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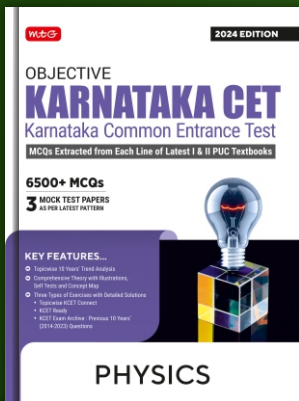
BIOLOGY

mtg Introducing

OBJECTIVE KARNATAKA CET

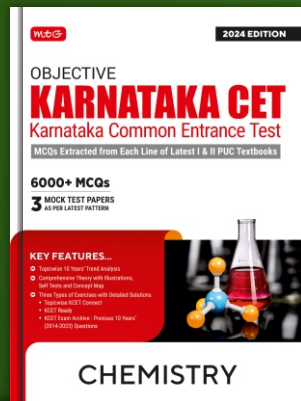
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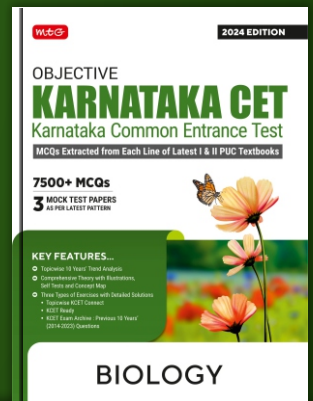
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- ⇒ Topicwise 10 Years' Trend Analysis
- ⇒ Comprehensive theory with illustrations and concepts maps.
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- ⇒ Detailed solutions for all exercises and questions.
- ⇒ Three types of exercises
 - KCET Connect – Level 1 – Topic-wise MCQs
 - KCET Ready – Level 2 – Chapter-wise MCQs
 - KCET Exam Archive – Level 3 – Previous 10 Years' (2014-2023) Questions

3

Reproductive Health

10 Years' KCET Topicwise Trend at a Glance

NCERT Topic	No. of Questions									
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
3.1 Reproductive Health – Problems and Strategies	-	-	-	-	1	-	-	-	-	1
3.2 Population Explosion and Birth Control	-	-	1	-	1	-	1	-	-	-
3.3 Medical Termination of Pregnancy	-	-	-	-	1	-	-	-	-	1
3.4 Sexually Transmitted Infections	-	-	1	-	1	-	1	-	-	-
3.5 Infertility	-	-	1	-	1	-	1	-	-	-

3.0 Introduction

The term **reproductive health** refers to healthy reproductive organs with normal functions. However, it has a broader perspective and includes the emotional and social aspects of reproduction also. According to the World Health Organisation (WHO), reproductive health means a total well-being in all aspects of reproduction, *i.e.*, physical, emotional, behavioural and social. Therefore, a society with people having physically and functionally normal reproductive organs and normal emotional and behavioural interactions among them in all sex-related aspects might be called reproductively healthy.

3.1 Reproductive Health – Problems and Strategies

- India was the first country in the world to start action plans and programmes at a national level to attain total reproductive health as a social goal and these programmes called '**family planning**'. These programmes were initiated in **1951** and were periodically assessed over the past decades. Improved programmes covering wider reproduction-related areas are currently in operation under the popular name '**Reproductive and Child Health Care (RCH)** programmes'.

Major tasks carried out under these programmes are :

- creating awareness among people about various reproduction related aspects;
- providing facilities and support for building up a reproductively healthy society.

Maternal and child health services and family planning are the important programmes of health care centres. The various **problems** related to reproductive health in human beings are :

- Overpopulation
- Early marriage : Children are often married in some parts of the country as soon as they attain puberty.
- Health of mothers : Early marriage leads to several diseases in mothers.

Some of the **strategies** that can be adopted to achieve total reproductive health are :

- The print-media governmental and non-governmental agencies have taken various steps to create awareness among the people about reproduction-related aspects with the help of audio-visual.
- Parents, other close relatives, teachers and friends, also have a major role in the dissemination of the reproductive health related information.
- To provide right information to the young so as to discourage children from believing in myths and having misconceptions about sex-related aspects, introduction of sex education in schools should be encouraged.
- Proper information about reproductive organs, adolescence and related changes, safe and hygienic sexual practices, sexually transmitted diseases (STD), AIDS, etc., would help people, especially those in the adolescent age group to lead a reproductively healthy life.
- Educating people, especially fertile couples and those in marriageable age group, about available birth control options, care of pregnant mothers, post-natal

care of the mother and child, importance of breast feeding, equal opportunities for the male and the female child, etc., would address the importance of bringing up socially conscious healthy families of desired size.

(vi) Awareness of problems due to uncontrolled population growth, social evils like sex-abuse and sex-related crimes, etc., need to be created to enable people to think and take up necessary steps to prevent them and thereby build up a socially responsible and healthy society.

(vii) For successful action plans to attain reproductive health requires good infrastructural facilities, professional expert knowledge and material support. It is necessary to provide medical help and care for reproduction related problems like menstrual problems, infertility, pregnancy, delivery, contraception, abortions, sexually transmitted diseases (STDs).

- Implementation of better techniques and new strategies are also required to provide better care and help to people for reproductive health.

Amniocentesis : Amniocentesis is a fetal sex determination and disorder test based on the chromosomal pattern in the amniotic fluid surrounding the developing embryo. Amniotic fluid contains cells from the skin of the fetus and other sources. These cells can be used to determine the sex as well as survivability of the fetus, to identify certain genetic disorders like Down's syndrome, haemophilia, sickle cell anaemia, etc. If it is established that the fetus is likely to suffer from a serious incurable congenital defect, then the mother should get the fetus aborted.

Misuse of amniocentesis : It is being used to kill the normal female fetus. It is legally banned for the determination of sex to avoid female feticide.

Research in reproductive health area : It should be encouraged and supported to find out new methods. "Saheli" a new oral contraceptive for the females was developed by our scientists at **Central Drug Research Institute (CDRI) in Lucknow, India.**

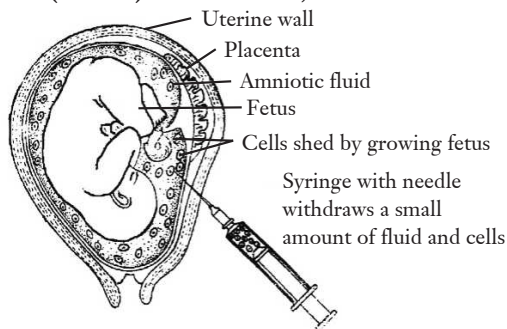


Fig.: Amniocentesis

Factors indicating improved reproductive health are :

- Better awareness about sex related matters,

- Increased number of medically assisted deliveries,
- Better post-natal care leading to decreased maternal and infant mortality rates
- Increased number of couples with small families, better detection and cure of STDs ; and
- Overall increased medical facilities for all sex-related problems, etc.

Illustration : Mention the problems that are taken care of by Reproduction and Child Health Care Programme.

Soln.: Reproductive and Child Health Care (RCH) programmes cover wide range of reproduction related areas. Creating awareness among people about various reproduction related aspects and providing facilities and support for building up a reproductively healthy society are the major tasks under these programmes.

Illustration : How is amniocentesis misused?

Soln.: Amniocentesis is a prenatal diagnostic technique used to determine sex and metabolic disorders of an unborn fetus. This technique is often misused to kill normal female fetus.

3.2 Population Stabilisation and Birth Control

Population Stabilisation

Human population is increasing at a very fast rate over relatively short period of time. Such a rapid or exponential increase in population is termed as **population explosion**. Increased health facilities along with better living conditions had an explosive impact on the growth of population. The world population has increased from around 2 billion in 1900 to about 6 billion by 2000 and 7.2 billion in 2011. Similarly, in India also population which was approximately 350 million at the time of our independence have crossed 1.2 billion in May 2011.



The scientific study of human population is called demography.

Reasons for population explosion

- Reduced death rate particularly **maternal mortality rate (MMR)** and **infant mortality rate (IMR)**
- Increase in number of people in reproductive age.

Through our RCH programmes, population growth rate was brought down marginally.

According to the 2011 census report, the population growth rate was less than 2 per cent, *i.e.*, 20/1000/year, a rate at which our population could increase rapidly.

Impacts of population explosion

The alarming growth rate could lead to an absolute scarcity of even the basic requirements, *i.e.*, food, shelter and clothing. Therefore, the government was forced to take up serious measures to check this population growth rate.

Info Shots

Reproductive and Child Health Care Programme

Aim :

- Creating awareness among people about various reproduction related aspects
- Providing facilities and support for building up of a reproductively healthy society

We Two, Our Two
(Hum Do, Hamare Do)

To reduce

- Infant Mortality Rate (IMR)
- Maternal Mortality Rate (MMR)

Stop Female Feticide

Some control measures of population explosion

The most important **step** to overcome this problem is :

- Motivate smaller families by using various contraceptive methods.
- Advertisements and posters in the media, etc., showing a happy couple with two children with a slogan *Hum Do Hamare Do* (we two, our two) are

used. Many couples, mostly the young, urban, working ones have even adopted a '**one child norm**'.

- Statutory raising of marriageable age in both male and females to 21 years and incentives given to couples with small families are two other measures taken to tackle this problem.

Birth Control

The regulation of conception by preventive methods or devices to limit the number of offspring is called **birth control**. A variety of methods are known for birth control. The birth control methods which deliberately prevent fertilisation are referred to as **contraception**. **Contraceptive methods** are preventive methods to help woman avoid unwanted pregnancies.

Characteristics of an ideal contraceptive

An ideal contraceptive should be user - friendly, easily available, effective and reversible with no or least side-effects. It should not interfere with the sexual drive, desire or sexual act of the user. These methods are mainly grouped into **temporary** and **permanent** methods.

Temporary methods

These methods are commonly used to postpone or to space births. These methods prevent conception only for a limited period. Their regular use is necessary for continued avoidance of pregnancy. These are further of many types :

Natural (Traditional) methods

These methods work on principles to avoid meeting of sperm and ova. These include **periodic abstinence**, **withdrawal method** or **coitus interruptus** and **lactational amenorrhea**.

Natural Methods

Periodic abstinence or Rhythm method

- The couples should avoid or abstain from coitus from day 10 to 17 of the menstrual cycle because ovulation occur during this period.
- This is called **fertile period** as chances of fertilisation are very high during this period.
- The effectiveness of this method is limited because only a few women have regular menstrual cycles and the exact time of ovulation cannot be predicted.

Coitus interruptus or Withdrawal method

- Male withdraws penis from vagina just before ejaculation, so that semen is not ejaculated into the vagina and thus, fertilisation is prevented.

Lactational amenorrhea method

- It is based on the fact that ovulation and the menstrual cycle do not occur during the period of intense lactation following child birth (parturition).
- This method is considered effective only upto a maximum period of six months following parturition, as chances of conception are least till the mother breast feeds the child fully.

Info Shots

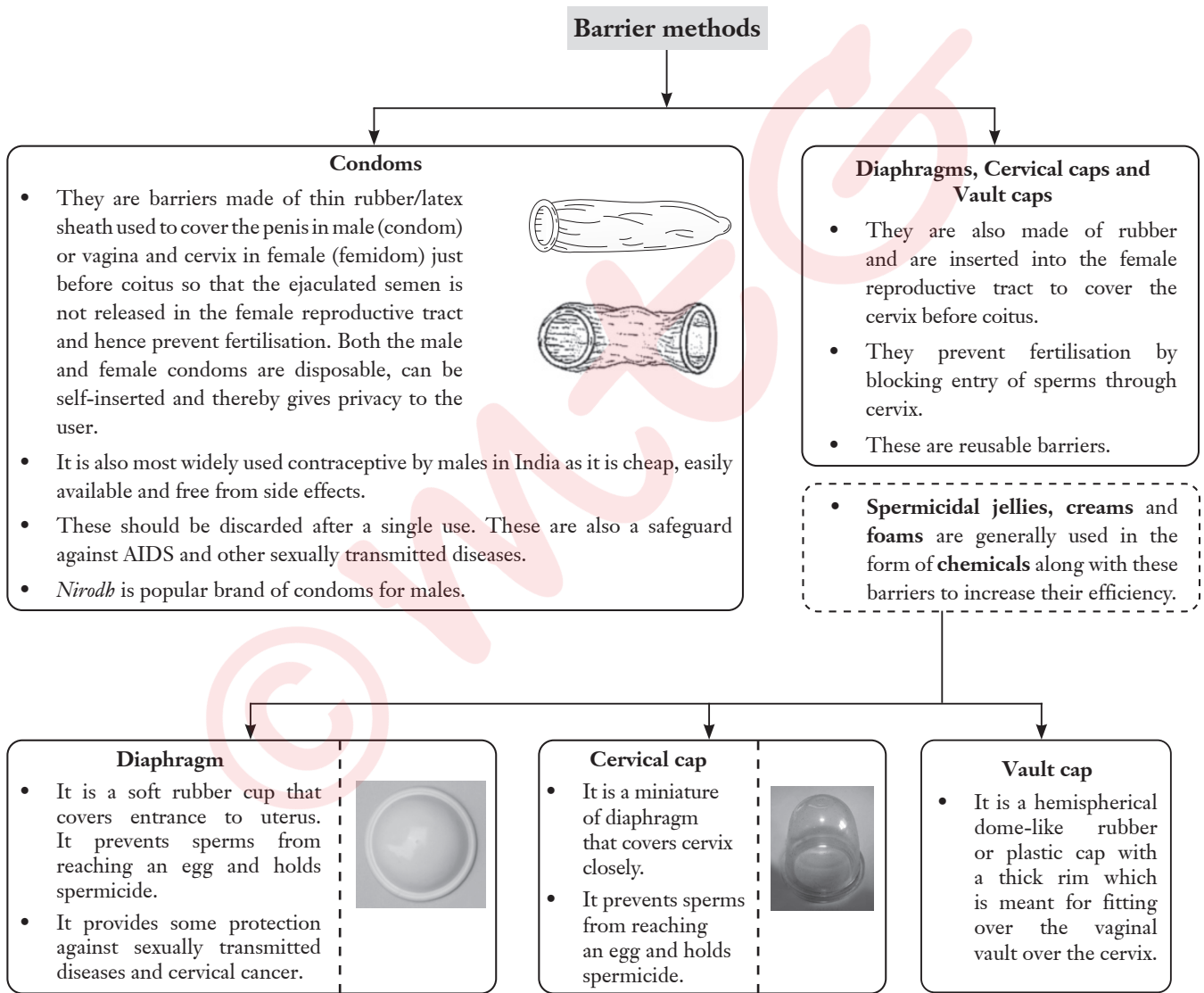
Coitus interruptus method is only moderately effective because male produces some lubricating fluid before ejaculation that also contains many sperms.

Illustration : State one reason why breast-feeding the baby acts as a natural contraceptive for the mother?

Soln.: Ovulation, and therefore the menstrual cycle, does not occur during intense lactation period (following parturition). Therefore, breast feeding the baby act as a natural contraceptive for the mother but that too upto a maximum period of six months following parturition.

Barrier methods

Ovum and sperms do not meet physically due to barriers, and thus fertilisation does not occur.



Intra-Uterine Devices (IUDs)

These are plastic or metal objects which are inserted by doctors or expert nurses in the uterus through vagina.

Types of IUDs

These are available as :

- (i) non-medicated IUDs (e.g., Lippes loop),
- (ii) **copper releasing IUDs** (e.g., CuT, Cu7, Multiload 375); and
- (iii) hormone releasing IUDs (e.g., *Progestasert*, LNG-20). IUDs increase phagocytosis of sperms within

the uterus and the Cu ions released suppress sperm motility and the fertilising capacity of sperms. The hormone releasing IUDs, in addition, make the uterus unsuitable for implantation and the cervix hostile to the sperms. IUDs are ideal contraceptives for the females who want to delay pregnancy and/or space children. It is one of most widely accepted methods of contraception in India.

Illustration : Which IUD you would recommend to promote the cervix hostility to the sperms?

Soln.: Progestasert is a hormone releasing intra-uterine contraceptive device which makes the cervix hostile to the sperms.

Illustration : Why are copper containing intra-uterine devices considered an ideal contraceptive for females?

Soln.: Copper containing intrauterine devices (CuT, Cu7, etc) are considered effective contraceptives for females as the Cu ions released by them suppress sperm motility and fertilising capacity of the sperms. Hence, they act as effective birth control method.

Oral contraceptives

These are physiological contraceptives used in the form of **pills** (tablets) and taken by women to prevent conception. Pills have to be taken daily for a period of 21 days starting preferably within the first five days of menstrual cycle. After a gap of 7 days (during which menstruation occurs) it has to be repeated in the same pattern till the female desires to prevent conception. They inhibit ovulation and implantation as well as alter the quality of cervical mucus to prevent/retard entry of sperms. Pills are very effective with lesser side effects and are well accepted by the females.

Pills are of two types : **combined pills** and **mini pills**.

Combined pills are most commonly used contraceptive pills which contain synthetic progesterone and estrogen to check ovulation. **Mini pills** contain progestin (progesterone like synthetic hormone) only.

Info Shots

Progesterone is pregnancy maintaining hormone.

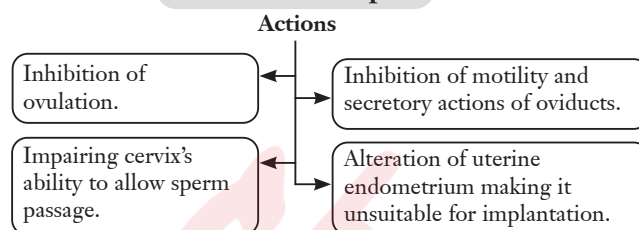
Pills **Mala D** and **Mala N** are commonly used combined contraceptive pills. These are taken daily without break.

Oral contraceptive pill, *Sabeli* contains a non-steroidal preparation called centchroman which is taken 'once a

week'. It has very high contraceptive value with few side effects.

The most common form of **emergency contraceptive** is a kit consisting of high dose of birth control pills. These kits can prevent pregnancy within 72 hours after unprotected sexual intercourse.

Oral hormonal pills



Injectables

Other contraceptives used by females include **hormonal implants** and **hormone injections** under skin (Depo Provera), etc. Their mode of action is similar to that of pills and their effective periods are much longer.



Fig. : Implants

Info Shots

Depot medroxyprogesterone acetate (DMPA) and **Norethiosterone enanthate (NET-EN)** are two injectable hormonal contraceptives.

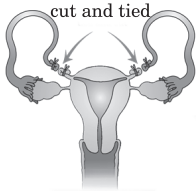
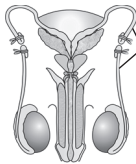
Illustration : What do oral pills contain and how do they act as effective contraceptives?

Soln.: Oral pills contain either progestogen alone or a combination of progestogen and estrogen both. Oral pills inhibit ovulation, motility and secretory activity of oviducts and changes the quality of cervical mucus that impairs transport of sperms and also alter the uterine endometrium and makes it unsuitable for implantation. Hence, they act as effective contraceptives for human females.

Permanent methods

These methods block gamete transport and hence prevent fertilisation.

Types of Permanent Methods

Tubectomy	Fallopians tubes cut and tied	Vasectomy	Vas deferens cut and tied
<ul style="list-style-type: none"> • It is the sterilisation procedure in females. • A small part of the fallopian tube is removed or tied up through a small cut in the abdomen or through vagina. 		<ul style="list-style-type: none"> • It is the sterilisation procedure in males. • A small part of the vas deferens is removed or tied up through a small cut on the scrotum. 	

Both vasectomy and tubectomy are very **effective** methods but **reversibility** is very **poor**.

The selection of a suitable contraceptive method and its use should always be undertaken in consultation with qualified medical professionals. The contraceptives are not regular requirements for the maintenance of reproductive health. In fact, they are practiced against a natural reproductive event, *i.e.*, conception/pregnancy. One is forced to use these methods either to prevent pregnancy or to delay or space pregnancy due to personal reasons. The widespread use of these methods have a significant role in checking uncontrolled growth of population.

Side effects of anti-natural contraceptives

Nausea, abdominal pain, breakthrough bleeding, irregular menstrual bleeding, breast cancer.

Illustration : Mention a surgical contraceptive method that can be adopted by the male partner of a couple.

Soln.: Surgical contraception method or sterilisation method adopted by the male partner of a couple is vasectomy. It blocks gamete transport and prevent conception. It is a permanent method of birth control. In vasectomy a small part of the vas deferens is removed or tied up through a small cut on the scrotum to prevent passage of sperms. This technique is highly effective but the reversibility is very poor.

Self Test - 1

- According to whom, reproductive health means a total well-being in all aspects of reproduction?
 - NGO
 - RCH
 - WHO
 - UNESCO
- In _____, amniotic fluid of the developing fetus is taken to determine chromosomal abnormalities.
 - menopause
 - lactation
 - amniocentesis
 - parturition
- Amniocentesis is used for determining
 - heart disease
 - brain disease
 - genetic disorder
 - all of these.
- Which one of the following can be determined by amniocentesis?
 - Down syndrome
 - Haemophilia
 - Sex of the unborn child
 - All of these
- Which oral contraceptive is developed by CDRI?
 - Saheli
 - Mala-D
 - Mala-M
 - None of these
- Human population after 1900 is thought to be in
 - lag phase
 - exponential phase
 - stationary phase
 - none of these.
- Which birth control method is referred to as withdrawal method?
 - Periodic abstinence
 - Coitus interruptus
 - Lactational amenorrhea
 - Rhythm method
- Which method helps in contraception by absence of ovulation?
 - Coitus interruptus
 - Withdrawal method
 - Rhythm method
 - Lactational amenorrhea
- The birth control device used by women is
 - diaphragm
 - vault
 - copper T
 - all of these.
- Which of the following is a method of birth control?
 - IUDs
 - GIFT
 - ZIF
 - IVF

3.3 Medical Termination of Pregnancy (MTP)

Medical termination of pregnancy (MTP) or **induced abortion** is intentional or voluntary termination of pregnancy before full term. Approximately **45 to 50 million** MTPs are performed in a year all over the world which accounts to 1/5th of the total number of conceived pregnancies in a year. Whether to accept / legalise MTP or not is being debated upon in many countries due to emotional, ethical, religious and social issues involved in it.

In 1971, Government of India legalised MTP with some strict conditions to avoid its misuse. These restrictions are all the more important to check indiscriminate and illegal female foeticides which are reported to be high in India.

Significance of MTP

(i) MTP is used to get rid of unwanted pregnancies either due to casual unprotected intercourse or failure of the contraceptive used during coitus or rapes.

(ii) MTPs are also essential in certain cases where continuation of the pregnancy could be harmful or even fatal either to the mother or to the fetus or both.

MTPs are considered relatively safe during the **first trimester**, *i.e.*, upto 12 weeks of pregnancy. Second trimester abortions are much riskier.

Problems Associated with MTPs

It is observed that a majority of the MTPs are performed illegally by unqualified quacks which are not only unsafe but could be fatal too.

Another dangerous trend is the misuse of amniocentesis. This amniocentesis is misused to determine the sex of the unborn child. Frequently, if the fetus is found to be female, it is followed by MTP- this is totally against what is legal.

These practices should be avoided because these are dangerous both for the young mother and the fetus. Effective counselling on the need to avoid unprotected coitus and the risk factors involved in illegal abortions as well as providing more health care facilities could reverse the mentioned unhealthy trend.

- Government of India in acted the Medical Termination of Pregnancy (Amendment) Act, 2017 to reduce the incidence of illegal abortion and consequent maternal mortality and morbidity.
- According to this Act, a pregnancy may be terminated within the first 12 weeks of pregnancy on the opinion of one registered medical practitioner. If the pregnancy is between 12-24 weeks, two registered medical practitioners must be of the opinion.

- The grounds for such termination of pregnancies are:

- (i) The continuation of the pregnancy would involve a risk to the life of the pregnant woman or of grave injury physical or mental health; or
- (ii) There is a substantial risk that of the child were born, it would suffer from such physical or mental abnormalities as to be seriously handicapped.

Illustration : “Our government has intentionally imposed strict conditions for MTP in our country.” Justify giving a reason.

Soln.: Government of India has imposed strict conditions for MTP because it is often misused for sex determination and illegal abortions of female fetuses. Due to female foeticides, male and female sex ratio may get disturbed, raising many ethical, religious and social issues.

3.4 Sexually Transmitted Infections

Diseases or infections which are transmitted through sexual intercourse with infected persons are collectively called sexually transmitted infections (STIs) or venereal diseases (VD) or reproductive tract infections (RTI). Gonorrhoea, syphilis, genital herpes, chlamydia, genital warts, trichomoniasis, hepatitis-B and HIV (leading to AIDS) are some of the common STIs. Among these, HIV infection is the most dangerous.

Infections like hepatitis-B and HIV can be transmitted by sharing of injection needles, surgical instruments, etc., with infected persons, transfusion of blood, or from an infected mother to the fetus too. Except for **hepatitis-B, genital herpes and HIV infections**, other diseases are completely curable if detected early and treated properly.

Problems Associated with ART

Early symptoms of most of these are minor and include itching, fluid discharge, slight pain, swellings, etc., in the genital region. Infected females may often be asymptomatic and hence, may remain undetected for long.

Absence or less significant symptoms in the early stages of infection and the social stigma attached to the STIs, deter the infected persons from going for timely detection and proper treatment. This could lead to **complications** later, which include pelvic inflammatory diseases (PID), abortions, still births, ectopic pregnancies, infertility or even cancer of the reproductive tract.

STIs are a major threat to a healthy society. Therefore, prevention or early detection and cure of these diseases are given prime consideration under the reproductive health-care programmes. Though all persons are vulnerable to these infections, their incidences are reported to be very high among persons in the age group of 15-24 years. There is no reason to panic because prevention is possible.

STIs can be prevented by following **measures**:

- Avoid sex with unknown/multiple partners.
- Always use condoms during coitus.
- Get complete treatment if diagnosed with disease.

Illustration : What are the measures one has to take to prevent from contracting STIs?

Soln.: The measures that one has to take to prevent from contracting STIs are :

- Avoid sex with unknown partners/multiple partners.
- Always use condoms during coitus.
- In case of doubt, go to a qualified doctor for early detection and get complete treatment if diagnosed with disease.

Illustration : Name two incurable STIs.

Soln.: Hepatitis B and AIDs are two incurable STIs.

Self Test - 2

- MTP stands for
 - Medical Termination of Pregnancy
 - Mental Trauma Phase
 - Menstrual Pain
 - none of these.
- On which of the following ground MTP cannot be done?
 - Rape
 - Contraceptive failure
 - Continuation of pregnancy is harmful to either mother or foetus or both.
 - If fetus is identified as female and not wanted by the couple.
- Which among the following is/are the reason to perform MTP?
 - Casual unprotected intercourse.
 - In case where continuation of pregnancy can be fatal.
 - In case of sexual assault.
 - All of these
- Intentional or voluntary termination of pregnancy before full term is called
 - MTP
 - STI
 - induced abortion
 - both (a) and (c).
- Which of the following is not an early symptom of STIs?
 - Itching
 - Swelling
 - High fever
 - Fluid discharge
- Which of the following venereal disease is not curable?
 - Hepatitis-B
 - Chlamydia
 - HIV infection
 - Genital herpes
- AIDS can spread by
 - sexual contact
 - transfusion of contaminated blood
 - sharing infected needles
 - all of these.
- Listed below are all venereal diseases except
 - Genital warts
 - Haemophilia
 - Trichomoniasis
 - Hepatitis-B.
- Hepatitis-B spreads through
 - sharing needles
 - transfusion of blood
 - infected mother to child
 - all of these.
- PID stands for
 - Penes inflammation disease
 - Pure inflammation disease
 - Pelvic inflammatory disease
 - Purely intestine disease.

3.5 Infertility

Inability to conceive or produce children inspite of unprotected sexual intercourse is called **infertility**. It is caused by various reasons which can be grouped under physical, congenital, immunological or even psychological disorders. In India, often the female is blamed for the couple being childless, but more often than not, the problem lies in the male partner.

Specialised infertility clinics can help in the diagnosis and proper treatment of some of these disorders and enable these couples to have children. However, where such diagnosis and treatments are not possible, the couples can be assisted to have children through certain special techniques called **Assisted Reproductive Technologies** (ART). Some important Assisted Reproductive Techniques.

Gamete Intra Fallopian Transfer (GIFT)

It is used in females who cannot produce ova but can provide suitable environment for fertilisation and further development of embryo. Ovum from the donor female is surgically removed and then introduced into the fallopian tube of female incapable of producing ovum for fertilisation.

Symptoms of SITs

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 artificial insemination 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.

Assisted Reproductive Technologies (ART)
Test tube baby

This method involves **in vitro fertilisation (IVF)**, *i.e.*, fertilisation of male and female gametes outside the body of female in almost similar conditions as that in the body followed by **embryo transfer (ET)**. In test tube baby programme, ova from wife/donor (female) and sperms from husband/donor (male) are collected and are induced to form zygote under simulated conditions in the laboratory. Embryo upto 8 blastomeres is transferred into the fallopian tube (**ZIFT-Zygote Intra Fallopian Transfer**) to complete its further development. If the embryo is with more than 8 blastomeres, it is transferred into the uterus (**IUT-Intra Uterine Transfer**) to complete its further development.

Intra Cytoplasmic Sperm Injection (ICSI)

In this technique, **sperm is directly injected into the ovum** to form an embryo in the laboratory. The embryo is later transferred by Intra-uterine transfer (IUT) in woman.

Info Shots

Embryos formed by *in-vivo* fertilisation (fusion of gametes within the female) also could be used for such transfer to assist those females who cannot conceive.

of the sperm from the husband/ donor semen. → Incubation of ovum and the sperm together in special media and environment. → Fertilisation and early development of the embryo in the culture plate. → Implantation of the 8-celled embryos (or more) in the uterine cavity.

Problems Associated with ART

All these techniques require extremely high precision handling by specialised professionals and expensive instrumentation. Therefore, these facilities are presently available only in very few centres in the country and their benefits is affordable to only a limited number of people. In the adoption of these methods emotional, religious and social factors are deterrents. **Adoption** : The ultimate aim of all these procedures is to have children and **adoption** is one of the best methods for couples looking for parenthood. In India we have so many orphaned and destitute children, who would probably not survive till maturity, unless taken care of. Our laws permit legal adoption, so, adoption is the best method for childless couples.

Illustration : A childless couple has agreed for a test tube baby programme. Name the basic steps the procedure would involve to conceive the baby.

Soln.: Two basic principle procedures adopted for test tube baby programme are ZIFT (Zygote Intra Fallopian Transfer) and IUT (Intra Uterine Transfer).

Illustration : “Intra-Cytoplasmic Sperm Injection” and ‘Gamete Intra Fallopian Transfer’ are two assisted reproductive technologies. How is one different from other?

Soln.: The difference between ICSI and GIFT are :

Intra Cytoplasmic Sperm Injection (ICSI)	Gamete Intra Fallopian Transfer (GIFT)
Spermatozoon/ Spermatisid is directly injected into the ovum by puncturing zona pellucida.	Both sperms and unfertilised ova are transferred into the fallopian tubes of the female where fertilisation takes place.

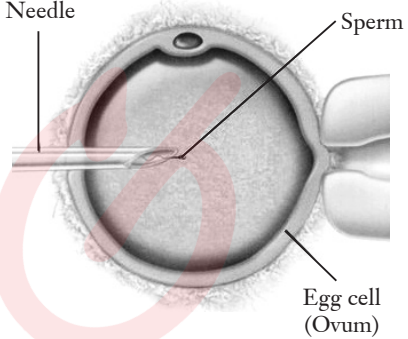
Info Shots

Steps of ART : Administration of gonadotropins or Clomiphene Citrate to the woman. → Aspiration of several ova (secondary oocytes) by laparoscopy. → Collection

Self Test - 3

- In ZIFT method, there is
 - transfer of embryo into uterus
 - transfer of morula into fallopian tube
 - transfer of zygote or early embryo upto 8 blastomeres into fallopian tube
 - none of these.
- IUI stands for
 - intra uterine injection
 - intra uterine implantation
 - intra uterine insemination
 - both (b) and (c)
- The technique of direct introduction of gamete into oviduct is

(a) MTP	(b) ET
(c) IVF	(d) GIFT.
- The stage of embryo which is transferred into the uterus after induced fertilisation of ovum in the laboratory is

(a) ZIFT	(b) IUT
(c) GIFT	(d) ICSI
- Which one of the assisted reproductive technologies is shown by the figure given below?
 

The diagram illustrates the process of Intracytoplasmic Sperm Injection (ICSI). It shows a cross-section of an egg cell (ovum) with a needle inserted into its cytoplasm. A single sperm is being injected through the needle. Labels include 'Needle', 'Sperm', and 'Egg cell (Ovum)'.

CONCEPT MAP

REPRODUCTIVE HEALTH

According to WHO, reproductive health means a total well-being in physical, emotional, social and behavioural aspect of reproduction. Reproductively healthy persons have physically and functionally normal reproductive organs and normal behavioural and emotional interactions among them in all sex-related aspects.

Sexually Transmitted Infections (STIs)

- Infections or diseases which are transmitted through sexual intercourse.
- Syphilis, gonorrhoea, AIDS, hepatitis B, genital herpes, genital warts, Chlamydia, trichomoniasis are common STIs.

Population Stabilisation

The rapid increase in population over a relatively short period is called population explosion.

Decline in death rate, decline in Maternal Mortality Rate (MMR), decline in Infant Mortality Rate (IMR), increase in number of people in reproductive age and early marriage are some of the reason for population explosion.

People should be educated about the advantages of small family, raising the marriageable age (21 years in both females and males), to adopt **birth control measures/contraception** to check birth rate are some of the control methods for this.

Amniocentesis

Amniocentesis is a fetal sex and disorder determination test based on the chromosomal pattern in the amniotic fluid surrounding the developing embryo.

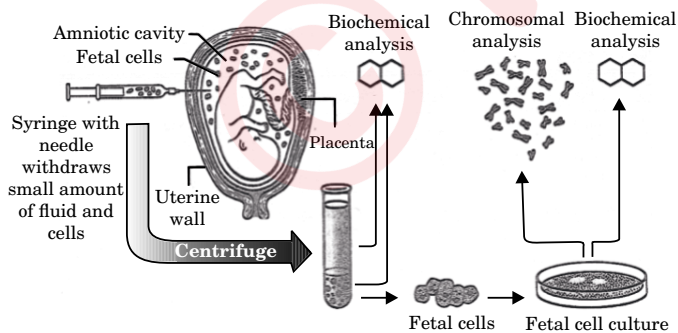


Fig.: Amniocentesis and procedure for prenatal diagnosis of biochemical and chromosomal disorders

Problems

Over population, early marriage, poor health of mothers, maternal and infant mortality rate, STIs, etc.

Infertility

It is a failure to conceive within one or more years in regular unprotected coitus. Specialised infertility clinics can help in proper treatment of some of these disorders and enable these couples to have children by surgical or hormonal methods. However, where such treatment is not possible, the couples can be assisted to have children through certain special techniques called the **assisted reproductive technologies (ART)**.

Test Tube Baby (IVF)

This technique involves fertilising one or more ova outside the body, and then transferring the fertilised ova (zygote or early embryo) into the fallopian tube (ZIFT - Zygote Intra Fallopian Transfer). If the embryo is with more than 8 blastomeres, it is transferred into the uterus (IUT - Intra Uterine Transfer) to complete its further development. This is also called *in vitro* fertilisation (IVF).

Gamete Intra Fallopian Transfer (GIFT)

Both sperms and ova are transferred to the oviducts, so that fertilisation occurs naturally in the woman's body (*in vivo*) rather than outside.

Intra Cytoplasmic Sperm Injection (ICSI)

In this procedure, first sperms are obtained through ejaculation, then one single spermatozoon or even a spermatid is injected directly into the cytoplasm of an oocyte by micropuncture of the zona pellucida.

Artificial Insemination

In artificial insemination (AI) technique, the sperms collected either from the husband or a healthy donor are artificially introduced either into the vagina or into the uterus (IUI - Intra-uterine insemination) of the female.

Strategies

- **Family planning programme** was initiated in India in 1951.
- **Reproductive and Child Health Care programmes (RCH)** to create awareness among people about various reproduction related aspects, problems due to uncontrolled population growth, sex abuse, etc., through audio-visuals, print media, by governmental and non-governmental agencies.
- Sex education in schools should be encouraged.
- Fertile couples should have knowledge about birth control devices, pre-natal and post-natal care of mother, etc.
- Statutory ban on amniocentesis (*i.e.*, a fetal sex determination test based on the chromosomal pattern in the amniotic fluid surrounding the developing embryo) for sex determination to legally check female feticides needs to be implemented.

Methods of Birth Control

Natural Methods

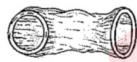
- Natural methods work on the principle of avoiding chances of ovum and sperms meeting.
- **Periodic abstinence, coitus interruptus (withdrawal method) and lactational amenorrhea method (LAM)** are some of natural methods.

Barrier Methods

- Ovum and sperms are prevented from physically meeting with the help of barriers.
- **Condom, femidom, diaphragm, cervical vault/cap** are some of the barriers.
- Spermicidal creams, jellies and foams are usually used in the form of chemicals alongwith these barriers to increase their contraceptive efficiency.



Condom



Femidom



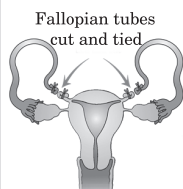
Diaphragm



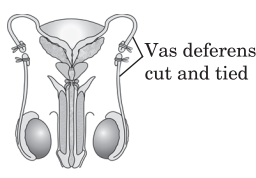
Spermicide cream

Sterilisation Methods

- Block gamete transport and thus prevent fertilisation.
- **Vasectomy** : In males, small part of vas deferens is removed or tied up.
- **Tubectomy** : A small part of fallopian tube is removed or tied up.



Tubectomy



Vasectomy

Medical Termination of Pregnancy (MTP)/Abortion

- Premature termination of pregnancy (upto 12 weeks).
- It helps in getting rid of unwanted pregnancies and such pregnancies which may be harmful or even fatal, either to the mother, or to the fetus, or both.
- Government of India legalised MTP in 1971 with some strict restrictions.

Intrauterine Devices (IUDs)

- Small device made of copper, plastic or stainless steel are inserted by a doctor into uterus through vagina.
- It is most widely accepted method in India. Presently available as the **non-medicated IUDs** (*e.g.*, Lippes loop), **copper releasing IUDs** (CuT, Cu7, Multiload 375) and the **hormone releasing IUDs** (Progestasert, LNG-20).
- IUDs increase phagocytosis of sperms within the uterus and the Cu ions released suppress sperm motility and fertilising capacity of sperms. Hormone releasing IUDs make the uterus unsuitable for implantation and the cervix hostile to the sperms.



Copper T



Multiload 375

Hormonal Methods

- Oral contraceptives used in the form of pills to prevent conception. **Combined pills** (contains both progesterone and estrogen) and **mini pills** (contains progesterone only) are types of oral contraceptives.
- **Mini pills** : Contains progesterone only; ovulation may occur but cervical mucus is thickened, preventing entry of sperm. To be taken daily for 21 days after menstruation. However, **Saheli** contains a non steroidal preparation. It is once a week pill, with high contraceptive value and very few side effects.
- **Combined pills** : Contains estrogen and progesterone; prevents development of ova and ovulation. One pill taken orally each day during first 3 weeks of cycle and after week 4 menstruation starts, and the pill is started again. Examples are Mala-D and Mala-N.
- **Subcutaneous implants** : Contain synthetic progesterone; blocks ovulation and thicken the cervical mucus to prevent sperm transport. It is inserted under the skin.
- **Morning after pills** : These pills can prevent pregnancy if taken within 72 hours of coitus. They can either suppress ovulation or prevent implantation. These pills are for emergency use only.
- **Hormonal injections** : These are progesterone-derivative injections. Injection is given once every 3 months and prevent ovulation, *e.g.*, Depo-Provera.



Implant

EXERCISE



KCET Connect

3.1 Reproductive Health-Problems and Strategies

- Which was the first country in the world to initiate family planning?
 - Canada
 - Iran
 - India
 - Japan.
- RCH stands for
 - Reproductive and Child Health Care Programmes
 - Remedies for Health Care Programmes
 - Reforms in Health Care Programmes
 - Reproductive Health Care.
- In amniocentesis, the fluid is taken from
 - developing fetus
 - placenta
 - mother's blood
 - body fluid of mother.
- Saheli, a new contraceptive for female was developed at
 - IARI, New Delhi
 - CDRI, Lucknow
 - IICB, Calcutta
 - AFMC, Pune.
- The permissible use of the technique amniocentesis is for
 - detecting sex of the unborn fetus
 - artificial insemination
 - transfer of embryo into the uterus of a surrogate mother
 - detecting any genetic abnormality.
- Which of the following cannot be detected in a developing fetus by amniocentesis?
 - Down's syndrome
 - Jaundice
 - Klinefelter's syndrome
 - Sex of the fetus.

3.2 Population Stabilisation and Birth Control

- The best solution to population problem in India is to
 - increase food production
 - increase medical facilities
 - conserve natural resources
 - reduce birth rate.
- Which of the following leads to growth in population?
 - maternal mortality rate increases
 - mortality decreases
 - mortality increases
 - infant mortality rate increases
- The growth in population is indicated by
 - emigration
 - mortality
 - nativity
 - none of these.
- High increase in population is due to
 - better living conditions
 - better medical facilities
 - decrease in death rate
 - all of these.
- Population explosion has occurred in the last
 - 500 years
 - 300 years
 - 100 years
 - 50 years.
- Netherlands is a small country, still it has high population. What is your conclusion?
 - Low birth rate
 - High birth rate
 - High mortality rate
 - Environmental conditions are not favourable
- What is the chief reason of population growth in a country?
 - Low number of young people
 - Low IMR and high MMR
 - Low population of young children
 - High birth rate
- One of the cause of explosive population growth is
 - decrease in death due to epidemics.
 - decrease in IMR.
 - increase in health facilities and better living conditions.
 - decrease in death due to natural disasters.

15. Natural contraceptive methods are broadly based on principle of
 (a) no fertilisation
 (b) avoiding chances of sperm and ovum meeting
 (c) prevention of implantation
 (d) adversely affect sperm motility.
16. Which of the following is hormone-releasing IUD?
 (a) LNG-20 (b) Multiload 375
 (c) Lippes loop (d) Cu7
17. Progestasert is
 (a) hormone releasing IUD
 (b) copper releasing IUD
 (c) oral contraceptive pill
 (d) implant.
18. A widely used temporary contraception method by males in India is
 (a) condom (b) diaphragm
 (c) cervical cap (d) IUD.
19. Which of the following is not a barrier method of birth control?
 (a) Condom (b) Cervical cap
 (c) Spermicidal creams (d) Diaphragm.
20. The cheap and convenient method of birth control in males is
 (a) vasectomy (b) IUDs
 (c) condom (d) tubectomy.
21. Barrier method of birth control in males involves the use of
 (a) creams (b) condom
 (c) lippes loop (d) diaphragm.
22. The barrier methods for population control includes
 (a) condom (b) diaphragm
 (c) IUD (d) all of these.
23. Barrier methods used to avoid pregnancy work by
 (a) preventing ovulation
 (b) preventing implantation
 (c) preventing-maturation of uterine endometrium
 (d) preventing meeting of sperm with egg.
24. Cu ions released from copper-releasing intra uterine devices (IUDs)
 (a) make uterus unsuitable for implantation
 (b) increase phagocytosis of sperms
 (c) suppress sperm motility
 (d) prevent ovulation.
25. Lactational amenorrhoea means
 (a) medical termination of pregnancy
 (b) oral administration of progesterone
 (c) coitus interruptus
 (d) absence of menstruation during intense lactation following parturition.
26. Lactational amenorrhoea is a natural method of contraception that
 (a) prevents ovulation
 (b) prevents spermatogenesis
 (c) prevents conception
 (d) both (a) and (c).
27. Which of the following contraceptive devices makes uterus unsuitable for implantation?
 (a) Progestasert (b) CuT
 (c) Lippe's loop (d) Multiload
28. To avoid pregnancy, sexual act must not be performed from _____ day of menstrual cycle.
 (a) 10th and 11th (b) 7th to 12th
 (c) 10th to 17th (d) 20th to 25th
29. Periodic abstinence is based on which of the following aspects?
 (a) Ovulation occurs on the 14th day of menstrual cycle.
 (b) Intense lactation after parturition.
 (c) Sperm's motility
 (d) All of these
30. Which of the following is correct for coitus interruptus?
 (a) It is the withdrawal method of natural contraception.
 (b) It is the hormonal method of birth control.
 (c) It involves periodic abstinence from sexual intercourse.
 (d) None of these
31. What is the function of copper-T?
 (a) Checks mutation
 (b) Stops embryonic development
 (c) Checks fertilisation
 (d) Checks maturation of egg
32. Which of the following method of contraception has least side effect?
 (a) IUD (b) Pills
 (c) Coitus interruptus (d) Cervical cap

33. IUDs are implanted in the
 (a) vagina (b) ovary
 (c) uterus (d) fallopian tube.
34. A birth control device which is fitted into female reproductive tract to cover the cervix of female is
 (a) condom
 (b) diaphragm and cervical cap
 (c) oral contraceptive pill
 (d) implant.
35. Diaphragms, cervical caps and vaults are
 (a) surgical intervention
 (b) for female use only
 (c) for male use only
 (d) none of these.
36. Oral contraceptives are prescribed in females to check
 (a) ovulation
 (b) fertilisation
 (c) sperm formation
 (d) entry of sperms in vagina.
37. Which oral contraceptive is taken weekly?
 (a) Saheli (b) Mala-D
 (c) Mala-M (d) None of these
38. Oral contraceptive pills contain
 (a) progestogens only
 (b) progestogens and estrogen combination
 (c) LH and progesterone
 (d) both (a) and (b).
39. Which is the most widely accepted method of contraception in India?
 (a) Pills (b) Vaults
 (c) Condoms (d) IUDs.
40. Oral contraceptives are used by
 (a) male
 (b) normal female only
 (c) pregnant female
 (d) both (a) and (b)
41. Saheli is
 (a) an oral contraceptive for females
 (b) a surgical sterilisation method for females
 (c) a diaphragm for females
 (d) a diaphragm used by males.
42. Component of oral pills is
 (a) progestogens (b) oxytocin
 (c) relaxin (d) none of these.
43. What are the characteristics of an ideal pill ?
 (a) Effective and reversible
 (b) Effective and non-reversible
 (c) No adverse effect on sexual drive
 (d) Both (a) and (c)
44. Which one of the following is not a method of contraception?
 (a) Condom
 (b) Pills having oxytocin and vasopressin
 (c) Lippes loop
 (d) Tubectomy
45. Most of the contraceptive pills contain
 (a) FSH and estrogen
 (b) LH and progesterone
 (c) estrogen and progestogens
 (d) FSH and LH.
46. The method of sterilisation in females is called
 (a) IUD (b) vasectomy
 (c) tubectomy (d) none of these.
47. The permanent method of birth control in males is
 (a) vasectomy (b) tubectomy
 (c) IUD (d) condom.
48. Which of the following is incorrect regarding vasectomy?
 (a) It is a surgical method
 (b) No sperm occurs in epididymis
 (c) Vasa deferentia is cut and tied
 (d) Irreversible sterility
49. Sterilisation is the surgical method to prevent more pregnancies. These methods inhibit
 (a) gametes transport
 (b) implantation
 (c) ovulation
 (d) both (b) and (c).

3.3 Medical Termination of Pregnancy (MTP)

50. In India, MTP was legalised in _____.
 (a) 1981 with no restrictions
 (b) 1971 with some strict conditions
 (c) 1961 with some superfluous conditions
 (d) not legalised
51. MTP is considered to be safe upto
 (a) 4 weeks of pregnancy
 (b) 8 weeks of pregnancy
 (c) 12 weeks of pregnancy
 (d) 20 weeks of pregnancy.

52. What does the letter 'T' represents in MTP?
 (a) Transferable (b) Temporary
 (c) Termination (d) Temporary
53. Induced abortion is also called
 (a) STD (b) MTP
 (c) IUD (d) PID.
54. Premature termination of pregnancy refer to
 (a) Medical Termination of Pregnancy (MTP)
 (b) Medical Abortion of Pregnancy
 (c) Medical Termination of Fetus
 (d) None of these.
55. One of the legal methods to terminate pregnancy
 (a) by having coitus at the time of day break
 (b) by a premature ejaculation during coitus
 (c) termination by taking an appropriate opinion of one registered medical practitioner
 (d) by abstaining from coitus from day 10 to 17 of the menstrual cycle.
56. MTPs have a significant role in _____ the population.
 (a) increasing (b) decreasing
 (c) immunising (d) stabilising
57. Select the incorrect statement.
 (a) In India, MTP is legalised but with some strict conditions.
 (b) Even breast cancer can occur as an ill-effect of use of contraceptive measures.
 (c) As an emergency contraceptive measure, IUD should be inserted within 72 hours of unprotected coitus.
 (d) Multiload 375 is a hormone releasing contraceptive.
58. Select the incorrect statement.
 (a) Medical termination of pregnancy (MTP) during first trimester is generally safe.
 (b) Nirodh protect the user from contracting STIs and AIDS.
 (c) Multiload 375 is an effective contraceptive.
 (d) Lippes loop is an example of hormone releasing IUD.
59. Which one of the following is most common STIs?
 (a) AIDS (b) Gonorrhoea
 (c) Syphilis (d) Chlamydia
60. Though the people of all ages are vulnerable to STDs, but they are more common to age group
 (a) 10-15 years (b) 15-24 years
 (c) 20-30 years (d) 30-45 years.
61. STDs are also called
 (a) VD (b) RTI
 (c) STI (d) all of these.
62. Which one of the following pairs of diseases can spread through blood transfusion?
 (a) Hepatitis-B and AIDS
 (b) Hay fever and AIDS
 (c) Cholera and hepatitis
 (d) Diabetes mellitus and malaria
63. Which of the following is not a STI?
 (a) Gonorrhoea (b) Syphilis
 (c) Cancer (d) HIV
64. Which of the following is not a sexually transmitted disease?
 (a) Trichomoniasis
 (b) Sickle-cell anemia
 (c) Syphilis
 (d) Acquired Immuno Deficiency Syndrome (AIDS)
65. AIDS is
 (a) congenital
 (b) innate immunodeficiency disease
 (c) sexually transmitted disease
 (d) none of these.
66. Which one of the following groups includes all sexually transmitted diseases ?
 (a) AIDS, syphilis, cholera
 (b) HIV, malaria, trichomoniasis
 (c) Gonorrhoea, hepatitis-B, chlamydia
 (d) Hepatitis-B, haemophilia, AIDS
67. Which of the following infections can also be transmitted by sharing of injection needles, surgical instruments, etc., with infected persons, transfusion of blood from an infected mother to the fetus too?
 (a) Hepatitis-B and HIV
 (b) Cholera and HIV
 (c) Syphilis and Malaria
 (d) Chlamydia and Mumps
68. The STIs which are completely curable if detected in early stage or treated properly are
 (a) AIDS and genital herpes
 (b) Hepatitis-B and genital herpes

3.4 Sexually Transmitted Infections

- (c) AIDS and Hepatitis-B
(d) all of these.
69. Venereal diseases are
(a) diseases which are caused due to malfunctioning of an enzyme
(b) infections which are caused by food contamination
(c) diseases which are transmitted through sexual intercourse
(d) genetic disorders.
70. AIDS is caused by
(a) blood cancer
(b) tobacco mosaic virus
(c) bacterium
(d) human immunodeficiency virus.
71. Choose the incorrectly matched pair from the following.
(a) RTI – Reproductive tract infection
(b) VD – Venereal disease
(c) Hepatitis-B – Curable
(d) Genital herpes – STIs
72. Hepatitis-B and HIV are
(a) spread through sharing injection needles
(b) sexually transmitted disease
(c) spread through infected mother to child
(d) all of these.
73. If a person gets infected by STIs then what kind of complications that person could face?
(a) PID (b) Normal pregnancy
(c) Still birth (d) Both (a) and (c)
74. What measures one should opt to get free from sexually transmitted infections?
(a) Always try to use condoms during coitus.
(b) One should always visit a doctor for early detection of anykind of infection.
(c) One should get complete treatment if diagnosed with infection.
(d) All of these
75. Find out sexually transmitted diseases among the following.
I. AIDS II. Syphilis
III. Gonorrhoea IV. Down syndrome
V. Hepatitis-B VI. Haemophilia
(a) I, II, V and VI
(b) I, II, III and VI
(c) I, II, III and V
(d) I, II, III, IV, V and VI
76. Which of the following statement(s) is/are correct?
(a) Hepatitis, HIV infection are completely curable.
(b) Infected females may often be asymptomatic and remain undetected for long period of time.
(c) Persons in age group of 15-24 years are more vulnerable to STIs.
(d) Both (b) and (c)
77. What measures should be taken to avoid the transmission of STI?
I. Avoid sex with unknown partner
II. Avoid sex with multiple partners
III. Do protected sex
IV. Avoid sharing needles
(a) I, II and IV only
(b) I, II and III only
(c) I, III and IV only
(d) I, II, III and IV
78. Which one of the following statements is correct regarding sexually transmitted infections (STIs)?
(a) A person may contract syphilis by sharing milk with one already suffering from the disease.
(b) Haemophilia is one of the STIs.
(c) Genital herpes and sickle-cell anaemia are both STIs.
(d) The chances of a 5-years boy contacting a STI are very little.
79. Which of the following is a correct statement?
(a) Trichomoniasis is not a STI.
(b) Gonorrhoea is transmitted by sharing of injection needles.
(c) AIDS is a sexual transmitted disease.
(d) Hepatitis B is eradicated completely whereas syphilis is not.

3.5 Infertility

80. Inability to produce children is called
(a) cryptorchidism
(b) survivability
(c) infertility
(d) artificial insemination.
81. After *in vitro* fertilisation, when embryo (upto 8 celled stage) is transferred into the following tube, the technique is
(a) ZIFT (b) IUT
(c) GIFT (d) ICSI.

82. A peculiar procedure to form an embryo by injecting sperm directly into the ovum is
 (a) GIFT (b) ICSI
 (c) ZIFT (d) IUT.
83. IVF involves the fertilisation A the body followed by B.
 (a) A-outside; B-gamete transfer
 (b) A-outside; B-embryo transfer
 (c) A-inside; B-embryo transfer
 (d) A-inside; B-gamete transfer
84. Embryo with more than 8 blastomeres formed due to *in vitro* fertilisation is transferred into
 (a) uterus (b) fallopian tube
 (c) vagina (d) cervix.
85. A childless couple can be assisted to have a child through a technique called GIFT. The full form of this technique is
 (a) gamete internal fertilisation and transfer
 (b) germ cell internal fallopian transfer
 (c) gamete inseminated fallopian transfer
 (d) gamete intra fallopian transfer.
86. Read the given statements and select the correct option.
Statement I : Infertile couple can have offspring through ZIFT.
Statement II : In ZIFT, zygote formed outside the female body is transferred into the fallopian tube for further development.
 (a) Both statement I and statement II are correct.
 (b) Both statement I and statement II are incorrect.
 (c) Statement I is correct and statement II is incorrect.
 (d) Statement I is incorrect and statement II is correct.
87. *In vivo* fertilisation involves the fertilisation that takes place
 (a) in the laboratory
 (b) inside the uterus
 (c) outside the fallopian tube
 (d) in the fallopian tube.
88. In human beings, normally in which one of the following parts, does the sperm fertilise the ovum?
 (a) Cervix
 (b) Fallopian tube
 (c) Lower part of uterus
 (d) Upper part of uterus
89. Which of the following is a technique of direct introduction of gametes into the oviduct?
 (a) MTP (b) ET
 (c) GIFT (d) AI
90. ICSI is
 (a) embryo implantation after *in vivo* fertilisation
 (b) sperm injection for *in vivo* fertilisation
 (c) embryo implantation after *in vitro* fertilisation
 (d) egg implantation for *in vitro* fertilisation.
91. GIFT involves transfer of
 (a) zygote into the uterus
 (b) embryo into the uterus
 (c) an ovum into the fallopian tube
 (d) zygote into the fallopian tube.
92. In which technique, the donor semen is artificially introduced into the uterus?
 (a) Intra-vaginal insemination
 (b) Intra-uterine insemination
 (c) Intra cytoplasmic sperm injection
 (d) Gamete Intra Fallopian transfer
93. Which of the following statement(s) is incorrect regarding ZIFT?
 (a) It is zygote intra fallopian transfer.
 (b) It is type of IVF.
 (c) More than 8 blastomeres are transferred in this techniques.
 (d) Zygote or early embryo are transferred in this techniques.
94. In the production of test tube babies,
 (a) fertilisation is external and fetus formation is internal
 (b) fertilisation is internal and fetus formation is external
 (c) both fertilisation and fetus formation is external
 (d) both fertilisation and fetus formation is internal.
95. In spite of all corrective measures, a couple is unable to have children, these couples could be assisted to have children through special techniques commonly known as
 (a) RCH (b) MTP
 (c) ART (d) STI.
96. Assisted Reproductive Technology does not include
 (a) normal *in vivo* fertilisation
 (b) *in vitro* fertilisation and embryo transfer
 (c) artificial insemination
 (d) Gamete Intra Fallopian Transfer.

97. In case of a couple, where the male is having a very low sperm count, which technique will be suitable for fertilisation?
- Gamete intracytoplasmic fallopian transfer
 - Artificial insemination
 - Intracytoplasmic sperm injection
 - Intrauterine transfer
98. Assisted Reproductive Technology, IVF involves transfer of
- ovum into the fallopian tube
 - zygote or early embryos into the fallopian tube
 - zygote into the uterus
 - embryo with 16 blastomeres into the fallopian tube.
99. *In vitro* fertilisation is a technique that involves transfer of which one of the following into the fallopian tube ?
- Embryo upto 16 celled stage only
 - Either zygote or early embryo upto 8 celled stage
 - Embryo of 32 celled stage
 - Zygote only
100. In a couple, the infertility is due to inability of male partner to inseminate the female or due to low sperm counts. For such couple, pregnancy can be achieved by
- AI
 - ICSI
 - GIFT
 - ZIFT.
101. Sometimes, when uterus of female is able to bear pregnancy but she cannot produce egg, the technique used is
- IUT
 - ZIFT
 - GIFT
 - ICSI.
102. Infertility is the inability of couple to produce child. The reason of infertility may be
- congenital and immunological
 - congenital and diseases
 - drugs and psychological
 - all of these.
103. The technique called gamete intra fallopian transfer (GIFT) is recommended for those females
- who cannot produce an ovum
 - who cannot retain the fetus inside uterus
 - whose cervical canal is too narrow to allow passage for the sperms
 - who cannot provide suitable environment for pregnancy.
104. Identify the incorrect statement regarding ZIFT.
- ZIFT is zygote intra fallopian transfer.
 - It is one of the assisted reproductive technologies.
 - Through this process, embryo is formed by injecting ovum into the sperm.
 - Zygote or embryo upto 8 blastomeres is collected and transferred into the fallopian tube.
105. Match the following columns.
- | | Column-I | Column-II |
|-----|----------|---------------------------------------|
| (A) | ZIFT | (1) Zygote Inter Fallopian Transfer |
| (B) | ICSI | (2) Gamete Intra Fallopian Transfer |
| (C) | GIFT | (3) Zygote Intra Fallopian Transfer |
| | | (4) Inter Cytoplasmic Sperm Injection |
| | | (5) Intra Cytoplasmic Sperm Injection |
- | | A | B | C |
|-----|---|---|---|
| (a) | 1 | 2 | 5 |
| (b) | 3 | 5 | 2 |
| (c) | 1 | 2 | 4 |
| (d) | 2 | 3 | 4 |

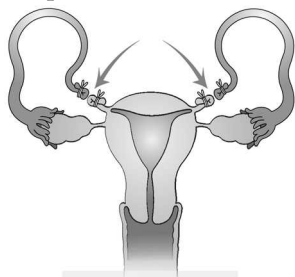


KCET Ready

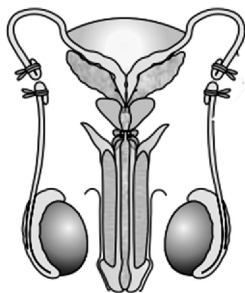
- In hundred years from 1900 to 2000, the population of world increased
 - two times
 - three times
 - two and half times
 - four times.
- To which population category India belongs?
 - Low birth rate and low mortality rate
 - Low birth rate and high mortality rate
 - High birth rate and low mortality rate
 - High birth rate and high mortality rate
- Which of the following techniques are used in ART?

(I) ZIFT	(II) IUT
(III) ICSI	(IV) AI
(V) IUI	

- (a) (I) and (III) only (b) (I) and (II) only
(c) (II) and (III) only (d) All of these
4. During IVF-ET (*In vitro* fertilisation embryo transfer), after fertilisation if embryo is having 8 or less number of blastomeres, then it is transferred to A while if the number of blastomeres is more than 8, it is transferred to B .
- (a) A - fallopian tube, B - fallopian tube
(b) A - fallopian tube, B - uterus
(c) A - uterus, B - fallopian tube
(d) A - uterus, B - uterus
5. The given figure is related to the control of pregnancy. It represents



- (a) tubectomy (b) vasectomy
(c) hysterectomy (d) orchiectomy.
6. To prevent pregnancy, Saheli is commonly used by females. It is a type of
- (a) cervical cap
(b) female condom
(c) oral contraceptive pills which contains non-steroidal preparation
(d) oral contraceptive pills which contains steroidal preparation.
7. Which of the following could be administered to a rape victim as emergency contraceptive to prevent pregnancy?
- (a) Progestogens
(b) Progestogen and estrogen combination
(c) IUDs
(d) All of these
8. The given figure indicates a surgical method to prevent pregnancy. It is _____ and useful in _____.



- (a) tubectomy, male (b) tubectomy, female
(c) vasectomy, male (d) vasectomy, female
9. After parturition, a mother has intense lactation and breast feeding to baby. The chances of conception
- (a) increase due to ovulation
(b) reduces due to lack of ovulation and menstrual cycle
(c) reduces due to inability of sperms to reach egg
(d) increases because of continued action of LH and oxytocin.
10. Human population in India
- (a) can be regulated by implementing national program of family planning
(b) tends to follow a sigmoid curve as in case of many other animal species
(c) can be reduced by permitting natural calamities
(d) tends to reach a zero population growth.
11. In test tube baby,
- (a) fertilisation is *in vitro*, development of embryo takes place inside female body
(b) fertilisation and development both out of female body
(c) fertilisation and development both inside female body
(d) fertilisation is *in vivo* and development of embryo outside female body.
12. In India, the fetal sex determination test on the basis of chromosomal pattern is misused in
- (a) determination of gene mutation related disorders
(b) female feticide
(c) studying nutritional disorders in fetus
(d) determination of chromosomal and mutant gene disorder.
13. Which of the following statements is correct?
- (a) According to WHO, reproductive health means total well being in physical and emotional aspect only.
(b) Family planning programmes are initiated in our country in 1961.
(c) Sex education in schools in India should be discouraged as it is against our ethics and religion.
(d) Government and non-government organisations together can solve the problem of reproductive health and population.

14. Select the option which correctly matches the type of IUD with its related example.

	IUD	Example
(a)	Non-medicated IUDs	Progestasert
(b)	Hormone releasing IUDs	Lippes loop
(c)	Copper releasing IUDs	Multiload 375
(d)	Non-medicated IUD	LNG- 20

15. Read the given statements and select the correct option.

Statement I : The world population was around 2 billion in 1900 which has rocketed to about 6 billion by 2000.

Statement II : Decline in death rate, maternal mortality rate and infant mortality rate has been some major causes of population explosion.

- (a) Both statement I and statement II are correct.
 (b) Both statement I and statement II are incorrect.
 (c) Statement I is correct but statement II is incorrect.
 (d) Statement I is incorrect but statement II is correct.
16. Which of the following approaches does not give the defined action of contraceptive?
- (a) Hormonal contraceptives – Prevent/retard entry of sperms, prevent ovulation and fertilisation
 (b) Vasectomy – Prevents spermatogenesis
 (c) Barrier methods – Prevent fertilisation
 (d) Intra uterine devices – Increase phagocytosis of sperms, suppress sperm motility and fertilising capacity of sperms
17. Read the given statements and select the correct option.
- Statement I :** Women are at the peak of conception on the 14th day of menstrual cycle.
Statement II : Infertile couples could have children using assisted reproductive technologies (ART).
- (a) Both statement I and statement II are correct.
 (b) Both statement I and statement II are incorrect.
 (c) Statement I is correct but statement II is incorrect.
 (d) Statement I is incorrect but statement II is correct.

18. Which one of the following statements is correct with reference to a test tube baby?

- (a) A prematurely born baby develop in an incubator.
 (b) *In vitro* fertilisation and transfer of embryo into mother's uterus.
 (c) *In vitro* fertilisation and development of the embryo in a laboratory.
 (d) *In vivo* fertilisation and development of the embryo in laboratory.

19. Artificial insemination means

- (a) artificial introduction of sperms of a healthy donor into the vagina
 (b) introduction of sperms of a healthy donor directly into the ovary
 (c) transfer of sperms of a healthy donor to a test tube containing ova
 (d) transfer of sperms of husband to a test tube containing ova.

20. Which of the following is correctly matched?

- (a) IUI-semen collected from husband or donor is artificially introduced either into fallopian tube.
 (b) GIFT-transfer of embryos with more than 8 blastomeres into the fallopian tube.
 (c) ICSI-sperm directly injected into the ovum.
 (d) ZIFT-transfer of embryos with upto 10 blastomeres into the fallopian tube.

21. Assisted reproductive technologies (ART)

- (a) include social awareness programmes to educate people about reproductive health and diseases
 (b) include research organisation working on to produce new and more effective contraceptives for birth control
 (c) include a number of special techniques which assist infertile couples to have children
 (d) both (b) and (c).

22. Read the given statements and identify the correct option.

Statement I : Infertility is the inability to produce children inspite of unprotected sexual co-habitation.

Statement II : Infertile couples could have children using Assisted Reproductive Technologies (ART).

- (a) Both statement I and statement II are correct.
 (b) Both statement I and statement II are incorrect.

- (c) Statement I is correct but statement II is incorrect.
- (d) Statement I is incorrect but statement II is correct.
23. Which of the following statements is correct with reference to a test tube baby?
- (a) The egg is fertilised outside the body; the fertilised egg is then placed in the womb of the mother where the gestation is completed and development of fetus takes place.
- (b) The egg is fertilised in the female genital tract. It is then taken out and grown in a large test tube.
- (c) A prematurely baby is born incubator.
- (d) Fertilisation of the egg and growth of the embryo occur in a large test tube.
24. Which of the following is incorrectly matched?
- (a) Amniocentesis : detecting chromosomal defects in fetus.
- (b) GIFT - transfer of embryos with more than 8 blastomeres into the uterine cavity.
- (c) IVF - fertilisation outside body followed by embryo transfer.
- (d) ZIFT - transfer of zygote into the fallopian tube.
25. Read the following statements and select the incorrect one.
- (a) Government of India legalised MTP in 1971 with some strict conditions to avoid its misuse.
- (b) Second trimester abortions are more riskier.
- (c) MTPs are essential in certain cases where continuation of pregnancy could be harmful either to the fetus or to the mother or both.
- (d) None of these
26. Read the given statements and select the correct option.
- Statement I :** Infections or diseases which are transmitted through sexual intercourse are called STIs.
- Statement II :** Hepatitis-B, is curable STI.
- (a) Both statements I and II are correct.
- (b) Statement I is incorrect but statement II is correct.
- (c) Statement I is correct but statement II is incorrect.
- (d) Both statements I and II are incorrect.
27. Read the given statements and select the correct option.
- Statement I :** Family planning is an action plan to attain reproductive health among people.
- Statement II :** Improved programmes covering reproduction related areas were propagated by RCH to create awareness among people.
- (a) Both statement I and statement II are correct.
- (b) Both statement I and statement II are incorrect.
- (c) Statement I is correct but statement II is incorrect.
- (d) Statement I is incorrect but statement II is correct.
28. Which of the following are the reasons for population explosion?
- I. Decrease in MMR II. Increases in IMR
- III. Increase in MMR IV. Decrease in IMR
- (a) I and IV (b) I and II
- (c) II and III (d) III and IV
29. Select the correctly matched pair.
- (a) IUT – Inter uterine transfer
- (b) GIFT – Gametogenesis in fallopian tube
- (c) ART – Assisted reproductive technologies
- (d) IVF – *In-vivo* fertilisation
30. Match the column I with column II.
- | Column I | Column II |
|--------------------|--|
| A. Periodic method | (i) Blocks gamete transport |
| B. Oral pills | (ii) Suppresses sperm mobility |
| C. CuT | (iii) Temporary avoidance of intercourse |
| D. Sterilisation | (iv) Emergency contraceptive |
- (a) A-(iii), B-(iv), C-(ii), D-(i)
- (b) A-(ii), B-(iv), C-(iii), D-(i)
- (c) A-(i), B-(ii), C-(iv), D-(iii)
- (d) A-(iv), B-(iii), C-(ii), D-(i)
31. Which of the following statements is correct regarding the figure given below?



- (a) It is a device made of rubber and inserted into the female reproductive tract to cover the cervix during coitus.
- (b) It is a device made of thin rubber/latex sheath and is used to cover penis in the male.
- (c) This device is inserted by doctors in the uterus through vagina which increases phagocytosis of sperms within the uterus.
- (d) It is a set of 6 small plastic capsules that have combination of progestogens with estrogen called implants which are placed under the skin of a women.
32. Which of the following will help people to prevent infection of sexually transmitted diseases?
- (i) Avoid sex with unknown partners/multiple partners.
- (ii) Avoid using condoms during intercourse.
- (iii) In case of doubt, go to a qualified doctor for early detection and get complete treatment if diagnosed with diseases.
- (a) (i) only (b) (i) and (ii) only
- (c) (i) and (iii) only (d) (i), (ii) and (iii)
33. Find out the natural contraception methods.
- I. Implants
- II. Lactational amenorrhea
- III. Condoms
- IV. Vasectomy
- V. Tubectomy
- VI. IUDs
- (a) I and II (b) III and IV
- (c) V and VI (d) Only II
34. An ideal contraceptive should be?
- I. User friendly II. Reversible
- III. Many side effects IV. Easily available
- (a) II, III and IV (b) I, II and III
- (c) I, III and IV (d) I, II and IV
35. Sex education in schools can prevent which of the following?
- (a) Myths and misconceptions about sex related aspects.
- (b) Problems related to adolescence and related changes
- (c) Sex related crimes
- (d) All of these
36. What is true about 'Saheli'?
- I. Developed at CDRI, Lucknow
- II. Contains a steroidal preparation
- III. 'Once-a-week' pill
- IV. Many side effects
- V. High contraceptive value
- VI. Very few side effects
- VII. Low contraceptive value
- (a) I, II, III, V and VI
- (b) I, III, V and VI
- (c) I, II, III, IV and VII
- (d) I, III, IV and V
37. What is true for IUDs?
- I. They are self-inserted.
- II. They are inserted by expert nurses.
- III. They may be non-medicated IUDs, copper releasing IUDs or hormone releasing IUDs.
- IV. They are the one of the most widely accepted contraceptives in India.
- V. They are inserted in uterus through vagina.
- (a) I, II, III, V (b) II, III, IV, V
- (c) I, II, III (d) I, II, III, IV, V
38. Select the correct statement(s) regarding IUDs.
- (a) Intrauterine devices (IUDs) are the plastic or metal objects which are inserted in the uterus of the female through vagina by expert doctors.
- (b) IUDs may be categorised as non-medicated IUDs (*e.g.*, lippes loop), copper releasing IUDs (*e.g.*, CuT, Cu7, Multiload 375) and hormone releasing IUDs (*e.g.*, progestasert, LNG-20).
- (c) In India, use of IUDs is one of the most widely accepted methods of contraception these days.
- (d) All of these.
39. Which of the following is not a reason for population explosion?
- (a) Decreased death rate
- (b) Rapid decrease in IMR
- (c) Rapid decrease in MMR
- (d) Decrease in number of people reaching reproductive age
40. Match the contraceptive methods given under column I with their examples given under column II. Select the correct option.
- | Column I | Column II |
|-------------------|-------------------------------|
| A. Natural method | p. Tubectomy and vasectomy |
| B. IUDs | q. Copper T and Lippes loop |
| C. Barriers | r. Condom and cervical cap |
| D. Sterilisation | s. Spermicidal jelly and foam |
| | t. Coitus interruptus |

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

41. Read the given statements and select the option with correct statements.

- I. Tubectomy and vasectomy are highly effective and reversible contraceptive.
 II. Purpose of tubectomy is to prevent egg formation.
 III. The most important component of the oral contraceptive pills is progestogen.
 IV. Contraceptive oral pills help in birth control by preventing ovulation.
 V. In India, there is rapid decline in infant mortality rate and maternal mortality rate.

- (a) I, II and III only
 (b) I, II and V only
 (c) III, IV and V only
 (d) II and V only

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

- | Method | Mode of action |
|---------------|-------------------------------------|
| A. Oral pills | (i) Prevents sperms reaching cervix |
| B. Condoms | (ii) Suppress sperm motility |
| C. Vasectomy | (iii) Prevents ovulation |
| D. Copper T | (iv) Semen contains no sperms |
- (a) A-(ii), B-(iii), C-(i), D-(iv)
 (b) A-(iii), B-(i), C-(iv), D-(ii)
 (c) A-(iii), B-(iv), C-(i), D-(ii)
 (d) A-(iv), B-(i), C-(ii), D-(iii)

43. Fill up the blanks in the following paragraph by selecting the correct option.

- A. (i) methods work on the principle of avoiding chances of ovum and sperms meeting.
 B. (ii) is one such method in which the couples avoid or abstain from coitus from day 10 to 17 of the menstrual cycle.
 C. (iii) is another method in which the male partner withdraws his penis from the vagina just before ejaculation so as to avoid insemination.
 D. (iv) method is based on the fact that ovulation and therefore the cycle do not occur during the period of intense lactation following parturition.

- | | (i) | (ii) | (iii) | (iv) |
|-----|----------|-------------------------|---------------------|-------------------------|
| (a) | Barrier | Coitus interruptus | Periodic abstinence | Lactational amenorrhoea |
| (b) | IUDs | Lactational amenorrhoea | Coitus interruptus | Periodic abstinence |
| (c) | Natural | Periodic abstinence | Coitus interruptus | Lactational amenorrhoea |
| (d) | Surgical | Periodic abstinence | Coitus interruptus | Lactational amenorrhoea |

44. Read the given statements and select the option with two correct statements.

- (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 device like copper-T are effective contraceptives.
 (D) Contraceptive pills may be taken upto one week after coitus to prevent conception.
- (a) (A) and (C) (b) (A) and (B)
 (c) (B) and (C) (d) (C) and (D)

45. In following table, the methods of population control and related mode of effect is given. Select the correct match.

	Method	Mode of effect
A.	Lactational amenorrhoea	Prevents fertilisation
B.	Contraceptive pills	Inhibit ovulation and implantation
C.	Sterilisation	Block gamete transport
D.	Diaphragm	Prevent implantation

- (a) A and B only (b) B and C only
 (c) B, C and D only (d) A, B and C only

46. Identify the figures of the contraceptives given below and read the given statements carefully.



- (i) C is made of rubber and is inserted into the female reproductive tract to prevent fertilisation by blocking the entry of sperms through the cervix.
 (ii) A inhibits ejaculation of semen.
 (iii) B releases the Cu ions which suppress sperm motility and the fertilising capacity of sperms.

Of the above given statements

- (a) statements (i) and (ii) are correct but statement (iii) is incorrect.
- (b) statement (i) is correct but statements (ii) and (iii) are incorrect.
- (c) statements (i) and (iii) are correct but statement (ii) is incorrect.
- (d) statement (iii) is correct but statements (i) and (ii) are incorrect.

47. Consider the following statements and select the option stating which ones are true (T) and which ones are false (F).

- (i) There are many side effects of the pills and lesser effectiveness.
- (ii) Purpose of tubectomy is to prevent egg formation.
- (iii) Contraceptive oral pills help in birth control by preventing ovulation.
- (iv) Sickle-cell anemia is a sexually transmitted disease.
- (v) In India, there is rapid decline in infant mortality rate and MMR.

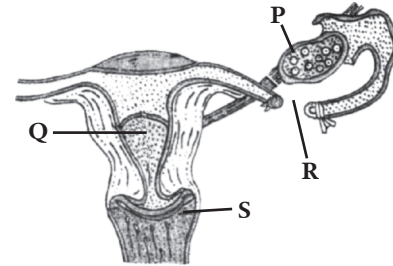
(i) (ii) (iii) (iv) (v)

- (a) T F T F F
- (b) F F F T T
- (c) T T T F F
- (d) F F T F T

48. Which of the following is the correct sequence of events in development of test tube baby?

- (a) Removal of unfertilised ovum → *in vitro* fusion of sperm and ovum → development of embryo more than 8 blastomeres → Embryo transfer into the uterus of mother.
- (b) *In vitro* fusion of sperm and ovum → removal of unfertilised ovum and transfer into the uterus of mother → formation and development of zygote upto 32 cell stage.
- (c) Embryo transfer into the uterus of mother → formation and development of zygote upto 32 cell stage → *in vitro* fusion of sperm and ovum → removal of unfertilised ovum.
- (d) Formation and development of zygote upto 32 cell stage → *in vitro* fusion of sperm and ovum → removal of unfertilised ovum → embryo transfer into the uterus.

49. The given figure represents locations in human female reproductive system that are affected by different birth control measures. Identify them and select the correct option.



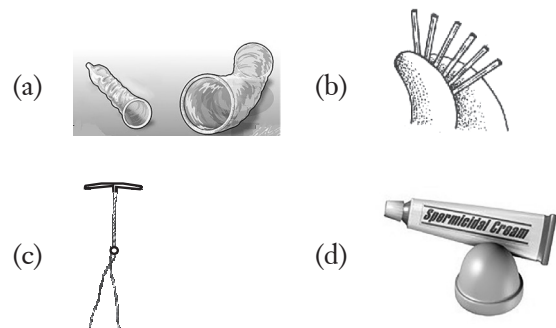
P Q R S

- (a) Copper T Birth control pills Tubectomy Condom
- (b) Birth control pills Copper T Tubectomy Diaphragm
- (c) Birth control pills Diaphragm Ovariectomy Copper T
- (d) Copper T Birth control pills Ovariectomy Diaphragm

50. Given below are some advantages of a kind of birth control method or contraceptive that can prevent the physical meeting of sperm and egg.

- (i) They can be used at the time of coitus.
- (ii) It is not harmful if used by the breast feeding mother.
- (iii) These methods do not affect a woman's or man's future fertility.
- (iv) Its use does not cause other side effects like hypertension, nausea, etc.
- (v) They are the only contraceptives that protect the users against all sexually transmitted infections (STIs), including HIV, gonorrhoea, etc.

Identify the figure of the contraceptive from the options which are associated with the given advantages.





KCET Exam Archive

10 Years' PYQs (2014-2023)

- IUDs which are used by females
 - are implanted under the skin and they release progesterone and estrogen
 - act as spermicidal jellies
 - release copper ions in the uterus that increase phagocytosis of sperm
 - block the entry of sperms into vagina. (2014)
- Which one of the following causes population explosion?
 - Decrease in infant mortality rate and increase in death rate.
 - Decrease in death rate, maternal mortality rate and infant mortality rate.
 - Decrease in infant mortality rate and decrease in the number of people in reproductive age.
 - Decrease in death rate and increase in maternal mortality rate. (2014)
- Progestasert is an IUD which makes the uterus unsuitable and cervix hostile to the sperms as they are
 - hormone releasing IUDs
 - copper releasing IUDs
 - ideal contraceptive
 - non-medicated IUDs. (2015)
- Assisted Reproductive Technology does not include
 - Zygote Extra Fallopian Transfer
 - in-vitro* fertilisation and embryo transfer
 - artificial insemination
 - Gamete Intra Fallopian Transfer. (2015)
- Amniocentesis is one of the methods
 - adapted for MTP
 - of birth control
 - for fetal sex determination
 - used for safe parturition. (2016)
- Lactational amenorrhea
 - prevents secretion of milk from breast
 - prevents conception
 - prevents secretion of prolactin
 - prevents spermatogenesis. (2016)
- In India the action plans for family planning were initiated in the year

(a) 1972	(b) 1947
(c) 1951	(d) 1950. (2017)
- Match the following column I with column II.

Column I	Column II
(A) Surgical methods	(p) Condom
(B) Barrier methods	(q) Pills
(C) Natural methods	(r) Tubectomy
(D) Chemical methods	(s) Lactational amenorrhea

Select the code for the correct answer from the options given below.

(A)	(B)	(C)	(D)
(a) (r) (p) (s) (q)			
(b) (r) (s) (p) (q)			
(c) (s) (r) (q) (p)			
(d) (q) (p) (r) (s)			(2018)
- The following factors indicate improved reproductive health of the society. Choose the correct option.
 - Better detection and cure of disease
 - Better post-natal care
 - Medically assisted deliveries
 - Increased MMR

Select the code for the correct answer from the options given below.

(a) B, C and D only	(b) A, B and C only
(c) A, C and D only	(d) A, B and D only (2018)
- The method of natural contraception which requires correct knowledge of menstrual cycle is
 - periodic abstinence
 - lactational amenorrhoea
 - IUDs–Intrauterine devices
 - coitus interruptus. (2019)
- A childless couple visit Assisted Reproductive Technologies (ARTs) centre to get assistance to have a child. On diagnosis, it was noticed that there was low sperm count in the male partner. Which of the following strategy of ART is most suitable in this case?
 - Gamete Intra-Fallopian Transfer (GIFT)
 - Artificial Insemination (AI)
 - Zygote Intra-Fallopian Transfer (ZIFT)
 - In vitro* Fertilisation (IVF) (2019)

12. Which of the following contraceptives could be effective in avoiding pregnancy if used within 72 hours after casual unprotected intercourse?
 (a) Progestogen– Estrogen combination
 (b) Androgen – FSH combination
 (c) Testosterone – Relaxin combination
 (d) Relaxin – Oxytocin combination (2020)
13. Choose the correct statement regarding the GIFT (Gamete Intrafallopian Tube Transfer) procedure.
 (a) Ova are collected from a female donor and are transferred to the uterus of recipient.
 (b) Ova collected from a female donor are transferred to the fallopian tube to facilitate zygote formation in the recipient.
 (c) Zygote is collected from female donor and transferred to the fallopian tube of recipient.
 (d) Zygote is collected from a female donor and transferred to the uterus of recipient. (2020)
14. Select the incorrect statement about contraceptives.
 (a) They are regular requirements for the maintenance of reproductive health.
 (b) They have a significant role in checking uncontrolled growth of population.
 (c) They are practised against a natural reproductive events like conception or pregnancy.
 (d) They have possible ill-effects like nausea, abdominal pain, irregular menstrual bleeding or even breast cancer that should not be totally ignored. (2021)
15. The method of directly injecting a sperm into ovum is called
 (a) GIFT (b) ZIFT
 (c) ICSI (d) IVF-ET. (2021)
16. The technique advised by a doctor to overcome the problem of infertility
 (a) RCH (b) MTP
 (c) RTI (d) ART. (2022)
17. Amniocentesis is a process to
 (a) grow cell on culture medium
 (b) determine any disease of heart
 (c) determine the sex of the fetus
 (d) know about the disease of brain. (2022)
18. An example for hormone releasing IUD is
 (a) Multiload 375 (b) Lippes' loop
 (c) Implant (d) LNG-20. (2023)
19. MTPs are considered relatively safe during
 (a) 24 weeks of pregnancy
 (b) 180 days of pregnancy
 (c) first trimester
 (d) second trimester. (2023)
20. Which of the following is abbreviated as ZIFT?
 (a) Zygote Inter Fallopian Transfer
 (b) Zygote Intra Fallopian Tube
 (c) Zygote Inter Fallopian Tube
 (d) Zygote Intra Fallopian Transfer (2023)

Hints & Explanations

Self Test - 1

1. (c) 2. (c)
 3. (c) : Amniocentesis is the withdrawal of a sample of the fluid (amniotic fluid) surrounding an embryo in the uterus by piercing the amniotic sac through the abdominal wall. As the amniotic fluid contains cells from the embryo (mostly shed from the skin), cell cultures enable chromosome patterns to be studied so that prenatal diagnosis of chromosomal abnormalities (such as Down's syndrome) can be made.
 4. (d) : Amniocentesis is the technique used to examine amniotic fluid to know chromosomal abnormalities and presence of Y chromosome in growing fetus. Genetic disorders like haemophilia, Down syndrome and sex of unborn baby can be determined by amniocentesis.
 5. (a)
 6. (b) : After 1900, there was enormous increase in human population. It is an exponential phase.

7. (b)
 8. (d) : During the period of intense lactation following parturition, there is absence of ovulation.
 9. (d) 10. (a)

Self Test - 2

1. (a) : Induced abortion and intentional abortion, both the terms are used commonly for MTP (Medical Termination of Pregnancy).
 2. (c) 3. (d) 4. (d)
 5. (c) : Early symptoms of STIs include itching, fluid discharge, slight pain, swelling, etc.
 6. (a)
 7. (d) : AIDS can spread through sharing of injection needles, transfusion of blood, from infected mother to fetus too.

8. (b)
9. (d) : The infection of hepatitis spread through sharing of injection needles, transfusion of blood, from infected mother to fetus too.
10. (c)

Self Test - 3

1. (c)
2. (c) : When male is unable to inseminate naturally then sperm is collected artificially and introduced into vagina, or uterus (IUI- Intra Uterine Insemination).
3. (d) : GIFT- Gamete Intra Fallopian Transfer.
4. (c) : If the embryo developed in culture medium is more than 8 celled (morula has 8 to 16 cells, sometimes 32 cells, it is transferred in uterus called Intra Uterine Transfer (IUT).
5. (d)

KCET Connect

1. (c) 2. (a)
3. (a) : Amniocentesis is the withdrawal of a sample of the fluid (amniotic fluid) surrounding an embryo in the uterus by piercing the amniotic sac through the abdominal wall. As the amniotic fluid contains cells from the embryo (mostly shed from the skin), cell cultures enable chromosome patterns to be studied so that prenatal diagnosis of chromosomal abnormalities (such as Down's syndrome) can be made. Metabolic errors and other diseases, such as spina bifida, can also be diagnosed prenatally from the biochemistry of the cells or that of the fluid.
4. (b) : Saheli contraceptive pill has been developed at Central Drug Research Institute (CDRI), Lucknow.
5. (d) : Amniocentesis is the technique used to find any genetic disease pertaining to change in structure and number of chromosome by examination of amniotic fluid. Using this technique the sex of unborn baby can also be detected but it is not permissible under law.
6. (b) : Amniocentesis is a fetal sex determination test in which amniotic fluid containing fetal cells which surround the developing embryo is extracted and cells are tested for chromosomal pattern to identify genetic disorders, if any. Jaundice is not a chromosomal disorder thus, cannot be tested by amniocentesis.
7. (d) : To keep check on population growth, the birth rate has to be decreased.
8. (b)
9. (c) : Natality refers to birth rate. Natality contributes in population growth.
10. (d)
11. (c) : In last 100 years population increased manifold. In 1900, world population was 2 billion, and reached to 6 billion in 2000, *i.e.*, increased three times.
12. (b) 13. (d) 14. (c)
15. (b) : Natural contraceptive methods are used to prevent meeting of sperm and egg.
16. (a) : LNG-20 is the hormone releasing IUD. Multiload

375 and Cu7 are copper releasing IUDs and Lippes loop is a non-medicated IUD.

17. (a) : Intra Uterine Devices (IUDs) are inserted in the uterus through vagina. These Intra Uterine Devices are the most widely accepted method of contraception in India. These are presently available as the non-medicated IUDs (*e.g.*, Lippes loop), copper releasing IUDs (CuT, Cu7, Multiload 375) and the hormone releasing IUDs (Progestasert, LNG-20). The hormone releasing IUDs make the uterus unsuitable for implantation and the cervix hostile to the sperms.

18. (a) : Condoms are made of thin rubber/latex sheath used to cover the penis in males just before coitus (intercourse) so that the ejaculated semen is not released in the female reproductive tract. This prevents fertilisation. It is most widely used contraceptive in India.

19. (c) : Spermicidal creams are chemical method of birth control. Chemical methods (spermicides) refer to foam tablets, jellies, pastes and creams that if introduced into female's vagina before sexual intercourse help in birth control by adhering to the mucous membrane and immobilising and killing the sperms before entering uterus.

20. (c) : Condom is a cheap and convenient method of birth control.

21. (b) : Condoms come under barrier method of birth control and prevent the deposition of ejaculated sperms into female reproductive tract.

22. (d)

23. (d) : Barrier methods prevent fertilisation by not allowing meeting of sperm and egg.

24. (c) : Intra uterine devices (IUDs) are plastic or metal objects which are inserted by doctors in the uterus through vagina. IUDs increase phagocytosis of sperms within the uterus and the copper ions released suppress sperm motility and fertilising capacity of the sperms.

25. (d) : Lactational amenorrhea (absence of menstruation) method is based on the fact that ovulation and therefore the cycle do not occur during the period of intense lactation following parturition. Therefore, as long as the mother breast-feeds the child fully, chances of conception are almost nil.

26. (d) : Lactational amenorrhea (absence of menstruation) method is based on the fact that ovulation and therefore the cycle do not occur during the period of intense lactation following parturition. Therefore, as long as the mother breast-feeds the child fully, chances of conception are almost nil.

27. (a) : Intra Uterine Devices (IUDs) are inserted in the uterus through vagina. These Intra Uterine Devices are the most widely accepted method of contraception in India. These are presently available as the non-medicated IUDs (*e.g.*, Lippes loop), copper releasing IUDs (CuT, Cu7, Multiload 375) and the hormone releasing IUDs (Progestasert, LNG-20). The hormone releasing IUDs make the uterus unsuitable for implantation and the cervix hostile to the sperms.

28. (c) : Ovulation occurs usually on 14th day of menstrual cycle therefore avoidance of sexual act from 10 to 17 day of menstrual cycle ensure no pregnancy.

29. (a) 30. (a)

31. (c) : Cu ions released from CuT suppress sperm motility and fertilising capacity of sperm thereby preventing fertilisation.
32. (c)
33. (c) : Intra uterine devices (IUDs) are inserted by doctors in the uterus through vagina. They include Lippes loop, copper-T, etc.
34. (b) : Diaphragms, cervical caps and vaults are made of rubber, inserted into the female reproductive tract to cover the cervix before coitus. They prevent fertilisation by blocking the entry of sperms through the cervix.
35. (b)
36. (a) : Estrogen and progesterone in contraceptive pills inhibit ovulation and implantation and also impairs the ability of cervical mucus so as to prevent transport of sperms.
37. (a) : Saheli is a birth control pill which is taken weekly.
38. (d) : Oral contraceptive pills contain either progestogens or estrogen and progestogens combination that inhibit ovulation and implantation.
39. (d)
40. (b) : Oral contraceptives are form of tablets taken by females that inhibit ovulation and implantation hence help in birth control.
41. (a) : Saheli is an oral contraceptive for females. It contains a non-steroidal preparation called centchroman which is taken once a week after an initial intake of twice a week dose for three months. It has a little side-effects also.
42. (a) : Oral contraceptive pills contain either progestogen only or a combination of progestogens and estrogen.
43. (d)
44. (b) : Oxytocin is a birth hormone and vasopressin (anti-diuretic hormone) reabsorbs water from the renal tubules to conserve water in the body. They have no role in contraception.
45. (c) : Estrogen and progestogen in contraceptive pills inhibit ovulation and implantation and also impairs the ability of cervical mucus so as to prevent transport of sperms.
46. (c) : Sterilisation procedure in females is called tubectomy (tubal ligation). In tubectomy a small part of the fallopian tube is cut and tied up through a small cut in the abdomen or through vagina.
47. (a) : Vasectomy is a permanent method of birth control in males. In this process, a small part of vas deferens is cut and tied up through a small cut in scrotum.
48. (b) : Vasectomy is a surgical contraception method performed in males. In vasectomy, a small part of the vas deferens is removed or tied up through a small cut on the scrotum. This prevents sperm transport. Vasectomy has a poor reversibility.
49. (a) : In sterilisation, vas deferens in male or fallopian tube in female is cut and bind which block the transport of gametes.
50. (b) : MTP is (medical termination of pregnancy) was legalised in India in 1971 with some strict conditions.
51. (c) : MTP is supposed to be done up to 3 month, i.e., first trimester of pregnancy. Second trimester abortion are much more riskier.
52. (c) 53. (b)
54. (a) : Intentional or voluntary termination of pregnancy before full term is called MTP.
55. (c) 56. (b)
57. (d) : Multiload 375 is a copper releasing IUD.
58. (d) : Lippes loop is an example of non-medicated IUD.
59. (a) 60. (b)
61. (d) : Diseases or infections, which are transmitted through sexual intercourse with infected persons are collectively called Sexually Transmitted Infections (STIs) or Venereal Diseases (VD) or Reproductive Tract Infections (RTI).
62. (a) 63. (c) 64. (b)
65. (c) : AIDS is a sexually transmitted disease.
66. (c)
67. (a) : Hepatitis-B is an infectious disease caused by the hepatitis-B virus (HBV) which affects the liver. HIV (human immunodeficiency virus) is a virus that attacks the immune system, the body's natural defense system. Both the diseases can also be transmitted by sharing of injection needles, surgical instruments, etc., with infected persons, transfusion of blood, or from an infected mother to the fetus too.
68. (a) : STIs except hepatitis-B, genital herpes and HIV AIDS are completely curable.
69. (c) : Sexually transmitted diseases (STIs) are caused by infections that are passed from one person to another during sexual contact.
70. (d) : AIDS is a sexually transmitted disease of the human immune system, that was first noted in USA in 1981. It is caused by infection with HIV (Human immunodeficiency virus).
71. (c)
72. (d) : Mode of infection of AIDS and hepatitis are same. These infections spread through sharing of injection needles, transfusion of blood, and from infected mother to fetus.
73. (d) : STIs are a major threat to a healthy society and if a person gets infected with it then this could lead to complications such as PID, abortions, still births, infertility and ectopic pregnancies.
74. (d) 75. (c)
76. (d) : Viral diseases such as hepatitis is not curable.
77. (d)
78. (d) : Syphilis is caused by bacterium *Treponema pallidum*. It is a sexually transmitted infections (STI) which is transferred through sexual intercourse with infected person. Hemophilia is a X-linked genetic disorder of blood. It is not transmitted sexually. Genital herpes is an STI while sickle-cell anaemia is an autosomal hereditary disorder.
79. (c)
80. (c) : Inability to produce children inspite of unprotected sexual co-habitation is called infertility.
81. (a) : In test tube baby the egg is collected from mother/donor, sperms from husband/ donor, fertilisation is done

in vitro and embryo usually upto 8 blastomeres is transferred into fallopian tube (ZIFT-Zygote Intra Fallopian Transfer) and embryo with more than 8 blastomeres is inserted into uterus (IUT-Intra Uterine Transfer) for implantation and further development.

82. (b): ICSI stands for intra cytoplasmic sperm injection where sperm is directly injected into egg.

83. (b): In IVF, the fertilisation takes place outside the female body but in almost similar conditions as that inside the body followed by embryo transfer.

84. (a): Embryo with more than 8 blastomeres formed due to *in vitro* fertilisation is transferred into uterus (intra-uterine transfer, IUT).

85. (d): Gamete intra fallopian transfer (GIFT) is an assisted reproductive technology in which ovum are transferred into the fallopian tube of another female who cannot produce one.

86. (a): The infertile couples could be assisted to have children through special techniques commonly called as assisted reproductive technologies (ART). Zygote Intra-Fallopian transfer (ZIFT) is one of ART. In this ZIFT, zygote or early embryo (with upto 8 blastomeres) is transferred into the fallopian tube.

87. (d): In *In vivo* fertilisation, the fertilisation of the gametes takes place in the fallopian tube of the female rather than outside.

88. (b): Fallopian tube or oviduct is the site of fertilisation in mammals. It takes place in the ampullary isthmic junction of the Fallopian tube.

89. (c): GIFT is Gamete Intra Fallopian Transfer. If a female is unable to produce egg, the egg is collected from donor female and is transferred into the recipient female oviduct.

90. (b)

91. (c): GIFT stands for Gamete Intra Fallopian Transfer. In this process, healthy female eggs are introduced into the fallopian tube of another female.

92. (b): Intra-uterine insemination (IUI) is a method of artificial insemination (AI), in which sperms collected either from the husband or a healthy donor are artificially introduced into the uterus of female.

93. (c): In ZIFT, the zygote or early embryo upto 8 cells/blastomeres are transferred to the fallopian tube.

94. (a): In the production of test tube babies, fertilisation is external and fetus formation is internal.

95. (c): ART stands for Assisted Reproductive Technology where various techniques are used to help the sterile couple to produce child.

96. (a) 97. (b)

98. (b): Assisted Reproduction Technology is the technique to help the infertile couple to have child. The most important method is test tube baby, in which upto 8 celled embryo is transferred into fallopian tube.

99. (a): In production of test tube baby, the egg is taken out from female, sperms from male and *in vitro* fertilisation is allowed to occur in culture medium with similar condition of uterus. Zygote is formed, divides and eight celled stage embryo is transferred to fallopian tube called Zygote Intra

Fallopian Transfer (ZIFT) and if embryo is more than 8 celled stage, it is transferred into uterus called Intra Uterine Transfer (IUT).

100. (a): When male is unable to inseminate naturally it could be corrected by AI- artificial insemination in which the sperm is artificially introduced into vagina, or uterus (IUI-Intra Uterine Insemination).

101. (c): GIFT is Gamete Intra Fallopian Transfer where egg is collected from donor female and transferred to fallopian tube of the recipient mother.

102. (d)

103. (a): When a female cannot produce egg, the egg is taken out from donor female and is transferred to fallopian tube of mother (recipient female). It is called Gamete Intra Fallopian Transfer (GIFT).

104. (a): Zygote intra fallopian transfer (ZIFT) is an infertility treatment. Egg cells are removed from a woman's ovaries and *in vitro* fertilised. The resulting zygote is placed into the fallopian tube.

105. (b)

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1. (b): World population in 1900 was 2 billion, in 2000 it reached to 6 billion, *i.e.*, increased three times.

2. (c)

3. (d): In IVF (*in vitro* fertilisation), the technique used are:

ZIFT – Zygote Intra Fallopian Transfer

IUT – Intra Uterine Transfer

GIFT – Gamete Intra Fallopian Transfer

ICSI – Intra Cytoplasmic Sperm Injection

AI – Artificial Insemination

IUI – Intra Uterine Insemination

4. (b)

5. (a): Cutting and binding of fallopian tube to prevent pregnancy is tubectomy. It prevents contact between sperm and egg.

6. (c): Saheli is a contraceptive pill prepared by CDRI, Lucknow contain non-steroidal material.

7. (d): Progestogen or progestogen – estrogen combination or IUDs could be administered within 72 hours of coitus to prevent pregnancy in rape victim.

8. (c)

9. (b): Lactational amenorrhea is a natural method of birth control in which no menstrual cycle occurs and therefore ovulation does not occur during intense lactation following parturition.

10. (a): To regulate population growth in our country, family planning programmes must be implemented.

11. (a): In test tube baby the egg is collected from mother/donor, sperms from husband/ donor, fertilisation is done *in vitro* and embryo usually at 8 blastomeres is transferred into Fallopian tube (ZIFT-Zygote Intra Fallopian Transfer) and embryo with more than 8 blastomeres is inserted into uterus (IUT-Intra Uterine Transfer) for implantation and further development.

12. (b)

13. (d): According to WHO, reproductive health means total well being in physical, emotional, behavioural and social aspects in reproduction. Family planning programme in India were initiated in 1951 and sex education must be encouraged in schools.

14. (c) 15. (a)

16. (b): Vasectomy is a sterilisation technique for the males in which a small part of the vas deferens is removed or tied up through a small cut on the scrotum to prevent passage of sperms. Spermatogenesis is the series of cell division in the testis that results in the production of spermatozoa or sperms.

17. (c): Luteinising hormone induces rupturing of Graafian follicle. Both LH and FSH attain peak level in the middle of cycle (*i.e.*, about 14th day) and lead to ovulation. Therefore, on 14th day there are more chances of fertilisation and conception. Vasectomy is a sterilisation technique for males in which two vasa deferentia are cut and tied up in order to prevent the passage of sperms.

18. (b): In test tube baby development, the egg and sperms are collected, fertilisation is allowed to occur outside of female body in specific condition. 8 celled stage embryo is transferred to fallopian tube *i.e.*, ZIFT- zygote intra fallopian transfer. If embryo is more than 8 celled, it is transferred to uterus (IUT- intra uterine transfer).

19. (a): Intra-uterine insemination (IUI) is a method of artificial insemination (AI), in which sperms collected either from the husband or a healthy donor are artificially introduced either into the vagina or into the uterus of female.

20. (c)

21. (c): ART helps the infertile couples to have children.

22. (a) 23. (a)

24. (b): Gamete intra fallopian transfer (GIFT) involves transfer of an ovum collected from a donor female into the fallopian tube of another female who cannot produce ovum but can provide suitable environment for fertilisation and development of fetus.

25. (d)

26. (c): Hepatitis-B is an incurable STI.

27. (a)

28. (a): A rapid decline in MMR, IMR are the reasons for explosive population growth.

29. (c) 30. (a)

31. (d): The given figure is a contraceptive implant. It is a small flexible tube which is inserted under the skin (typically the upper arm) and prevents pregnancy by releasing hormones that prevent ovaries from releasing eggs.

32. (c)

33. (d): Lactational amenorrhea is natural method which based on the fact that ovulation and therefore the menstrual cycle do not occur during the period of intense lactation following parturition.

34. (c) 35. (d)

36. (b): Saheli is a oral contraceptive for females which contains a non-steroidal preparation. It is a 'once a week' pill with very few side effects and high contraceptive value. It was

developed by scientists at Central Drug Research Institute (CDRI) in Lucknow, India.

37. (b): Intra uterine devices (IUDs) are inserted by doctors or expert nurses in the uterus through vagina.

38. (d): Intra Uterine Devices (IUDs) are inserted by doctor or expert nurses in the uterus through vagina. These are presently available as the non-medicated IUDs (*e.g.*, Lippes loop), copper releasing IUDs, (CuT, Cu7, Multiload 375) and hormone releasing IUDs (Progestasert, LNG-20). IUDs are ideal contraceptives for the female who wants to delay pregnancy and space children. It is one of most widely accepted methods of contraception in India.

39. (a) 40. (a) 41. (c)

42. (b): Oral pills prevents ovulation. Condom prevent sperm reaching cervix. In vasectomy semen contains no sperm and CuT suppresses sperm motility.

43. (c)

44. (a): Generally, chances of conception are nil until mother breast feeds the infant upto 6 months. Contraceptive pills have to be taken daily for a period of 21 days starting preferably within the first five days of menstrual cycle. After a gap of 7 days (during which menstruation occurs) it has to be repeated in the same pattern till the female desires to prevent conception.

45. (d): Lactational amenorrhea inhibits menstrual cycle and ovulation eventually prevent conception diaphragm blocking entry of sperm through the cervix and prevent conception. Contraceptive pills inhibit ovulation and implantation. Sterilisation block gamete transport.

46. (c)

47. (d): Pills are very effective with lesser side effects. Purpose of tubectomy is to prevent gamete transport. Sickle cell anemia is a genetic disorder.

48. (a)

49. (b): Birth control pills affect the ovaries in inhibiting ovulation. Copper T affects the uterus by suppressing sperm movement. Tubectomy is the surgical removal or incision of fallopian tubes that does not allow the ova to meet the sperm. Diaphragm covers the cervix and does not let the sperms enter uterus.

50. (a): All the given advantages are associated with condom, a type of barrier contraceptives. Condoms are barriers, made of thin rubbery latex sheath. They are used to cover the penis in male and the vagina and cervix in females just before the coitus to avoid insemination. This helps in preventing conception by blocking the meeting of sperm and ova.

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1. (c): Intra uterine devices (IUDs) are plastic or metal objects which are inserted by doctors in the uterus through vagina. IUDs increase phagocytosis of sperms within the uterus and the Cu ions released suppress sperm motility and fertilising capacity of the sperms.

2. (b): Death rate is defined as the number of deaths per 1,000 individuals in a population per year. It decreases population size and population density. Maternal mortality rate is the rate of maternal deaths.

Maternal death is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration of pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.

Infant mortality rate is the number of deaths per 1,000 infants who die between birth and 1 year of age.

A decrease in all three of these factors can result in population explosion.

3. (a) : Intrauterine Contraceptive Devices (IUCDs or IUDs) are effective and popular methods of contraception. These are inserted by doctors or expert nurses in the uterus through vagina. These devices are presently available as the non-medicated IUDs (e.g., Lippes loop), copper releasing IUDs (CuT, Cu7, Multiload 375) and the hormone releasing IUDs (Progestasert, LNG-20). IUDs increase phagocytosis of sperms within the uterus and the Cu ions released 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. IUDs are ideal contraceptives for the females.

4. (a) : Assisted Reproductive Technologies (ART) include:

- (i) Zygote Intra Fallopian Transfer (ZIFT)
- (ii) *In vitro* Fertilisation (IVF) and embryo transfer
- (iii) Artificial insemination (AI)
- (iv) Gamete Intra Fallopian Transfer (GIFT).

5. (c) : Amniocentesis involves withdrawing some of the amniotic fluid that bathes the developing fetus and analysing the fetal cells and dissolved substances. It is used to test for the presence of certain genetic disorders, such as Down's syndrome, haemophilia, etc. It is often misused to reveal the baby's gender.

6. (b) : In lactational amenorrhea, immediately after parturition, during period of lactation, there is absence of menstruation. As long as breastfeeding is continued, chances of pregnancy are extremely low.

7. (c) : Family planning was initiated in India in 1951. It created awareness regarding prevention of unwanted pregnancies by adopting safe methods. It also aimed to improve the health of women.

8. (a)

9. (b) : Awareness about methods to have sound reproductive health is not only beneficial to both mother and child but to the society at large. The benefits of these programmes are listed as follows:

- (i) Prevention of unwanted pregnancy by having knowledge about methods of contraception.
- (ii) Prevention of high-risk pregnancy
- (iii) Having medically-assisted deliveries
- (iv) Planning pregnancy at an appropriate age when the mother is neither too young nor too old so as to maintain good health of both mother and child.
- (v) Appropriate spacing between two child births.

10. (a) : In periodic abstinence, a couple can use their knowledge of the physiological changes that occur during the female reproductive cycle to decide either to abstain from intercourse on those days when pregnancy is a likely result, or to plan intercourse on those days if they wish to conceive a child.

11. (b) : In cases where the male partner is unable to inseminate the female or in cases where the number of sperms in the ejaculate is low, artificial insemination (AI) or intrauterine insemination (IUI) can be used. A woman is treated with medicines that stimulate ovulation before IUI. Then semen from husband (AIH) or healthy male donor (AID) is introduced artificially into the vagina or uterus.

12. (a) : Administration of progestogens or progestogen-estrogen combinations within 72 hours of coitus have been found to be very effective as emergency contraceptives as they could be used to avoid possible pregnancy due to rape or casual unprotected intercourse.

13. (b) : If a woman cannot produce ova but can provide a suitable environment for fertilisation and further development, then Gamete Intra Fallopian Transfer (GIFT) is used. In this technique, the ovum from a donor female can be transferred to the fallopian tube of this woman, so that fertilisation takes place inside the body (*in vivo*).

14. (a) : Birth control refers to restricting the number of children by various methods designed to control fertility and prevent conception. Contraceptive methods help in preventing unwanted pregnancies. The properties of an ideal contraceptive are user friendly (easy to use), affordable and readily available, effective, not interfere with the sexual desire or drive or act of the user. They are not regular requirements for the maintenance of reproductive health they are only used to control unwanted pregnancy not to maintain any health.

15. (c) : Intra-cytoplasmic sperm injection (ICSI) technique is used to treat male infertility that is low sperm count, low motility of sperm or intracellular sperm injection and in older couples, etc. In this technique, the sperms are obtained from ejaculation and a single sperm is injected into a mature egg with the help of a micro needle.

16. (d) : The technique advised by a doctor to overcome the problem of infertility is assisted reproductive technologies (ART).

17. (c) : Amniocentesis is a fetal sex determination test based on the chromosomal pattern in the amniotic fluid surrounding the developing embryo.

18. (d) : LNG-20 is the hormone releasing IUDs which make the uterus unsuitable for implantation and the cervix hostile to the sperms. Multiload 375 is a copper releasing IUD, Lippes' loop is a non-medicated IUD. Implants contain either progestogens alone or in combination with estrogen which is injected under the skin. Their mode of action is similar to that of pills and their effective periods are much longer.

19. (c) : Medical termination of pregnancy (MTP) or abortion is the termination of pregnancy before the fetus becomes viable. MTP is comparatively safe up to 12 weeks (the first trimester) of pregnancy. It becomes more risky after the first trimester period of pregnancy as the fetus becomes intimately associated with the maternal tissues.

20. (d) : ZIFT is an assisted reproductive technology which stands for Zygote Intra Fallopian Transfer. This technique involves transfer of zygote or early embryos up to 8 blastomeres into the fallopian tube.



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