is found, the mother can get the foetus aborted.

Q.5. A couple is eager to know the sex of their unborn child. What diagnostic technique will you suggest? What social abuse is associated with the application of this technique?

Ans. Amniocentesis is the suggested diagnostic technique which when applied helps in sex determination of the foetus and may lead to social abuse like female foeticides.

Q.6. What do you mean by contraception? Name the natural methods of contraception.

Ans. The birth control methods which prevent conception are known as contraception. Natural methods of contraception are periodic abstinence, withdrawal or coitus interruptus and lactational amenorrhea.

Q.7. What are the barrier methods of birth control? Explain.

Ans. Barrier methods

These methods prevent the contact of sperm and ovum with the help of barriers. Such methods are available for both males and females.

(a) Condoms are barriers made of thin rubber/latex sheath used to cover the penis in the male or vagina and cervix in females. It prevents the deposition of ejaculated semen into the vagina of the female.

(b) Diaphragms, cervical caps and vaults are the barriers made of rubber that are inserted into the female reproductive tract to cover the cervix during coitus. They prevent the entry of sperms through cervix.

(c) Spermicidal creams, jellies and foams are used along with these barriers to increase their contraceptive efficiency.

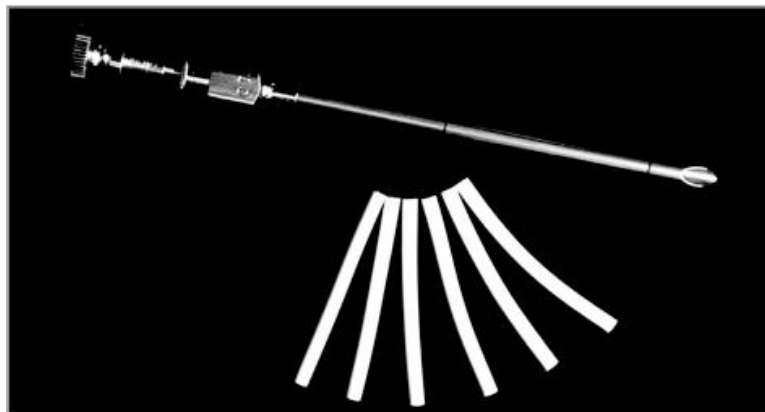
Q.8. Describe the chemical methods of birth control.

Ans. Chemical methods of birth control are as follows:

(i) Spermicidal creams, jellies and foams are introduced in the vagina just before coitus that kill sperms.

(ii) Pills are taken as oral contraceptive that inhibit ovulation and thus implantation.

Q.9. Identify the given diagram. What it is used for?



Ans. The diagram represents implants. These contain progestogens or progestogen-estrogen combination. These are used for inhibiting ovulation and implantation of embryo to the uterine wall.

Q.10. Write the role of hormones in contraception.

Ans. Progestogens or progestogen–estrogen combinations play an important role in contraception. They are used in the form of tablets or pills. They inhibit ovulation and hence implantation. They are also used by females as injections or implants under the skin. Their mode of action is similar to that of pills but their effective periods are longer.

Q.11. Explain the permanent methods of birth control.

Ans. Sterilisation (surgical methods) is a permanent method of birth control. It is called vasectomy in male and tubectomy in female. In vasectomy, a small part of the vas deferens is removed or tied up through a small incision in the scrotum while in

tubectomy, a small part of the fallopian tube is removed or tied up through a small incision in the abdomen or through vagina. These techniques are highly effective but their reversibility is very poor.

Q.12. How do Intra Uterine Devices (IUDs) act to prevent unwanted pregnancy in human females?

Ans. Intra uterine devices are inserted in the uterus through vagina and are presently available as the non-medicated IUDs, copper releasing IUDs and hormone releasing IUDs. They increase phagocytosis of sperms within the uterus and Cu ions released, suppress sperm mobility, along with fertilising capacity of sperms. On the other hand, hormone releasing IUDs make the uterus unsuitable for implantation and the cervix hostile to sperms.

Q.13. Name the hormonal composition of the oral contraceptive used by human females. Explain how does it act as a contraceptive.

Ans. Oral contraceptive of female consists of either progestogens or progesterone–estrogen combination. They are taken as pills that inhibit ovulation and implantation.

Q.14. How do surgical procedures prevent conception in humans? Mention the way it is achieved in human males.

Ans. Surgical procedures block gamete transport and thereby prevent conception. In human males, sterilisation procedure is called vasectomy, i.e., a small part of the vas deferens is removed or tied up through a small incision on the scrotum.

Q.15. Why is medical termination of pregnancy (MTP) carried out?

Ans. MTP is carried out to get rid of unwanted pregnancies. It is also essential when the foetus is suffering from an incurable disease or when continuation of the pregnancy could be harmful or even fatal to the mother and/or foetus.

Q.16. All reproductive tract infections (RTIs) are STDs but all STDs are not RTIs. Justify with example.

Ans. Among the common STDs, hepatitis-B and AIDS are not infections of the reproductive organs though their mode of transmission could be through sexual contact also. All other diseases like gonorrhea, syphilis, genital herpes, are transmitted through sexual contact and are also infections of the reproductive tract.

Q.17. In GIFT, gametes are transferred to the fallopian tube. Can gametes be transferred to the uterus to achieve the same result? Explain.

Ans. The uterine environment is not congenial for the survival of the gamete. If directly transferred to the uterus, they will undergo degeneration or could be phagocytosed and hence viable zygote would not be formed.

Q.18. Why is the term test tube baby a misnomer?

Ans. The term test tube is a misnomer because the baby is not developed in the test tube; only fertilisation is carried out in the laboratory conditions (in vitro). The fertilised egg (zygote) or early embryo is then transferred into the fallopian tube or uterus of the mother where it develops and a normal baby is born.

Q.19. Following table gives certain terms associated with ART. Fill in the spaces a, b, c and d.

IVF and ET	a
<i>b</i>	Introduction of zygote/embryo with 8 blastomeres into fallopian tube
<i>c</i>	Introduction of ova of a donor into the fallopian tube
<i>d</i>	Introduction of semen from the husband or healthy donor into the uterus

Ans.

- (a)** Test tube baby programme
- (b)** ZIFT (Zygote intra fallopian transfer)
- (c)** GIFT (Gamete intra fallopian transfer)
- (d)** IUI (Intra uterine insemination)