

## Chapter 6.4

# Reproductive Health

## Reproductive Health – Problems and Strategies

Reproductive health is defined as a state of physical, mental and social in all matters relating to the reproductive system at all stages of life. Good reproductive health implies that people are able to have a satisfying and safe sex life, the capability to reproduce and the freedom to decide if when and how often to do so. Men and women should be informed about effective and acceptable methods of family planning of their choice and the right to appropriate health care services that enable women to safely go through pregnancy and child birth.

India initiate action plans and programmes at a national level to attain total reproductive health as a social goal. These programmes called 'Family planning' were initiated in 1951.

Improved programmes popular name '**Reproductive and Child Health Care (RCH) programmes**' creating awareness among people about various reproduction related areas and providing facilities and support for building up a reproductively healthy society are the major tasks under these programmes.

Research on various reproduction-related areas are encouraged and supported by government and non-governmental agencies to find out new methods to improve upon the existing ones. 'Saheli'-a new oral contraceptive for the females-was developed by scientists at **Central Drug Research Institute (CDRI) in Lucknow, India.**

Various problems and strategies of reproductive health in human beings are discussed below :

**1. Over Population :** Particularly in the developing countries like India has a direct tolerating on the reproductive health of the society. Fast increasing human population has greater proportion of young individuals. These young individuals belong to different age groups such as puberty and early adulthood. Health and education of these young individuals (Both males and females) as well as age of marriage and child bearing capacity of women are some crucial concerns for the overall reproductive health of the human population. Recent reports have revealed that :

- (i) Secondary school education are still low in many countries and that particularly in case of girls.
- (ii) Complications of pregnancy, childbirth and abortions are major reasons of females' deaths between 15 to 19 years of age.
- (iii) The incidence of infection of sexually transmitted diseases is maximum in young individuals of 15-24 years of age.

**2. Awareness about reproduction-related aspects :** At present, programmes in reproduction related areas are in operation. These are popularly termed as **Reproductive and Child Health Care (RCH) Programmes.**

RCH programmes have two major aims and objectives :

- (i) Creating awareness among the people about various reproduction related aspects.
- (ii) Providing facilities and support for building up a reproductively healthy society.

**3. Sex education :** Introduction of sex education in schools is another step to give right information to the young individual about reproductive organs, accessory organs of reproduction, secondary sexual characters, and related changes, sexually transmitted diseases (STDs) etc. This knowledge will save them from myths about sex-related aspects and also help them to lead a healthy life.

**4. Knowledge about birth control methods and care of mother and child :** Knowledge about birth control methods, care of pregnant mothers, post-natal care of the mother and child, importance of breast feeding to the newly born babies, equality of the sex etc. is another goal of RCH Programmes.

**5. Awareness about Social evils :** Creating awareness about uncontrolled population growth and social evils (sex abuses and sex-related crimes, use of drugs, tobacco and alcohol etc.) among young people, is another important aspect of the RCH Programme.

## Sexually Transmitted Diseases (STDs)

Diseases or infections which are transmitted through infected persons during sexual intercourse are collectively called sexually transmitted disease (STDs) or venereal diseases (VD) or Reproductive tract infections (RTI).

**Table : 6.4-1 Common STDs and their causative agents**

S.No.	Disease	Causative Agent
1.	HIV/AIDS	Human Immuno Deficiency Virus
2.	Syphilis	<i>Treponema palladium</i> (Bacteria)
3.	Genital herpes	Herpes simplex virus
4.	Hepatitis – B	Hepatitis B Virus
5.	Enterobiasis	Enterobius Vermicularis (Nematode)
6.	Candidiasis	<i>Candida albicans</i> (Fungi)
7.	Gonorrhoea	<i>Neisseria gonorrhoeae</i> (Bacteria)
8.	Chlamydiasis	<i>Chlamydia trachomatis</i>
9.	Trichomoniasis	<i>Trichomonas vaginalis</i> (Protozoan)
10.	Scabies	<i>Sarcoptes scabiei</i> (Ectoparasite)

### Modes of Transmission :

STDs are generally transmitted through :-

- (i) Sexual relations with infected persons.
- (ii) Using of infected needles and surgical instruments etc.
- (iii) By blood transfusion
- (iv) Through infected mother to the new born.

### Prevention

(1) Sexual relationship with only one uninfected person. If you have several partners, either heterosexual or homosexual, you place yourself at a high risk of contracting disease. At present no vaccine is available to prevent any of the STDs.

(2) Always use precautions during sexual intercourse.

(3) In case of any doubt, go to a qualified doctor for consulting without delay and get treatment.

(4) Have regular checkups for STDs even if you have no symptoms especially if you are having sex with a new partner or with multiple partners.

(5) Take medications to suppress the virus if you have HPV or HSV.

(6) Learn the common symptoms of STDs and seek medical help immediately if you develop any symptoms.

(7) Use clean needles if injecting intravenous drugs.

(8) We must take responsibility for protecting ourselves and our partners from STDs.

## Methods of Birth Control

**Meaning :** The regulation of conception by preventive methods or devices to limit the number of offspring is called birth control.

**Methods :** A variety of methods are known for birth control. The birth control methods which deliberately prevent fertilization are referred to as contraception. These methods are of 2 main types : temporary and permanent.

(1) **Temporary Methods :** These are further of many types :

(i) **Safe Period (Rhythm Methods) :** A week before and a week after menses is considered the safe period for sexual intercourse. The idea is based on the following facts-

(a) Ovulation occurs on about the 14<sup>th</sup> day (may be 13<sup>th</sup> to 16<sup>th</sup> day) of menstruation.

(b) Ovum survives for about 1-2 days.

(c) Sperms remain alive for about 3 days.

This method may reduce the chances of pregnancy by about 80 percent. However, a great care is needed in its use. Rhythm method is also called natural family planning. i.e., a few days before and a few days after ovulation. Changes in cervical mucus and body temperature during the menstrual cycle mark the ovulation time. Thus, the natural family planning requires adequate knowledge of these physiological signs. Some couples use the natural family planning method of increase the chances of conception so that unplanned pregnancies are avoided.

(ii) **Coitus Interruptus :** This is the oldest method of birth control. It was in use over 2,000 years ago. It involves withdrawal of the penis from the vagina by the male before ejaculation so that semen is not deposited in the vagina and there is no fertilization.

(iii) **Spermicides :** Foam, tablets, jellies, pastes and creams, if introduced into the vagina before sexual intercourse, adhere to the mucus membrane and immobilise and kill the sperms. These contain spermicides such as lactic acid, citric acid, boric acid, potassium permanganate and Zinc sulphate.

(iv) **Mechanical Means :** These are of 3 types :

(a) **Condom (Nirodh)** is a thin sheath, usually made of rubber, to cover the erect penis. It is the most widely used contraceptive by males in India as it is cheap and easily available. It is given free also by government. It checks pregnancy by preventing deposition of semen in the vagina. Condom is also a safeguard against infection of AIDS and sexual diseases.

(b) **Diaphragm and cervical cap** are dome-shaped rubber plastic covers that are fitted on the cervix in the female's vagina, and check the entry of sperms into the uterus. These must be kept fitted for at least six hours after sexual intercourse. They are smeared with a spermicidal jelly or cream each time they are used. The diaphragm and cervical cap are the counterparts of condoms in the female

(c) **Intrauterine devices (IUDs)** are plastic or metal object placed in the uterus by a doctor. These include loop, copper-T, spiral, ring, bow, shield, etc. They prevent the fertilization of the egg or implantation of the embryo. Their presence perhaps acts as a minor irritant and this makes the egg to move down the Fallopian tubes and uterus rather quickly before fertilization or implantation. Drawbacks of IUDs include their spontaneous expulsion, even without the woman's knowledge; occasional haemorrhage; perforation of uterus; tubal pregnancy (implantation of the embryo) in the oviduct; and chance of infection. Use of mechanical contraceptives have pregnancy rates of less than 10%.

(v) **Physiological (Oral) Devices** : Birth control pills (oral contraceptives) check ovulation by inhibiting the secretion of follicle-stimulating hormone (FSH) and luteinizing hormone (LH) that are necessary for ovulation. Hence, no eggs are released in a woman on the pill and conception cannot occur. The birth control pills have side effects such as nausea, breast tenderness, weight gain and break-through bleeding (slight blood loss between menstrual periods) and high blood pressure. Pill Mala D is taken daily, and the pill Saheli is taken weekly. Oral contraceptives have pregnancy rates less than 1%. Birth control pills are likely to cause cardiovascular problems.

(vi) **Other Contraceptives** : Certain contraceptives, such as progestin minipill, are implanted under the skin of the upper arm. They prevent pregnancy for 3 to 4 years. They steadily release a tiny amount of progestin into the blood. Injectable one-month contraceptives are made in Germany, Mexico and China. These are marketed to many countries.

(vii) **Abortion** : Abortion is the medical termination of pregnancy (MTP) before the foetus becomes viable. It is one of the most widely used methods of fertility control in world. Certain pills act as abortants. They function by inducing menstruation which checks the implantation of the zygote or detaches the implanted egg. There are movements against abortion practically all over the world. A drug named RU-486, an analogue of progesterone, developed in France terminates pregnancy within the first few weeks, It blocks the progesterone receptors in the uterus, thereby preventing progesterone from maintaining pregnancy.

(viii) **Abstinence** : The best and 100% reliable way to avoid conception is to abstain from sexual intercourse. It is an unnatural mode of birth control, and seems impracticable. Some couples practice abstinence at certain times with success.

(2) **Permanent Method** : Sterilization provides a permanent and sure birth control. It is called **vasectomy** in man and **tubectomy** in woman. It involves the removal of a short segment of each vas deferens or oviduct and tying up of the remaining ends tightly with surgical thread. The operations are minor, usually performed under local anesthesia, give very little discomfort, and do not affect the sexual life.

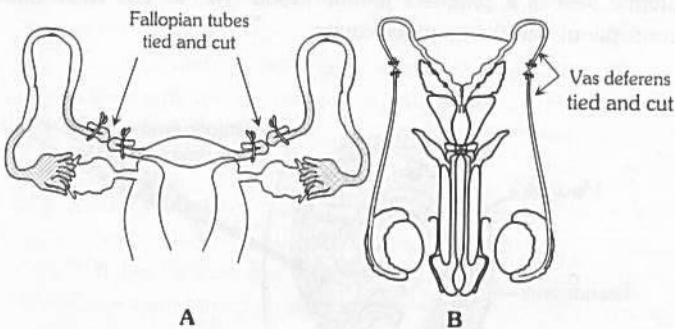


Fig : 6.4-1 (A) Tubectomy, (B) Vasectomy

(i) **Laparoscopy** : Now a telescopic instrument called laparoscope is used in tubal ligation. This blocks the fallopian tubes. Eggs continues to be produced because the ovaries are intact, but they fail to pass into the uterus and sperms fail to reach the eggs for fertilization.

(ii) **Most Effective Birth Control** : Sterilization is at present the most effective means of birth control. It is difficult to reverse.

(iii) **Extent of Contraceptive Use** : According to a UN report in the Tribune dated 24.8.87, half of the world couples use contraception and one in three chooses, sterilization.

(iv) **Medical Advice** : The birth control measures should be used with the guidance of qualified doctors. The government provides these facilities free at the family planning centres. Contraceptives are given free or at nominal prices at these centres to the couples of reproductive age desirous of preventing conception.

(v) **Advice for Fertility** : The couples who are not getting children can also seek advice and remedy at the family planning centres.

(vi) **Abortion or Medical Termination Pregnancy (MTP)** has now been legalised in India.

MTP or abortion is defined as medical termination of pregnancy before the foetus becomes capable of living independently (viable). Abortions are generally classified as spontaneous and induced.

Spontaneous abortions happen once in every 15 pregnancies. They may be considered "Nature's method of birth control." Induced abortions are Intentionally induced – It may be legal or illegal.

Indian government legalized MTP in 1971 with some strict conditions to avoid its misuse. Such limitation are very important to check indiscriminate and illegal female foeticides which are reported to be very high in nation.

Following are the indications for Medical termination of pregnancy :-

- (i) Failure of contraception possible hazards on physical / mental health of the mother.
- (ii) Pregnancy caused by rape.
- (iii) Possible hazard to the health of growing foetus.

Medical termination of pregnancy is legally permitted up to 20 weeks of gestation. Pregnancy termination performed in first trimester is safer than in second trimester since it has fewer complications it is illegal to perform MTP after determining sex of the child as govt. of India has banned sex determination.

The early complications of abortion include haemorrhage, shock, sepsis; Uterine perforation, cervical injury, thromboembolism and anaesthetic and psychiatric complications. Nearly 40 to 50 millions MTPs are performed in a year all over the world that accounts to 1/5<sup>th</sup> of the total number of conceived pregnancies in a year.

Different methods for termination of pregnancy there are two commonly used methods :

1. An abortion pill – this is for pregnancies upto 9 weeks old and involves taking two drugs – called mifepristone and prostaglandin – 48 hours apart.
2. A surgical termination can be performed up to 13 weeks. This may be performed under local or a general anaesthetic.

MTPs are essential in certain conditions where continuation of the pregnancy could be harmful either to the mother or to the foetus or both. MTPs also contribute in decreasing the human population.

**Table : 6.4-2 Method of Birth Control**

S. No	Method	Action
(1)	Rhythm method	No intercourse during woman's fertile period (day 12-20).
(2)	With drawl	Penis is withdrawn before ejaculation.
(3)	Tubectomy / Tubal ligation	Woman's fallopian tubes are cut and tied, permanently blocking sperm release.
(4)	Vasectomy	Man's vasa deferentia are cut and tied permanently blocking sperm passage.
(5)	Intrauterine device (IUD)	Small plastic or metal device placed in the uterus, prevents implantation. Some contain copper, other release hormones
(6)	Oral contraceptive	Synthetic estrogens and progesterones prevent normal menstrual cycle; primarily prevent ovulation.
(7)	Male condom	Thin rubber sheath on erect penis collects ejaculated semen.
(8)	Female condom	Plastic pouch inserted into vagina catches semen.
(9)	Diaphragm	Soft rubber cup covers entrance to uterus, prevents sperm from reaching egg and holds spermicide.
(10)	Cervical cap	Miniature diaphragm covers cervix closely, prevents sperm from reaching egg and holds spermicide.
(11)	Foams, creams, jellies, etc.	Chemical spermicides inserted in vagina before intercourse, prevent sperm from entering uterus.
(12)	Implant (Norplant)	Capsules surgically implanted under skin, slowly release hormone that blocks ovulation.
(13)	Injectable contraceptive (Depo-Provera)	Injection every 3 months of a hormone that is slowly released and prevents ovulation.

### Infertility

A large number of couples all over the world including India are infertile, i.e., they are unable to produce children. The reasons for this could be many-physical, congenital, diseases, drugs, immunological or even psychological. Specialised health care unite (infertility clinics, etc.) could help in diagnosis and corrective treatment of some of these disorders and enable these couples to have children. However, where such corrections are not possible, the couples could be assisted to have children through certain special techniques commonly known as **assisted reproductive technologies (ART)**.

**In vitro fertilisation** (IVF-fertilisation outside the body in almost similar conditions as that in the body) followed by **embryo transfer (ET)** is one of such methods. In this method, popularly known as **test tube baby** programme, ova from the wife/donor (female) and sperms from the husband/donor (male) are collected and are induced to form zygote under simulated conditions in the laboratory. The zygote or early embryos (with upto 8 blastomeres) could then be transferred into the fallopian tube (**ZIFT-Zygote intra fallopian transfer**) and embryos with more than 8 blastomeres, into the uterus (**IUT-Intra uterine transfer**) to complete its further development. Embryos formed by in-vivo fertilization (fusion of gametes within the female) also could be used for such transfer to assist those females who cannot conceive.

Transfer of an ovum collected from a donor into the fallopian tube (**GIFT-Gamete intra fallopian transfer**) of another female who cannot produce one, but can provide suitable environment for fertilisation and further development is another method attempted. **Intra cytoplasmic sperm injection (ICSI)** is another specialised procedure to form an embryo in the laboratory in which a sperm is directly injected into the ovum. Infertility cases either due to inability of the male partner to inseminate the female or due to very low sperm counts in the ejaculates, could be corrected by **artificial insemination (AI)** technique. In this technique the semen collected either from the husband or a healthy donor is artificially introduced either into the vagina or into the uterus (**IUI-Intra-uterine insemination**) of the female.

### Amniocentesis

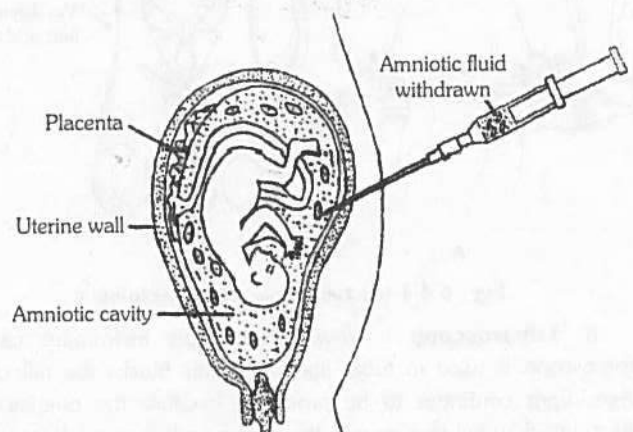
**Aim :** It is a technique to determine :

- (1) Sex of the developing baby.
- (2) Genetically controlled congenital diseases.
- (3) Metabolic disorders in foetus.

So amniocentesis is a **pre-natal diagnostic technique**.

**Procedure :** It involves following steps :

- (1) Location of the foetus is determined by a technique called **sonography** (using high frequency ultrasound waves) to prevent accidental damage to the foetus.
- (2) A fine hollow needle is passed through the abdominal and uterine wall of a pregnant female (about 14<sup>th</sup> to 15<sup>th</sup> week after conception) into the amniotic cavity.



**Fig : 6.4-2 Amniocentesis**

(3) A small amount of amniotic fluid is withdrawn. It contains foetal skin cells and a number of proteins, especially enzymes. The cells can be cultured *in vitro* for further examination.

#### Significance

(1) **Sex determination** : The somatic cells of foetal skin drawn with the amniotic fluid are stained to determine the presence of sex chromatin (barr body). Presence of barr body indicates that the developing foetus is female as female is with 2 X-chromosomes out of which one X-chromosome is active, while other X-chromosome is heterochromatised into a darkly stained barr body.

(2) **Congenital disease** : By Karyotypic studies of somatic cells, abnormalities due to changes in chromosome number like Down's syndrome, Turner's syndrome, Klinefelter's syndrome etc. can be determined.

(3) **Metabolic disorder** : By the enzyme analysis of amniotic fluid, different types of inborn metabolic disorders like phenylketonuria, alkaptonuria etc. can be detected. These inborn errors are caused by the absence or inactivity of specific enzymes due to gene mutations. So with the help of amniocentesis, if it is confirmed that the child is likely to suffer from some incurable, congenital defect, the mother can go for abortion.

(4) **Drawback** : However, these days, the amniocentesis is being misused also. Mothers even get their normal foetus aborted if it is a female. This is just equivalent to killing of a normal child. So Govt. of India enforced the **Pre-natal Diagnostic Techniques (Regulation and Prevention of Misuse) Act, 1994**, since January 1, 1994 under which all genetic counselling centres and laboratories are required to apply for registration. The violation of this Act can bring a fine of Rs. 50,000 and imprisonment for two years. The doctor's registration is also cancelled till the complaint is disposed of.

(5) **Chorionic Villus Sampling (CVS)** : Amniocentesis is possible without a chance of injuring the foetus with the needle only after the sixteenth week of pregnancy. At this time, abortion is not safe. A new technique, named Chorionic Villus Sampling (CVS), can be done during the eighth to tenth week of pregnancy when abortion is safe for the woman. For CVS, cells are sucked into a catheter passed through the cervix. CVS technique provides a mass of rapidly dividing foetal cells, thus facilitating the examination of chromosomal disorders.

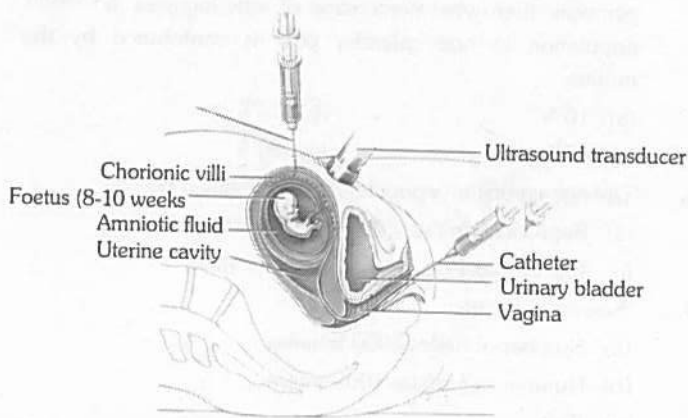


Fig : 6.4-3 Chorionic villi sampling (CVS)

## Test Tube Babies

The technique of *in-vitro* fertilization and *in-vitro* development followed by the embryo-transfer in the uterus of the normal female to start the development and finally leading to normal birth, is called **test tube baby**.

**History** : First attempt to produce a test tube baby was made by a Italian scientist, **Dr. Petrucci** (1959 A.D.). Although, this human embryo survived for only 29 days, but his experiment opened a new field of biological science. The first test tube baby was born to Lesley and Gilbert Brown on July 25, 1978, in Oldham, England. Mrs. Brown had obstructed Fallopian tubes. **Dr. Patricke Steptoe** and **Dr. Robert Edward** both from England experimented on Mrs. Brown successfully. the world's first test tube baby (a baby girl) was named as **Louise Joy Brown**. Later, test tube babies were also born in Australia, United States and some other countries. India's first test tube baby was born on **3<sup>rd</sup> October, 1978 in Kolkata**. Her name was **Kanupriya Aggarwal** and was created by **Dr. Subash Mukherjee**.

**Procedure** : It involves the following steps :

- (1) Removal of unfertilized ovum from reproductive tract of a female.
- (2) Ovum is kept under aseptic conditions.
- (3) Fusion of sperm and ovum in a culture medium, outside the female body, to form the zygote.
- (4) Zygote is stimulated to develop *in vitro* upto 32-celled stage.
- (5) Developing embryo is implanted on the endometrium of the uterus at 32-celled stage. So the pregnancy in the woman starts and further development of the child continues in the womb till it is born. Such a baby called a test tube baby.

#### Significance

- (1) It is boon to infertile mothers.
- (2) It can be used for men with Oligospermia (low sperm count).
- (3) Old superior cows can donate oocytes.

Embryos can be frozen and preserved in an embryo tank for 10 years for future use.

In very rare cases, a **surrogate mother** may have to be used to bring up *in vitro* fertilized ovum to maturity. Though biological realization of a test baby is a remarkable achievement, it has raised several ethical and legal problems like the right over the child.

## T Tips & Tricks

- ✍ Facilities for safe abortion to be increased.
- ✍ Best states to live in : Kerala (1); Punjab(2); Tamil Nadu(3); Maharashtra(4) and Haryana(5).
- ✍ Kerala has been declared as the "First baby-friendly state of world".
- ✍ In India, marriageable age is 18 years for female and 21 years for males.
- ✍ The International Conference of Population and Development (ICPD) was held at Cairo in September 1994.
- ✍ Chandigarh has the lowest number of females per 1000 males with 790.
- ✍ National average of infant mortality rate is 72, where as U.P., It was 86, in Bihar 73, in Rajasthan 85 and in M.P. 89 while that of Kerala is only 15.
- ✍ World Population Day : 11 July. (since 1987 when on 11 July on that year, the world population crossed five billion).
- ✍ After 40 years of age, contraceptive pills increase the chances of cardiovascular diseases.
- ✍ Matez Gasper : World's fifth billion child, a male infant born in Zagreb (Yugoslavia) on July 11,1987.
- ✍ Fatima : World's 6<sup>th</sup> billion child, a female infant born in Sarajevo (Kosovo) on October 14, 1999.
- ✍ Couple protection rate : Bringing eligible couples under the umbrella of various modes of contraception.
- ✍ Family Planning Programme was adopted as a National Programme in 1995 A.D. Now it has been renamed as Family Welfare Programme.
- ✍ Central Drug Research Institute (Lucknow) has developed a plant-based spermicidal cream "Consap" from Reetha (*Sapindus mukrosii*).
- ✍ UN Population Award, 1998 : It was jointly awarded to a group of Ugandan Elders (credited to reduce the practice of female genital mutilation) and head of Jamacia's Family Planning Board
- ✍ India's first test baby was "Kanupriya Aggarwal". India's second test tube baby was "Kumari Harsha" She was born on August 6, 1986.
- ✍ Ogino (1930) : Described "Safe period" or "Calendar period" to control pregnancy .
- ✍ Success rate of test tube baby is less than 20%.
- ✍ G.I.F.T. – Gametic Intra- Fallopian Transfer is the latest technique to produce the child.
- ✍ Gamete-Intra Fallopian tube transfer : Sperm (obtained by masturbation / electro ejaculation) and ovum obtained by laparoscopy are injected into the mid part of the oviduct by a separate catheter in a cycling female (in proliferative stage).

## OT Ordinary Thinking

### Objective Questions

#### Reproductive Health

1. The term 'Health' is defined in many ways. The most accurate definition of the health would be [NCERT]
  - (a) Health is the state of body and mind in a balanced condition
  - (b) Health is the reflection of a smiling face
  - (c) Health is a state of complete physical, mental and social well-being
  - (d) Health is the symbol of economic prosperity
2. Increased IMR and decreased MMR in a population will
  - (a) Cause rapid increase in growth rate
  - (b) Result in decline in growth rate
  - (c) Not cause significant change in growth rate
  - (d) Result in an explosive population/exp
3. A national level approach to build up a reproductively healthy society was taken up in our country in
  - (a) 1950s
  - (b) 1960s
  - (c) 1980s
  - (d) 1990s
4. World Health Day is celebrated every year on
  - (a) 7<sup>th</sup> March
  - (b) 7<sup>th</sup> April
  - (c) 7<sup>th</sup> July
  - (d) 7<sup>th</sup> May
5. A stable population is one which has got
  - (a) No growth of population in the last decade
  - (b) Constant rate of growth of population in the last decade
  - (c) Slow growth of population in the last decade
  - (d) Growth of 20% in excess than the last decade
6. Now-a-days India is under which stage of demographic cycle
  - (a) Early expanding
  - (b) Late expanding
  - (c) Phase of decline
  - (d) High stationary
7. If India's population is increasing at the rate of 13.6 million per year, then what percentage of total increase in world's population in one calendar year is contributed by the Indians
  - (a) 10%
  - (b) 17%
  - (c) 15%
  - (d) 20%
8. The age groups in a population are classified by
  - (a) Reproduction rate
  - (b) Death rate
  - (c) Age of marriage
  - (d) Sex ratio
9. 'Sex ratio' means
  - (a) Number of males/1000 females
  - (b) Number of females/1000 males
  - (c) Both
  - (d) None



**Sexually Transmitted Disease**

- 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
- Which of the following is not a sexually transmitted disease  
 [AIPMT (Cancelled) 2015]  
 (a) Acquired Immuno Deficiency Syndrome (AIDS)  
 (b) Trichomoniasis  
 (c) Encephalitis  
 (d) Syphilis
- One of these causes nongonococcal urethritis  
 (a) *Treponema pallidum* (b) *Neisseria gonorrhoeae*  
 (c) *Chlamydia trachomatis* (d) HSV-I
- Profuse, yellowish, greenish frothy smelling discharge from vagina is due to infection of  
 (a) *Treponema pallidum* (b) *Chlamydia*  
 (c) *Trichomonas vaginalis* (d) *Neisseria*
- Genital warts are due to sexually transmitted disease spread by  
 (a) Herpes virus (b) Papilloma virus  
 (c) Hepatitis A (d) *Trichomonas*
- The sexually transmitted disease, that can affect both the male and the female genitals and may damage the eyes of babies born of infected mothers is  
 [KCET 2012]  
 Or  
 It is a disease which mainly affects mucous membrane of urinogenital tract. In males, burning feeling on passing urine, after a yellow discharge occurs, that is accompanied by fever, headache and feeling of illness. Its name is  
 [NCERT; AMU (Med.) 2012]  
 (a) AIDS (b) Syphilis  
 (c) Gonorrhoea (d) Hepatitis
- Which one of the following correctly matches a sexually transmitted disease with its pathogen  
 [CBSE PMT 1994; MP PMT 1996, 97, 98, 2003]  
 (a) Urethritis – *Bacillus anthracis*  
 (b) Soft sore – *Bacillus brevis*  
 (c) Syphilis – *Treponema pallidum*  
 (d) Gonorrhoea – *Entamoeba histolytica*
- Which one of the following groups includes sexually transmitted diseases  
 [NCERT; AMU (Med.) 2012]  
 (a) AIDS, syphilis, cholera  
 (b) HIV, malaria, trichomoniasis  
 (c) Gonorrhoea, hepatitis-B, chlamydia  
 (d) Hepatitis-B, haemophilia, AIDS
- Which one of the following statements is correct regarding Sexually Transmitted Diseases (STD)  
 [NEET (Karnataka) 2013]  
 (a) A person may contact syphilis by sharing milk with one already suffering from the disease  
 (b) Haemophilia is one of the STD  
 (c) Genital herpes and sickle – cell anaemia are both STD  
 (d) The chances of a 5 year boy contacting a STD are very little

- Match the following sexually transmitted diseases (Column-I) with their causative agent (Column-II) and select the correct option

	Column-I		Column-II
(A)	Gonorrhoea	(i)	HIV
(B)	Syphilis	(ii)	Neisseria
(C)	Genital Warts	(iii)	Treponema
(D)	AIDS	(iv)	Human Papilloma - Virus

Options [NEET 2017]

- |     |       |       |       |      |
|-----|-------|-------|-------|------|
|     | (A)   | (B)   | (C)   | (D)  |
| (a) | (ii)  | (iii) | (iv)  | (i)  |
| (b) | (iii) | (iv)  | (i)   | (ii) |
| (c) | (iv)  | (ii)  | (iii) | (i)  |
| (d) | (iv)  | (iii) | (ii)  | (i)  |

**Method of birth control**

- Given below are four methods (A-D) and their modes of action (a-d) in achieving contraception. Select their correct matching from the four options that follow  

Method	Mode of Action
A. The pill	(a) Prevents sperm reaching cervix
B. Condom	(b) Prevents implantation
C. Vasectomy	(c) Prevents ovulation
D. Copper T	(d) Semen contains no sperm

Matching [NCERT; CBSE PMT 2008; J & K CET 2012]  
 (a) A-(c), B-(d), C-(a), D-(b) (b) A-(b), B-(c), C-(a), D-(d)  
 (c) A-(c), B-(a), C-(d), D-(b) (d) A-(d), B-(a), C-(b), D-(c)
- Consider the statements given below regarding contraception and answer as directed thereafter  
 A. Medical Termination of Pregnancy (MTP) during first trimester is generally safe  
 B. Generally chances of conception are nil until mother breast-feeds the infant upto two years  
 C. Intrauterine devices like copper-T are effective contraceptives  
 D. Contraception pills may be taken upto one week after coitus to prevent conception  
 Which two of the above statements are correct  
 [NCERT; CBSE PMT 2008]  
 (a) A,C (b) A,B  
 (c) B,C (d) C,D
- Which of these is used to control human population  
 [MP PMT 2009]  
 (a) Estrogen + progesterone (b) IUCD and MTP  
 (c) Tubectomy & Vasectomy (d) All of these
- What is the function of copper-T  
 [CBSE PMT 2000; BHU 2002; AFMC 2010]  
 (a) Checks mutation  
 (b) Stops fertilization  
 (c) Stops zygote formation  
 (d) Stops obliteration of blastocoel
- Assisted reproductive technology, IVF involves transfer of  
 [CBSE PMT 2014]  
 (a) Zygote into the uterus  
 (b) Embryo with 16 blastomeres into the fallopian tube  
 (c) Ovum into the fallopian tube  
 (d) Zygote into the fallopian tube





23. Cu ions released from copper-releasing Intra Uterine Devices (IUDs) [NCERT; CBSE PMT (Pre.) 2010; NEET 2017]

- (a) Prevent ovulation
- (b) Make uterus unsuitable for implantation
- (c) Increase phagocytosis of sperms
- (d) Suppress sperm motility

24. The "World Intellectual Property Day" is observed on [KCET 2011]

- (a) February, 29<sup>th</sup>
- (b) June, 30<sup>th</sup>
- (c) April, 26<sup>th</sup>
- (d) September, 5<sup>th</sup>

25. The technique called gamete intrafallopian transfer (GIFT) is recommended for those females [CBSE PMT (Mains) 2011; AIPMT 2015]

- (a) Whose cervical canal is too narrow to allow passage for the sperms
- (b) Who can not provide suitable environment for fertilisation
- (c) Who can not produce an ovum
- (d) Who can not retain the foetus inside uterus

26. Medical Termination of pregnancy (MTP) is considered safe up to how many weeks of pregnancy [CBSE PMT (Pre.) 2011]

- (a) Six weeks
- (b) Eight weeks
- (c) Twelve weeks
- (d) Eighteen weeks

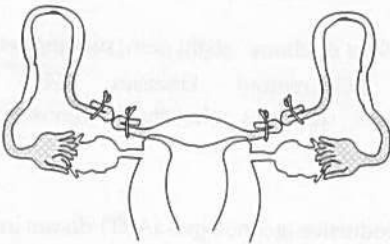
27. Which one of the following is the most widely accepted method of contraception in india, as at present [NCERT; KCET 2001; CBSE PMT (Pre.) 2011]

- (a) IUDs' (Intra uterine devices)
- (b) Cervical caps
- (c) Tubectomy
- (d) Diaphragms

28. One of the following is **not** a method of contraception-which one [NEET (Karnataka) 2013]

- (a) Condoms
- (b) Pills of a combination of oxytocin and vasopressin
- (c) Lippes loop
- (d) Tubectomy

29. What is the figure given below showing in particular [NCERT; CBSE PMT (Pre.) 2012]



- (a) Ovarian cancer
- (b) Uterine cancer
- (c) Tubectomy
- (d) Vasectomy

30. Match the contraceptive methods given under Column I with their examples given under Column II. Select the correct choice from those given below

Column I		Column II	
A.	Chemical	p.	Tubectomy and Vasectomy
B.	IUDs	q.	Copper T and Loop
C.	Barriers	r.	Condom and Cervical cap
D.	Sterilization	s.	Spermicidal jelly and foam
		t.	Coitus interruptus and calendar method

[KCET 2012]

- (a) A = s, B = q, C = r, D = p
- (b) A = s, B = t, C = q, D = r
- (c) A = p, B = r, C = q, D = t
- (d) A = s, B = q, C = t, D = p

31. One of the legal methods of birth control is [NEET 2013]

- (a) By a premature ejaculation during coitus
- (b) Abortion by taking an appropriate medicine
- (c) By abstaining from coitus from day 10 to 17 of the menstrual cycle
- (d) By having coitus at the time of day break

32. In context of Amniocentesis, which of the following statement is **incorrect** [NEET (Phase-I) 2016]

- (a) It is usually done when a woman is between 14-16 weeks pregnant
- (b) It is used for prenatal sex determination
- (c) It can be used for detection of Down syndrome
- (d) It can be used for detection of Cleft palate

33. Which of the following approaches does **not** give the defined action of contraceptive [NEET (Phase-I) 2016]

(a)	Barrier methods	Prevent fertilization
(b)	Intra uterine devices	Increase phagocytosis of sperms, suppress sperm motility and fertilizing capacity of sperms
(c)	Hormonal contraceptives	Prevent/retard entry of sperms, prevent ovulation and fertilization
(d)	Vasectomy	Prevents spermatogenesis

NCERT

Exemplar Questions

34. The method of directly injecting a sperm into ovum assisted by reproductive technology is called [NCERT]

- (a) GIFT
- (b) ZIFT
- (c) ICSI
- (d) ET

35. Increased IMR and decreased MMR in a population will [NCERT]
- Cause rapid increase in growth rate
  - Result in decline in growth rate
  - Not cause significant change in growth rate
  - Result in an explosive population
36. Intensely lactating mothers do not generally conceive due to the [NCERT]
- Suppression of gonadotropins
  - Hyper secretion of gonadotropins
  - Suppression of gametic transport
  - Suppression of fertilisation
37. Sterilisation techniques are generally full proof 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
  - It is a surgical procedure
  - Of lack of sufficient facilities in many parts of the country
- Choose the correct option [NCERT]
- (i) and (iii)
  - (ii) and (iii)
  - (ii) and (iv)
  - (i), (ii), (iii) and (iv)
38. A national level approach to build up a reproductively healthy society was taken up in our country in [NCERT]
- 1950s
  - 1960s
  - 1980s
  - 1990s
39. Emergency contraceptives are effective if used within [NCERT]
- 72 hrs of coitus
  - 72 hrs of ovulation
  - 72 hrs of menstruation
  - 72 hrs of implantation
40. Diaphragms are contraceptive devices used by the females. Choose the correct option from the statement given below
- They are introduced into the uterus
  - They are placed to cover the cervical region
  - They act as physical barriers for sperm entry
  - They act as spermicidal agents
- Choose the correct option [NCERT]
- (i) and (ii)
  - (i) and (iii)
  - (ii) and (iii)
  - (iii) and (iv)
41. The correct surgical procedure as a contraceptive method is [NCERT]
- Ovariectomy
  - Hysterectomy
  - Vasectomy
  - Castration
42. From the sexually transmitted diseases mentioned below, identify the one which does not specifically affect the sex organs [NCERT]
- Syphilis
  - AIDS
  - Gonorrhoea
  - Genital warts
43. Condoms are one of the most popular contraceptives because of the following reasons [NCERT]
- These are effective barriers for insemination
  - They do not interfere with coital act
  - These help in reducing the risk of STDs
  - All of the above

44. Choose the correct statement regarding the ZIFT procedure [NCERT]
- Ova collected from a female donor are transferred to the fallopian tube to facilitate zygote formation
  - Zygote is collected from a female donor and transferred to the fallopian tube
  - Zygote is collected from a female donor and transferred to the uterus
  - Ova collected from a female donor and transferred to the uterus

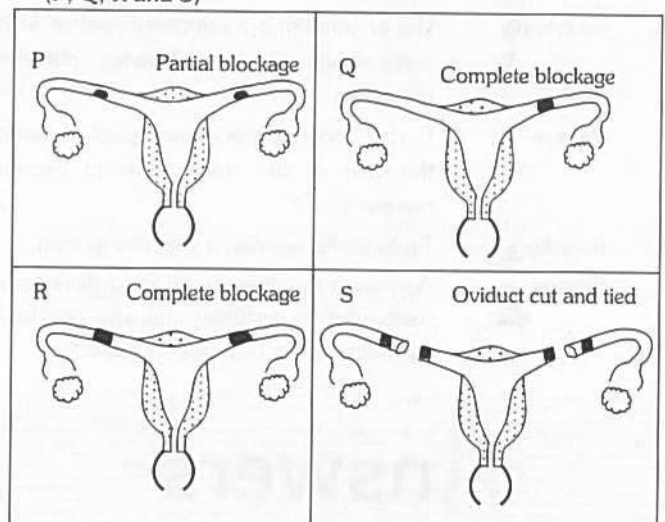
## GT Critical Thinking

### Objective Questions

1. The study of human population statistically is known as [KCET 1994; MP PMT 1996]
- Chromology
  - Demography
  - Population science
  - Sinography
2. Assisted Reproductive Technology does not include [KCET 2015]
- Zygote extra fallopian transfer
  - In vitro fertilization and embryo transfer
  - Artificial insemination
  - Gamete intra fallopian transfer
3. What is the full form of RCH [NCERT]
- Reproduction and Child Health Care
  - Reproduction, Contraception and Health
  - Reproductive and Child Health
  - None
4. What is true for natural methods of contraception [NCERT]
- They increase phagocytosis of sperms
  - They employ barriers to prevent fertilization
  - They are natural ways of avoiding chances of fertilization
  - They are surgical methods and are terminal methods
5. MTP is practised mainly to [NCERT]
- Get rid of unwanted female child legally
  - Get rid of unwanted pregnancies due to failure of contraception or rapes
  - Both (a) and (b)
  - Decrease population size
6. STDs lead to [NCERT]
- Itching, fluid discharge, slight pain, swellings etc.
  - Pelvic inflammatory Diseases (PID), ectopic pregnancies, still births, infertility, abortions etc.
  - Both (a) and (b)
  - None
7. Assisted reproductive technologies (ART) do not include
- GIFT and ZIFT
  - CVS and IUCD
  - IUI and ET
  - Intra uterine ET

8. What is the popular name of IVF  
 (a) Amniocentesis (b) Tubectomy  
 (c) Test tube baby (d) GIFT
9. Surgical methods of contraception prevent [NCERT]  
 (a) Gamete formation (b) Gamete motility  
 (c) Both (a) and (b) (d) Spermatogenesis only
10. Birth control pills check ovulation in female by inhibiting the secretion of [NCERT]  
 (a) Follicle stimulating hormone  
 (b) Luteinizing hormone  
 (c) Both  
 (d) None
11. Which of the following is a hormone releasing Intra Uterine Device (IUD) [CBSE PMT 2014; NEET (Phase-II) 2016]  
 (a) Cervical cap (b) Vault  
 (c) Multiload 375 (d) LNG-20
12. July 11 is observed as [BHU 2002; AIIMS 2003, 08]  
 (a) World population day (b) No tobacco day  
 (c) World environment day (d) World health day
13. Most literate state of India is [MP PMT 2001]  
 (a) Kerala (b) Goa  
 (c) U.P. (d) Sikkim
14. Who one of the following is awarded Noble Prize in physiology / Medicine 2010 for *in vitro* fertilization  
 (a) Robert Edwards (b) Patrick Stiptoe  
 (c) Gilbert Brown (d) Dr. Craig Venter
15. The Test-tube Baby Programme employs which one of the following techniques [NCERT; CBSE PMT (Pre.) 2012]  
 (a) Intra cytoplasmic sperm injection (ICSI)  
 (b) Intra uterine insemination (IUI)  
 (c) Gamete intra fallopian transfer (GIFT)  
 (d) Zygote intra fallopian transfer (ZIFT)
16. What is false for ZIFT [NCERT]  
 (a) ZIFT – Zygote intra Fallopian Transfer  
 (b) It follows IVF  
 (c) Zygote or early embryo  
 (d) Embryos with more than 8 blastomeres are transferred to the uterus
17. In-vitro fertilization is a technique that involves transfer of which one of the following into the fallopian tube  
 (a) Zygote only  
 (b) Embryo only, upto 8 cell stage  
 (c) Either zygote or early embryo upto 8 cell stage  
 (d) Embryo of 32 cell stage
18. Choose the right one among the statements given below [NCERT]  
 (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

19. 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 [NCERT]
- (a) (i) and (iii) (b) (ii) and (iii)  
 (c) (i) and (iv) (d) (i) and (ii)
20. What is the drawback of amniocentesis  
 (a) It may injure the foetus  
 (b) It may rupture protective membranes  
 (c) It is wrong in 50% cases  
 (d) It is misused in termination of female pregnancies
21. Which of the following **cannot** be detected in a developing foetus by amniocentesis [NEET 2013]  
 (a) Jaundice (b) Klinefelter syndrome  
 (c) Sex of the foetus (d) Down syndrome
22. The following figure shows the uterine tubes of four women (P, Q, R and S)



Out of them fertilization is impossible in which two women at present [NCERT]

- (a) P and Q (b) Q and R  
 (c) R and S (d) S and P
23. Progesterone in an IUD which makes the uterus unsuitable and cervix hostile to the sperms as they are [KCET 2015]  
 (a) Hormone releasing IUDs (b) Copper releasing IUDs  
 (c) Ideal contraceptive (d) Non-medicated IUDs
24. In case of a couple where the male is having a very low sperm count, which technique will be suitable for fertilisation [NEET 2017]  
 (a) Intrauterine transfer  
 (b) Gamete intracytoplasmic fallopian transfer  
 (c) Artificial Insemination  
 (d) Intracytoplasmic sperm injection

# Assertion & Reason

Read the assertion and reason carefully to mark the correct option out of the options given below :

- (a) If both the assertion and the reason are true and the reason is a correct explanation of the assertion
- (b) If both the assertion and reason are true but the reason is not a correct explanation of the assertion
- (c) If the assertion is true but the reason is false
- (d) If both the assertion and reason are false
- (e) If the assertion is false but reason is true

1. Assertion : Test tube baby has raised several legal problems.  
Reason : It involves *in vitro* fertilization followed by embryo transfer.
2. Assertion : Natality rate increases the population size and population density both.  
Reason : Natality increases the number of individuals in an area by births.
3. Assertion : Use of condom is a safeguard against AIDS and sexual diseases besides checking pregnancy.  
Reason : Certain contraceptives are planted under the skin of the upper arm to prevent pregnancy.
4. Assertion : Biologically, woman is superior to man.  
Reason : A woman provides nutrition to developing foetus during gestation and also nourishes the baby on her milk after its birth.

11	c	12	c	13	d	14	d	15	b
16	b	17	d	18	c	19	a	20	b
21	b	22	d	23	cd	24	c	25	c
26	c	27	a	28	b	29	c	30	a
31	b	32	d	33	d				

## NCERT Exemplar Questions

1	c	2	c	3	a	4	d	5	a
6	a	7	c	8	c	9	b	10	d
11	b								

## Critical Thinking Questions

1	b	2	a	3	a	4	c	5	b
6	c	7	b	8	c	9	b	10	c
11	d	12	a	13	a	14	a	15	d
16	d	17	c	18	b	19	c	20	d
21	a	22	c	23	a	24	c		

## Assertion and Reason

1	b	2	a	3	b	4	a		
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# Answers and Solutions

## Reproductive Health

1. (c) World Health Organisation (W.H.O.) has defined reproductive health as a total well being in physical, emotional, behavioural and social aspects of reproduction.
2. (c) Two primary factors for the increase in human population are :  
(i) Decrease in death rate, particularly maternal mortality rate (MMR) and infant mortality rate (IMR) and (ii) Increase in longevity.
5. (b) If number of individuals in pre-reproductive and reproductive group are almost same then in future population size will remain unchanged i.e. zero population. Now a days it is most desired trend in the world due to over expanding population and depleting resources.
8. (a) The ratio of various age groups is very important for future aspects of population. Three major age groups in any population are :
  - Pre-reproductive (Juvenile or dependent phase)
  - Reproductive (Adult phase)
  - Post reproductive (Old age)

# Answers

## Reproductive Health

1	c	2	c	3	a	4	b	5	b
6	b	7	b	8	a	9	b		

## Sexually Transmitted Disease

1	b	2	c	3	c	4	c	5	b
6	c	7	c	8	c	9	a	10	a

## Method of birth control

1	c	2	a	3	d	4	b	5	d
6	a	7	c	8	a	9	d	10	b

9. (b) Sex ratio is defined as the number of females per thousand males in a country or state. Sex composition is affected by three factors.
- Differentials in male-female ratio at birth.
  - Differentials in Mortality conditions of males and females.
  - Sex-selective migration.

### Sexually Transmitted Disease

- (b) Diseases which are transmitted through sexual intercourse with infected persons are collectively called sexually transmitted diseases (STDs). Gonorrhoea, syphilis, genital warts trichomoniasis, hepatitis B and of course, the most discussed infection in the recent years HIV leading to AIDS are some of the common STDs. Except HIV infection, Hepatitis-B, Syphilis, genital herpes, genital warts, Gonorrhoea specifically affect the sex organs.
- (c) Encephalitis is not an STD. This is actually an acute inflammation of the brain.
- (c) Chlamydiasis is caused by *Chlamydia trachomatis* of DEFGHIJK serotypes. Chlamydia is an obligate intracellular pathogen. It causes urethritis, epididymitis, mucopurulent, cervicitis, inflammation of fallopian tubes, proctitis (rectal pain with mucus and occasional bleeding) etc. It spreads by sexual contact with infected mating partner.
- (c) Trichomoniasis is caused by *Trichomonas vaginalis*. The parasite affects both males and females. In females it causes vaginitis with foul smelling. Yellow vaginal discharge and burning sensation. In males it causes urethritis epididymitis and prostatitis resulting in pain and burning sensation. It is transmitted through sexual intercourse.
- (b) Genital Warts is caused by human papilloma virus. Symptoms include benign, hard outgrowths with horny surface (warts) over the skin and mucosal surface of external genitalia and perianal area. It spreads through sexual intercourse with carriers of the viruses of this disease.
- (c) Gonorrhoea is caused by bacterium *Neisseria gonorrhoea*. The bacterium lives in genital tubes produces pus containing discharge, pain around genitalia and burning sensation during urination. It may lead to arthritis and eye infection in children of gonorrhoea afflicted mothers. It is spread through sexual contact common toilets and under-clothes.
- (c) It is caused by bacterium *Treponema pallidum*. Symptoms of this disease are painless ulcer on the genitals. Swelling of local lymph gland skin lesions, rashes, hair loss, swollen joints. It is transmitted through sexual contact and from mother to children.

- (c) Sexually Transmitted Diseases (STD) are a group of communicable diseases that are transmitted by sexual contact and caused by wide range of bacterial, viral, protozoal and fungal agents and ectoparasites.  
Example : Gonorrhoea, syphilis, chancroids, Genital chlamydial infection, Genital Herpes, Hepatitis, AIDS Trichomoniasis etc.

### Methods of birth control

- (b) The copper -T is also known as intra-uterine device. It is a loop which is placed in the uterus and prevents fertilization and implantation.
- (d) In IVF, zygote or the embryo upto 8-celled stage is transferred into the fallopian tube.
- (a) The method of sterilization is tubectomy (female) or vasectomy (male). While loop, IUD and diaphragm are temporary way to keep time gap between two children. Sterilization provides a permanent and sure birth control. It is called vasectomy in man and tubectomy in woman.
- (c) Permanent method of birth control in which either testes are surgically removed, called castration.
- (d) Test tube baby means ovum fertilised outside the mother body and then implanted in uterus for growth and development.
- (c) Surrogate mother is woman who bears a baby for another couple.
- (c) Surgical removal of uterus is called hysterectomy. Vasectomy is surgery of seminal tube or tubectomy is surgery of fallopian tube. Anatomy is the internal structure.
- (d) Amniocentesis involves the analysis of Amniotic fluid is withdrawn. It contains foetal skin cells and a number of proteins especially enzymes. The cells can be cultured in vitro for further examination.
- (c) Amniocentesis is a technique used for determining the sex of the foetus and a process to determine any hereditary disease in the embryo.
- (a) Amniotic fluid contains foetal skin cells that are stained to determine the presence of sex chromatin (barr body). The presence of barr body indicates that the developing foetus is female with 2X chromosome.
- (b) Amniocentesis is a prenatal diagnostic technique to determine the sex and condition of the foetus. In the early stage of pregnancy, small amount of amniotic fluid is drawn by surgical needle and then cultured for study.
- (d) In amniocentesis the fluid is taken from amniotic fluid, which is immediate surrounding of foetus.

23. (cd) Intra Uterine Devices (IUDs) are inserted by doctors in the uterus through Vagina. These intra Uterine Devices are available as the non-medicated IUDs (e.g. Lippes loop) copper releasing IUDs ( $CuI$ , Cu7, multiload 375) and the hormone releasing IUDs (Progestasert, LNG-20). IUDs increases phagocytosis of sperms within the uterus and the Cu ions released suppress sperm motility and the fertilizing capacity of sperms.
26. (c) MTPs are considered safe upto twelve weeks of pregnancy.
27. (a) The most widely accepted method of contraception in india is IUDs. Intra utrine device (Copper MIT) inhibit fertilization and help in birth control.
28. (b) Oxytocin is birth hormone and vasopressin is used to conserve water.
29. (c) This procedure of ligating and cutting fallopian tubes is called tubectomy.
19. (c) Intentional or voluntary termination of pregnancy before the foetus becomes viable is called medical termination of pregnancy (MTP) or induced abortion. MTPs are safe during the first trimester of pregnancy (i.e. upto 12 weeks of pregnancy), however these are much more riskier in second trimester of pregnancy.
20. (d) Unfortunately, the useful technique of amniocentesis is being misused to kill the normal female foetuses as it can help detect the sex of foetus. Some way out to end this malpractice must be found. Understanding of equality of sexes can help in this matter. Determination of sex by amniocentesis has been banned.

### Critical Thinking Questions

1. (b) The scientific study of human population is called demography. It deals with (i) Change in population (ii) Composition of population (iii) Distribution of population in space.
7. (b) ART include a number of special techniques which assist infertile couples to have children. Some prominent techniques are :
- Test tube baby programme
  - Gametic Intra Fallopian Transfer (GIFT)
  - Intra Cytoplasmic Sperm Injection (ICSI)
  - Artificial Insemination Technique (AIT)
  - IUI and ET
  - ZIFT
  - Intra Uterine ET
8. (c) Test tube baby – This method involves in vitro fertilization (IVF) i.e. fertilization of male gamete (Spermatozoan) and female gamete (ovum) outside the body in almost similar conditions as that in the body followed by zygote or embryo transfer (ET).
11. (d) LNG-20 is a hormone releasing intra-uterine device (IUD).
12. (a) The five billionth baby was born on july 11, 1987, it has been observed as world population day.
13. (a) Literacy rate of Kerala is 90.59% as per 1991 census.
17. (c) The baby produced by conceiving in a culture dish and nursing in the uterus is called a test tube baby. This method involves in vitro fertilization (IVF). Fertilization of male and female gamete outside the body in almost similar conditions as that in the body followed by embryo transfer (ET). Either zygote or early embryo upto 8 blastomeres is transferred into the fallopian tube to complete its future development.
1. (b) In very rare cases, a surrogate mother may have to be used to bring up *in vitro* fertilized ovum to maturity. Though biological realization of a test tube baby is a remarkable achievement, it has raised several ethical and legal problems like the right over the child. The technique of *in-vitro* fertilization followed by the embryo-transfer in the uterus of the normal female to start the development and finally leading to normal birth, is called test tube baby.
2. (a) Natality is generally expressed as number of births per 1,000 individuals of a population per year. Crude birth rate is the number of births per 1,000 persons in the middle of a given year, i.e., on July 07, It increases the population size (total number of individuals of a population) and population density.
3. (b) It is a simple but effective method and has no side effect. It checks pregnancy by preventing deposition of semen in the vagina. Condom should be used regularly and put on before starting coital activity, otherwise sperm containing lubricating fluid may be left in the vagina. Condom is also a safeguard against infection of AIDS and sexual diseases (STDs).  
Certain contraceptives, such as progestin, minipil or progesterone in combination with estrogen are also used by the females as injections or implants under the skin of the upper arm.
4. (a) Woman plays an important role in the continuity of the family and human race. She provides nutrition to the foetus in her womb for about nine months (280 days) through placenta. Even after birth, she nourishes the infant on her milk. Hence, biologically woman is superior to man.

### Assertion and Reason

## Reproductive Health

## SET Self Evaluation Test

- Amniocentesis is the withdrawal of amniotic fluid in [MP PMT 2000]
  - Menopause
  - Lactation
  - Gestation
  - Pregnancy
- When environmental conditions are non-limiting what will happen [DPMT 2007]
  - Maximum mortality and minimum natality
  - Mortality minimum
  - Natality minimum
  - Mortality maximum
- The long term planning for human civilization is [CBSE PMT 1996]
  - Increase in food production
  - Colonisation of rarely populated area
  - Control of human diseases
  - None of the above
- At what stage the embryo is implanted in the uterus
  - Immediate after fertilization
  - After 16 cells stage
  - After 64 cells stage
  - After 32 cells stage
- What is the purpose of tubectomy [MP PMT 1995]
  - To prevent embryonic development
  - To prevent sexual intercourse
  - To prevent formation of eggs
  - To prevent fertilization
- "Saheli" – a new oral contraceptive for the females, was developed by the scientists at which institute [NCERT; Kerala PMT 2011; MP PMT 2011]
  - C.D.R.I. – Lucknow
  - I.I.Sc. - Banglore
  - C.S.I.R. - New Delhi
  - I.C.M.R. - New Delhi
- Artificial insemination means [NEET 2013]
  - Introduction of sperms of a healthy donor directly into the ovary
  - Transfer of sperms of a healthy donor to a test tube containing ova
  - Transfer of sperms of husband to a test tube containing ova
  - Artificial introduction of sperms of a healthy donor into the vagina

## AS Answers and Solutions

1	d	2	a	3	b	4	d	5	d
6	a	7	d						

- (d) Amniotic fluid is secreted by amnion of foetus during pregnancy.
- (a) Maximum reproductive capacity or biotic potential ( $r$ ) can be realised only when environmental resources are non-limiting and conditions favour minimum mortality (specific mortality). However environment has a limiting effect on the rise of population. The sum of abiotic (eg. Temperature, water space etc.) and biotic (eg. Food, competition, disease, predation etc.) factors checks the rise in population size and prevents the species to realise its biotic potential.  
It helps in limiting population size to below the carrying capacity.

\* \* \*

