

REPRODUCTIVE HEALTH

SYLLABUS

Need for reproductive health and prevention of sexually transmitted diseases (STD); Birth control-Need and Methods, Contraception and Medical Termination of Pregnancy (MTP); Amniocentesis; Infertility and assisted reproductive technologies – IVF, ZIFT, GIFT (Elementary idea for general awareness).

KEY CONCEPTS

INTRODUCTION

- * 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.
- * India was amongst the first countries in the world to initiate action plans and programmes at a national level to attain total reproductive health as a social goal. These programmes called ‘family planning’ were initiated in 1951 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’.
- * **Population growth rate** is indicated by (i) the annual average growth rate, (ii) the doubling time.
- * Growth rate depends on birth (fertility) rate, death (mortality) rate migration and age sex ratio.
- * The major reasons for this growth are :
 - (i) A rapid decline in death rate
 - (ii) A decline in maternal mortality rate (MMR)
 - (iii) A decline in infant mortality rate (IMR)
 - (iv) Increase in the number of people reaching reproductive age.

BIRTH CONTROL

- * A method or a system which allows intercourse and yet prevents conception is called contraceptive method.
- * A wide range of contraceptive methods are presently available which could be broadly grouped into the following categories, namely Natural/Traditional, Barrier, IUDs, Oral contraceptives, Injectables, Implants and Surgical methods.

1. Natural methods

- * **Abstinence during fertile phase:** This method depends on fertility awareness so that the woman knows the fertile phase of the menstrual cycle and sexual intercourse is avoided during that phase.
- * Couples avoid or abstain from coitus from day 10 to 17 of the menstrual cycle when ovulation could be expected. As chances of fertilisation are very high during this period, it is called the fertile period. Therefore, by abstaining from coitus during this period, conception could be prevented.
- * **Withdrawal method (coitus interruptus):** In this method coitus takes place in a normal manner

but the penis is withdrawn immediately before ejaculation. Its failure rate is upto 25% as the prostatic fluid secreted prior to ejaculation, frequently contains active spermatozoa.

- * **Lactational amenorrhea:** Menstrual cycle and ovulation remains suspended during the period of intense lactation upto 6 months after parturition due to increase in prolactin level.

2. Barrier methods

- * In barrier methods, ovum and sperms are prevented from physically meeting with the help of barriers. Such methods are available for both males and females.
- * **Condoms :** In this method the erectile penis is completely covered by a very thin rubber / latex condom which can be used only once. Its efficiency is increased along with a spermicidal cream. Condoms also prevent transmission of sexually transmitted diseases (STDs) from one partner to the other.
- * **Femshield (female condom):** It is known as 'FEM' or 'Femidom'. It is made up of polyurethane or rubber. It covers the entire vagina, cervix as well as the external genitalia. It is highly protective against spread of STDs, and AIDS in particular.
- * **Diaphragm/Cervical Cap/Vault:** This consists of a dome shaped diaphragm of thin rubber, with a rubber covered metal rim, which is a spring. It fits obliquely in the vagina and covers the cervix thus blocking the entry of sperms.
- * **Foams:** These are small soluble tablets containing spermicidal chemicals. It is inserted into the vagina prior to coitus and it creates a spermicidal barrier.
- * **Intrauterine Contraceptive Devices**
IUD or IUCD is an effective, reversible and long-term method of contraception, which does not require replacement for long periods. The device is commonly made of polyethylene which is impregnated with barium sulphate to render it radiopaque, so that the presence or absence of the device in the pelvis can be easily detected by radiograph.

Types of IUDs :

- (i) **Biologically inert devices:** These are non-medicated and its presence in uterus prevents implantation of blastocyst. e.g. Lippes loop, Saf-T-coil.
- (ii) **Copper releasing devices:** Among these devices are copper, T, Copper 7, Multiload 375, Copper T 380, Nova T. In these copper wire is wrapped around the vertical stem of a polypropylene frame. The release of copper ions suppresses the sperm motility and its fertilizing capacity.
- (iii) **Hormone releasing IUDs:** Progestasert, LNG-20. Progestasert is a T-shaped device which releases progesterone which forms a thick plug of mucus at cervix. This prevents penetration by the sperms.
LNG-20 releases levonorgestrel which prevents ovulation as well.

3. Hormonal methods

- * Hormonal contraception is one of the most effective contraceptive methods available today.
- * The first oral contraceptive drug was prepared by Pincus in 1956.
- * There are usually two types of oral contraceptives, viz. combined oral pills and minipills.

Combined oral pills

- * Combined oral pills contain a mixture of synthetic progesterone called progestin or progestogen along with estrogen.
- * The tablets are taken starting on the fifth day of the cycle for 21 days. After a gap of 7 days, the same pattern has to be repeated.
- * When the intake of tablets is stopped, the menstrual bleeding begins. These tablets are to be taken at a fixed time of the day, preferably, after a meal e.g. Mala-D, Mala-N.
- * The combined oral pill suppresses pituitary hormones – FSH and LH. This inturn suppresses ovulation. At the same time, progestogen causes atrophic changes in endometrium, which are not suitable for implantation.

- * Progesterone also acts on cervical mucus making it thick and tenacious and impenetrable by sperms.
- * The use of OCs have been found to reduce the incidence of ovarian cyst, ovarian and uterine cancer. The incidence of PID (pelvic inflammatory disease) is also reduced.
- * However combination oral contraceptive (COC) does not protect a woman against HIV and sexually transmitted infections.

Mini pill / Progesterone - only pill (POP)

- * The low dose progesterone only pills or levonorgestrel have been introduced to avoid the side effects of estrogen in the combined pills.
- * This pill is also to be started within 5 to 7 days of the menstruation and is to be taken at the same time each day.

Centchroman

- * Centchroman is a synthetic non-steroidal contraceptive pill, started on the first day of menses and taken twice weekly for 12 weeks and thereafter only once per week.
- * It prevents implantation through endometrial changes as it has strong anti-estrogenic effect.
- * It is not teratogenic or carcinogenic.
- * It has been developed by **Central Drug Research Institute (CDRI)**, Lucknow and has been released in India under the name of *Saheli*.

Depot injections

- * To overcome the inconvenience of daily compliance, depot injections of progesterones have been developed.
- * An injection of Depomedroxy progesterone acetate (DMPA) called '**Depo-Provera**' provides contraception for 3 months.
- * The injections are easy to administer and there is no worry over 'missing pill'.

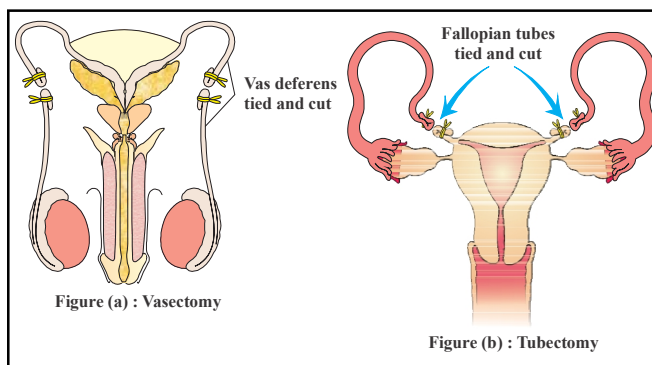
Subdermal implants

- * Subdermal implants are non-oral route of progesterone delivery with slow, sustained release, long acting and with reduced side effects.

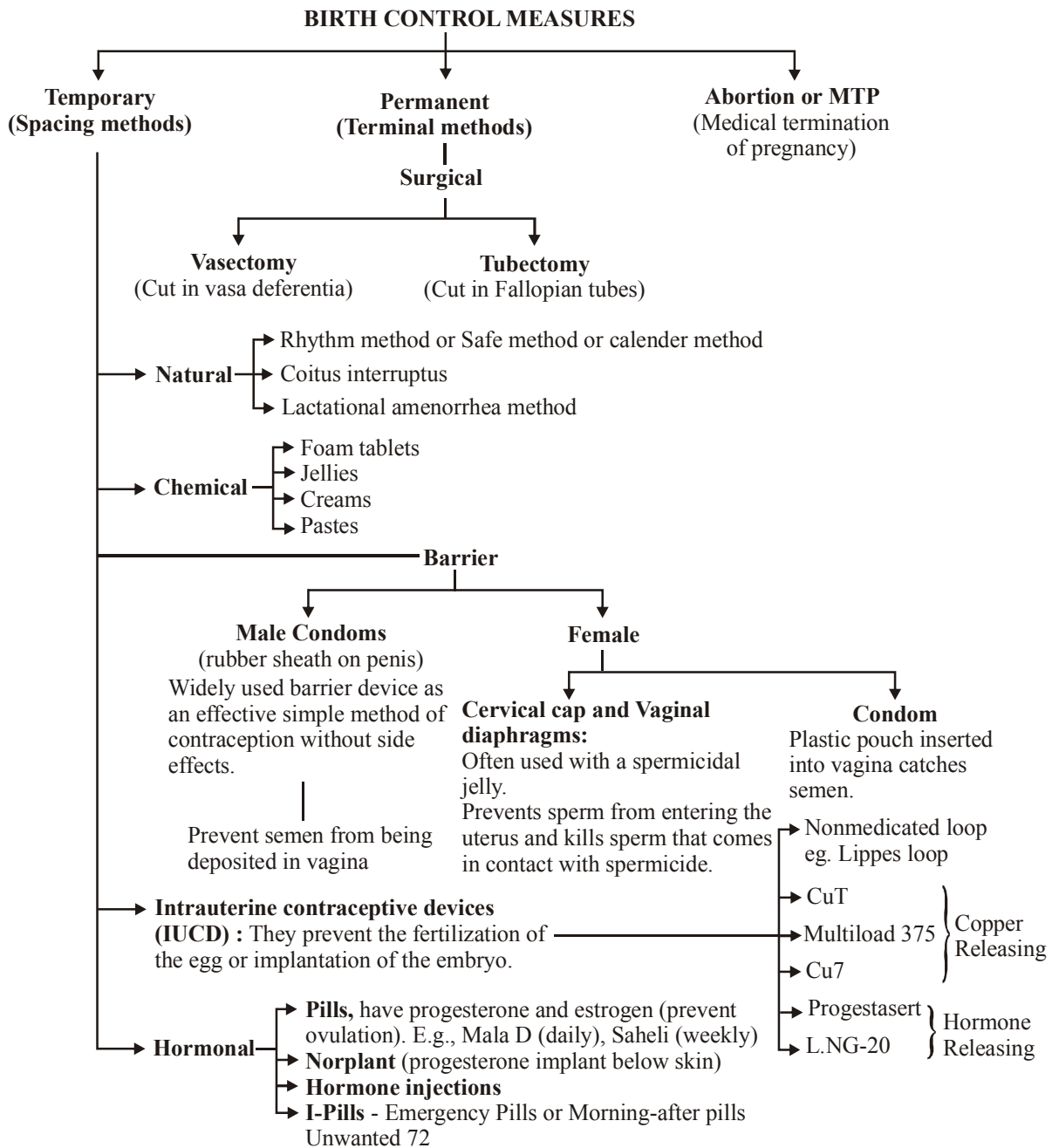
- * **Norplant** contains 6 capsules made up of siloxane material and each containing progesterone (or levonorgestrel). Its effect lasts for 5 years.
- * The implants suppress ovulation but main action is suppressing endometrium.
- * It takes 5 to 10 minutes to insert under local anaesthesia. Since the capsules are non-biodegradable, they need removal at the end of its use or earlier if the woman wishes to stop the use of contraception.
- * The insertion and removal is made easier by using a single rod, **Implanon** and its effect lasts for 3 years.

4. Surgical sterilization

- * The sterilization operation is undertaken with the primary objective of preventing further pregnancy permanently.
- * Sterilization is suited to those couples who have completed their families and cannot bear the inconvenience or cost of other contraceptive methods.
- * **Vasectomy:** Sterilization procedure in the male is called vasectomy in which a small part of the vas deferens is removed or tied up through a small incision on the scrotum.



- * **Tubectomy:** Sterilization procedure in the female is called tubectomy in which a small part of the fallopian tube is removed or tied up through a small incision in the abdomen or through vagina. Both these techniques are highly effective but their reversibility is very poor.



MEDICAL TERMINATION OF PREGNANCY (MTP)

* Intentional or voluntary termination of pregnancy before full term is called medical termination of pregnancy (MTP) or induced abortion. Nearly 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.

- * Government of India legalised MTP in 1971 with some strict conditions to avoid its misuse.
- * MTPs are considered relatively safe during the first trimester, i.e., upto 12 weeks of pregnancy.
- * The Medical Termination of Pregnancy (Amendment) Act, 2017 was enacted by the government of India with the intension of reducing the incidence of illegal abortion and consequent maternal mortality and morbidity.

- * According to this Act, a pregnancy may be terminated on certain considered grounds within the first 12 weeks of pregnancy on the opinion of one registered medical practitioner. If the pregnancy has lasted more than 12 weeks, but fewer than 24 weeks, two registered medical practitioners must be of the opinion, formed in good faith, that the required ground exist. 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.

AMNIOCENTESIS

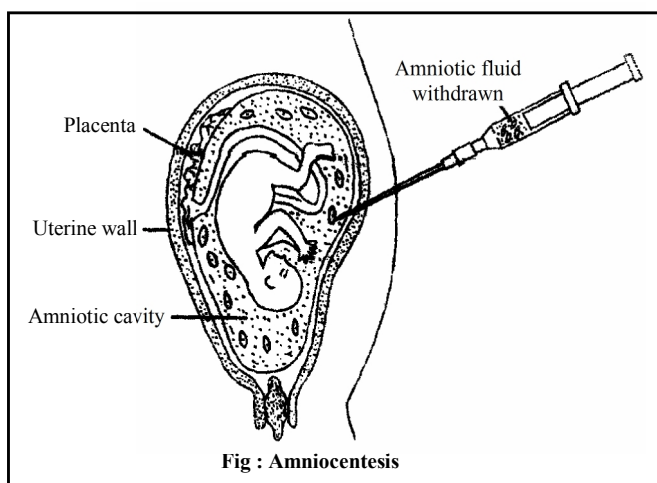
It is a technique to determine :

- (i) Sex of the developing baby.
- (ii) Genetically controlled congenital diseases.
- (iii) Metabolic disorders in foetus.

So amniocentesis is a pre-natal diagnostic technique.

It involves following steps :

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



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

Significance :

1. **Sex determination :** The somatic cells of foetal skin drawn with the amniotic fluid are stained to determine the presence of sex chromatin (barr body). Presence of barr body indicates that the developing foetus is female as female is with 2 X-chromosomes out of which one X-chromosome is active, while other X-chromosome is heterochromatised into a darkly stained barr body.
2. **Congenital disease :** By Karyotypic studies of somatic cells, abnormalities due to changes in chromosome number like Down's syndrome, Turner's syndrome, Klinefelter's syndrome etc. can be determined.
3. **Metabolic disorder :** By the enzyme analysis of amniotic fluid, different types of inborn metabolic disorders like phenylketonuria, alcaptonuria etc. can be detected. These inborn errors are caused by the absence or inactivity of specific enzymes due to gene mutations. So with the help of amniocentesis, if it is confirmed that the child is likely to suffer from some incurable, congenital defect, the mother can go for abortion.
4. **Drawback :** However, these days, the amniocentesis is being misused also. Mothers even get their normal foetus aborted if it is a female. This is just equivalent to killing of a normal child. So Govt. of India enforced the Pre-natal Diagnostic Techniques (Regulation and Prevention of Misuse) Act, 1994, since January 1, 1994 under which all genetic counselling centres and laboratories are required to apply for registration. The violation of this Act can bring a fine of Rs. 50,000 and imprisonment for two years. The doctor's registration is also cancelled till the complaint is disposed of.

SEXUALLY TRANSMITTED INFECTIONS (STIs)

- * Diseases or infections which are transmitted through sexual intercourse are collectively called sexually transmitted Infections (STI) or venereal diseases (VD) or reproductive tract infections (RTI). Gonorrhoea, syphilis, genital herpes, chlamydiasis, genital warts, trichomoniasis, hepatitis-B and of course, the most discussed infection in the recent years, HIV leading to AIDS are some of the common STIs.

Gonorrhoea

- * Caused by bacterium *Neisseria gonorrhoeae*.
- * It can infect the throat and rectum and can then spread to the eyes and internal organs, causing conjunctivitis and arthritic meningitis.
- * Left untreated in women, gonorrhoea can cause pelvic inflammatory disease (PID), a condition in which the fallopian tubes become scarred and blocked. PID can eventually lead to sterility.
- * Gonorrhoea symptoms in men may include a thick, milky discharge from the penis and pain and irritation upon urination.
- * It can be treated by combination of antibiotics.

Syphilis

- * Syphilis, a very destructive STD is caused by a spirochaete bacteria, *Treponema pallidum*, transmitted during sexual intercourse or through direct contact with an open syphilis sore, or from mother to foetus.
- * Once inside the body, the disease progresses in three distinct stages. The first or primary stage is characterized by the appearance of a small, painless, sore called chancre which resemble a blister and occurs on genitals. This stage is highly infectious.
- * The second stage is marked by a rash on the body, fever, sore throat and sores in the mouth. This stage is also infectious.
- * The final stage strikes after 30 years and is most debilitating in which damage done by the bacteria leads to heart disease, mental deficiency, and nerve damage, which may include a loss of motor functions or blindness. This stage is neither infectious nor can it be treated.

Genital Herpes

- * Genital Herpes is caused by two types of closely related viruses: **herpes simplex virus Type-I** and **Type-II**.
- * The Type II virus directly causes the genital lesions on gonads while the type I causes cold sores and fever blisters.
- * The fluid in the herpes sores can transmit the virus.
- * Once inside the body, the herpes virus travels along nerve endings until it reaches the base of the spine. There, the virus can remain dormant and cause no symptoms at all or the virus can become active and produce painful symptoms.

Chlamydia

- * It is caused by an unusual bacterium, *Chlamydia trachomatis*, that has both bacterial and viral characteristics: Like a bacterium, it is susceptible to antibiotics, and like a virus, it depends on its host to replicate its genetic material.
- * Chlamydia is called the “silent STD” because women usually experience no symptoms until after the infection has become established. It can cause PID similar to gonorrhoea.

Genital warts

- * Genital warts are caused by **human papilloma virus (HPV)**. Of the more than 30 known strains of HPV, at least three strains are known to cause cervical cancer in women.
- * Early detection and removal of genital warts is thus essential in cancer prevention.

Chancroid

- * It is a bacterial infection caused by gram negative streptobacillus *Haemophilus ducreyi*. This disease is primarily found in developing countries.
- * It is characterised by painful sores on the genitalia.
- * It can lead to enlargement of inguinal lymph nodes (located between the leg and lower abdomen).
- * The nodes may rupture through the skin producing draining abscesses.

Trichomoniasis

- * It is caused by a flagellate protozoan parasite *Trichomonas vaginalis*.
- * It infects genitourinary tract, urethra in males and vagina in females. There may be heavy yellow green vaginal discharge and painful urination.

- * In men, there is whitish discharge from penis. Infected women may deliver a premature or low birth weight infant.

NOTE

- * Once the host is infected by HIV. HIV detected by the **ELISA Test**. (Enzyme-linked immunosorbent assay a positive Elisa should be confirmed using another test called the western blot test.

INFERTILITY

- * Infertility is the failure to achieve pregnancy after one year of regular intercourse without the use of any contraceptive method.
- * The reasons for this could be many – physical, congenital, diseases, drugs, immunological or even psychological.

Male infertility

The reason of infertility due to the male partner can result from:

- * **Azoospermia:** It is absence of sperm in the semen. 5% males suffer from azoospermia which can be due to hormonal problem, injury or infection (T.B., gonorrhoea, mumps), blocked vas deferens or retrograde ejaculation where sperms pass back into the urinary bladder through urethra.
- * **Oligospermia:** More than 90% of male infertility is due to low sperm count which can be mild when count is 10–20 million / ml, moderate when 5–10 million / ml and severe when less than 5 million / ml sperms are seen.
- * **Abnormal sperm:** Usually small proportion of sperms of abnormal, for e.g. having two tails, no tail, no head etc. However, if proportion of such sperms is high, fertility is reduced.
- * **Autoimmunity:** Sometimes the immune system of the male generates antibodies which attack the sperm and reduce the living sperm count.
- * **Impotence:** This is the inability to achieve or maintain an erection of the penis.

Female infertility

The reasons behind female fertility usually are:

- * **Failure to ovulate:** Mostly the cause of failure of ovulation is hormonal. Sometimes the

hypothalamus or pituitary gland fail to produce hormones normally, for e.g. No follicles develop due to lack of FSH or egg release is affected due to lack of LH. Alternatively, the ovaries may not be producing estrogen or progesterone or both. This problem can be cured by giving clomiphene, a synthetic estrogen-like drug which stimulates ovulation and an injection of HCG (chemically similar to LH) can stimulate release of egg.

- * **Damage to the oviducts:** The fallopian tubes may be completely blocked or partially. The inner lining of the tubes can be scarred. These conditions arise due to PID or infections which may occur after delivery or miscarriage, endometriosis etc. This problem can be surgically treated in most cases.
- * **Cervical factors:** The cervical canal functions as a sperm reservoir, and capacitation of sperms occur here. The ciliated endocervical cells actively select the normal motile sperms and sieve out the abnormal ones by phagocytosis. Therefore, any damage to cervix results in infertility.
- * **Uterine causes:** Hypoplasia, malformed uterus and incompetent os are not related to infertility but cause miscarriage.
- * **Antibodies to sperm:** In a few rare cases, women produce antibodies against their husband's sperm. These are found in the cervix, uterus and oviducts.

TREATMENT FOR INFERTILITY

- * When environmental factors such as smoking, obesity and stress are involved, treatment is aimed at removing or reducing the factor responsible.
- * If surgical and hormonal methods are unable to provide treatment to infertile couples then they have to resort to specialised techniques commonly known as **assisted reproductive technologies (ART)**.

IN-VITRO FERTILIZATION (IVF)

- * This is commonly known as the ‘test-tube baby’ technique. It was first devised by Patrick Steptoe and Robert Edwards in 1978.
- * It can be used in case of blocked fallopian tubes which cannot be repaired surgically, problems with endometriosis, oligospermia, autoimmunity.
- * The technique involves fertilizing one or more eggs outside the body, and then transferring the zygote /embryo, back into the uterus. This step is referred as embryo-transfer (ET).

The main stages of IVF are :

- * Stimulation of the ovaries with fertility drugs to produce several eggs. These fertility drugs contain FSH in order to produce several eggs and release can be stimulates by injection of HCG / LH.
- * **Collecting the mature eggs:** The eggs can be collected from the follicles by laparoscopy or through trans-vaginal route guided by ultrasound.
- * **Fertilization:** Sperm are collected from the male partner and washed in a culture fluid to remove seminal fluid. About 100,000 healthy sperms are added to each egg in a glass dish or tube. The fertilized eggs are grown for about 2 days, after which they are usually at the 2-to 8-cell stage. Usually three pre-embryos are transferred to increase the chances of successful implantation. Spare pre-embryos can be frozen for further attempts, if necessary.
- * **Embryo transfer :** Embryos are transferred in a drop of culture fluid through the cervix and into the uterus using a fine plastic tube. A pregnancy test is usually performed 14 days after the procedure.

GAMETE INTRA-FALLOPIAN TRANSFER (GIFT)

- * GIFT is a variation of IVF which can be useful if the oviducts are not blocked.
- * Sperm and eggs are added separately to the fallopian tubes so that fertilization takes place naturally in the woman’s body rather than outside as in IVF.

- * The success rate is about 21% and implantation is more likely to be successful with GIFT than with IVF.

ZYGOTE INTRA-FALLOPIAN TRANSFER (ZIFT)

- * This is another treatment for unexplained infertility.
- * Pre-embryos (zygotes) are transferred into the oviducts rather than gametes as in GIFT.
- * The advantage over GIFT is that fertilization can be confirmed.

ARTIFICIAL INSEMINATION

- * If the male is infertile or has a very low sperm count or is impotent, then artificial insemination is often a preferred option to adoption of a child.
- * In this technique, the semen is collected either from the husband [**Artificial Insemination by husband – AIH**] or from a healthy donor [**Artificial Insemination by donor - AID**]. The semen is artificially introduced either into the vagina or into the uterus (IUI - intra-uterine insemination) of the female.

MICRO-ASSISTED FERTILIZATION (MAF) PROCESS IN-VITRO.

- * These sophisticated expensive techniques are needed if:
 - (i) IVF or GIFT fails due to fertilization failure.
 - (ii) Immunological derived infertility.
 - (iii) Sperm binds to zona pellucida but fails to penetrate.
 - (iv) No or weak binding of sperm to zona.
 - (v) Oligospermia
- * Intracytoplasmic semen insemination (ICSI) has proved successful in case of immotile sperms and if sperm count is less than 5 millions / ml with success rate of 30–40%. A single sperm is injected into the cytoplasm of the oocyte, which is then incubated overnight.
- * **Epididymal or testicular aspiration.** This is the latest technology employed in azoospermia caused by blocked vas deferens.

- * **Cryopreservation of semen** of the husband and embryos for future fertility is required if the man has to undergo radiation or chemotherapy for malignancy.
- * **Surrogacy.** It is a possibility when the woman cannot bear a child. An agreement is reached with another woman to have the baby using sperm from the male partner.

CONCEPT REVIEW

- * Effective methods of **contraception** include hormonal methods, such as oral contraceptives and injectable of progestin; **intrauterine devices; condoms; contraceptive diaphragms; and sterilization (vasectomy or tubal ligation)**. Emergency contraception can be used to prevent unwanted pregnancy after rape or unprotected intercourse.
- * **Spontaneous abortions** (miscarriages) occur without intervention. **Induced abortions** include **therapeutic abortions**, performed to maintain the mother's health or when the embryo is thought to be grossly abnormal, and abortions performed as a means of birth control.
- * The world population which was around 2 billion (2000 million) in 1900 rocketed to about 6 billion by 2000 and 7.2 billion in 2011.
- * Our population which was approximately 350 million at the time of our independence reached close to the billion mark by 2000 and crossed 1.2 billion in May 2011.
- * According to the 2011 census report, the population growth rate was less than 2 percent, i.e. 20/1000/year, a rate at which our population could increase rapidly.

* Method of Birth Control

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

IMPORTANT POINTS

- * Tubectomy, a method of population control, is performed on females only.
- * 'Saheli' an oral contraceptive for females, was developed by CDRI, Lucknow.
- * IVF involves transfer into fallopian tube of zygote or embryo upto 8-celled stage.
- * MTP is considered safe upto 12 weeks of pregnancy.
- * ZIFT is transfer of zygote into fallopian tube.
- * Chemical = Spermicidal jelly and foam.
- * IUDs = Copper T and Loop.
- * Barriers = Condom and Cervical cap
- * Sterilization = Tubectomy and Vascetomy.

QUESTION BANK

EXERCISE - 1 (LEVEL-1) [NCERT EXTRACT]

SECTION - 1 (VOCABULARY BUILDER)

Choose one correct response for each question.

For Q.1-Q.4

Match the column I with column II.

Q.1 Match each of the following types of contraception with its correct definition.

Column I	Column II
a. Rhythm method	i. Sheath or pouch of latex that captures sperm or prevents entry into the uterus.
b. Condom	ii. Device inserted into the uterus that prevents implantation
c. Diaphragm	iii. Hormonal means of preventing ovulation or implantation.
d. Pill or implants	iv. Avoiding intercourse during time of ovulation
e. IUD	v. Device which covers the opening to the uterus.

Codes

- (A) (a)–(i), (b)–(iii), (c)–(ii), (d)–(iv), (e)–(v)
 (B) (a)–(iv), (b)–(i), (c)–(v), (d)–(iii), (e)–(ii)
 (C) (a)–(i), (b)–(ii), (c)–(iii), (d)–(iv), (e)–(v)
 (D) (a)–(i), (b)–(ii), (c)–(iv), (d)–(iii), (e)–(v)

Q.2

Column I (Names of IUDs)	Column II (Examples of IUDs)
a. Non-medicated IUD	i. Progestasert and LNG-20
b. Copper releasing IUD	ii. Lippes loop iii. Cu-T, Cu-7 and
c. Hormone releasing IUD	multiload-375

Codes

- (A) (a)–(iii), (b)–(ii), (c)–(i)
 (B) (a)–(i), (b)–(ii), (c)–(iii)
 (C) (a)–(ii), (b)–(iii), (c)–(i)
 (D) (a)–(ii), (b)–(i), (c)–(iii)

Q.3

Column I (STD)	Column II (Causal Agent)
a. Chlamydia	i. <i>Chlamydia trachomatis</i>
b. Gonorrhoea	ii. <i>Neisseria gonorrhoeae</i>
c. Trichomoniasis	iii. <i>Trichomonas vaginalis</i>
d. Genital herpes	iv. Herpes simplex virus
e. Syphilis	v. <i>Treponema pallidum</i>

Codes

- (A) (a)–(i), (b)–(iii), (c)–(ii), (d)–(iv), (e)–(v)
 (B) (a)–(iv), (b)–(v), (c)–(iii), (d)–(ii), (e)–(i)
 (C) (a)–(i), (b)–(ii), (c)–(iii), (d)–(iv), (e)–(v)
 (D) (a)–(i), (b)–(ii), (c)–(iv), (d)–(iii), (e)–(v)

Q.4

Column I	Column II
a. Tubectomy	i. Prenatal diagnostic technique
b. Amniocentesis	ii. Oral contraceptive
c. Louise Joy Brown	iii. Cutting of fallopian tube
d. Saheli	iv. Test tube baby

Codes

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

SECTION - 2 (BASIC CONCEPTS BUILDER)

For Q.5 to Q.19 :

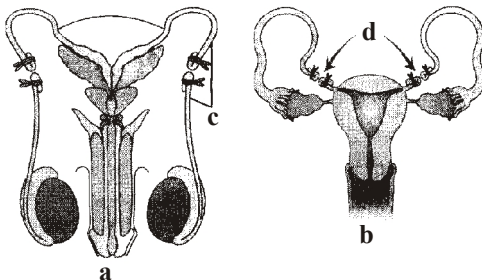
Choose one word for the given statement from the list.

Hormonal releasing IUD; Fallopian tube; Tubectomy, Ovulation; Mucous, Vas deferens; 8; ZIFT, Vasectomy, Outside, embryo transfer, sperms.

- Q.5** ____ makes the uterus unsuitable for implantation and the cervix hostile to ____.
- Q.6** In male sterilisation, ____ is cut and tied. This process is called ____.
- Q.7** In female sterilisation, ____ is cut and tied. This process is called ____.
- Q.8** IVF involves the fertilisation ____ the body followed by ____.
- Q.9** IVF in which the early zygote with up to ____ blastomere is transferred to the Fallopian tube is called ____.
- Q.10** Oral contraceptives inhibits ____ and implantation as the well as quality of cervical ____ to prevent the entry of sperms.
- Q.11** Coitus interruptus is the withdrawl method of natural contraception. [True / False]
- Q.12** Abortions could happen spontaneously too. [True / False]
- Q.13** Infertility is defined as the inability to produce a viable offspring and is always due to abnormalities/defects in the female partner. [True / False]
- Q.14** Complete lactation could help as a natural method of contraception. [True / False]
- Q.15** Creating awareness about sex related aspects is an effective method to improve reproductive health of the people. [True / False]
- Q.16** Surgical methods of contraception prevent gamete formation. [True / False]
- Q.17** All sexually transmitted diseases are completely curable. [True / False]
- Q.18** Oral pills are very popular contraceptives among the rural women. [True / False]
- Q.19** In ET techniques, embryos are always transferred into the uterus. [True / False]

SECTION - 3 (ENHANCE DIAGRAM SKILLS)

Q.20 Choose the correct option for a, b, c and d.



- (A) a-Tubectomy, b-Vasectomy, c-Fallopian tube cut and tied, d-Vas-deferens cut and tied
- (B) a-Tubectomy, b-Vasectomy, c-Cervix, d-Vas deferens cut and tied
- (C) a-Vasectomy, b-Tubectomy, c-Vas deferens cut and tied, d-Fallopian tube cut and tied
- (D) a-Tubectomy, b-Vasectomy, c-Vas deferens cut and tied, d-Fallopian tube cut and tied

SECTION - 4 (ENHANCE PROBLEM SOLVING SKILLS)

Choose one correct response for each question.

PART - 1: BASICS OF REPRODUCTIVE HEALTH

- Q.21** Choose the WHO's statement about reproductive health.
- I. Healthy reproductive organs with normal functions.
 - II. Total well being of physical, emotional, behavioural and social aspects.
 - III. Free of all STD (Sexually Transmitted Disease).
- (A) I and II (B) I and III
(C) II and III (D) Only II
- Q.22** In India, population crossed one billion mark in May 2000. The probable reasons for this are, decline in –
- a. Maternal mortality rate (MMR)
 - b. Infant mortality rate (IMR)
 - c. Number of people in reproductive age
 - d. Death rate
- (A) a & b only (B) a, b & c
(C) a, b & d (D) a, b, c & d
- Q.23** RCH stands for
- (A) Reproductive and Child Health care
 - (B) Reproductive Cum Hygiene
 - (C) Routine Check-up of Health
 - (D) Reproduction of Child Health and Care
- Q.24** Full form of CDRI is
- (A) Central Development Research Institute
 - (B) Child Development Research Institute
 - (C) Central Drug Research Institute
 - (D) Common Development Research Institute
- (B) Copper releasing IUD
(C) Both (A) and (B)
(D) Hormone releasing IUD
- Q.26** When the ovulation is expected in a normal menstrual cycle?
- (A) 10-17 day of menstrual phase
 - (B) 12-14 day of menstrual phase
 - (C) 10-20 day of menstrual phase
 - (D) 6-7 day of menstrual phase
- Q.27** Use of which of the following contraceptive device has increased in recent years due to its additional benefit of protecting the user from contracting STDs and AIDS?
- (A) Diaphragms and cervical caps
 - (B) IUDs
 - (C) Condoms
 - (D) Contraceptive pills
- Q.28** Oral contraceptive pills contain
- (A) FSH and LH hormones.
 - (B) Progestogen and estrogen combination.
 - (C) Prolactin
 - (D) Mifepristone
- Q.29** Diaphragms, cervical caps and vaults are
- (A) are non-usable
 - (B) for female use only
 - (C) for male use only
 - (D) None of these
- Q.30** Which of the following is not a natural method of contraception?
- (A) Periodic abstinence
 - (B) Withdrawl method
 - (C) Lactational amenorrhoea
 - (D) Condoms
- Q.31** Example of the non-medicated IUD is
- (A) Cu-T
 - (B) Cu-7
 - (C) multiload-375
 - (D) lippes loop

PART - 2 : BIRTH CONTROL

- Q.25** Which IUD increases the phagocytosis of the sperms within the uterus?
- (A) Non-medicated IUD

- Q.32** Lactational amenorrhoea, is a natural way of birth spacing. It is due to the high level of –
 (A) FSH and LH hormones
 (B) Estrogen
 (C) Prolactin
 (D) Progesterone
- Q.33** Find out correct choice for IUD.
 I. Increases phagocytosis of sperms.
 II. Releases Cu^{2+} ions that suppresses the sperm motility and fertilising capacity of sperms.
 III. Make the uterus unsuitable for implantation.
 (A) I, II and III (B) I and II
 (C) Only I (D) None of the above
- Q.34** Contraceptive pills are very effective with lesser side effects used by females. They work by –
 (A) Inhibiting ovulation
 (B) Inhibiting implantation
 (C) They alter the quality of cervical mucus to prevent/retard the entry of sperms.
 (D) All of these
- Q.35** Copper releasing IUDs are used for suppressing the
 (A) activity of ova
 (B) activity of the uterus
 (C) motility of the sperms
 (D) motility of ova
- Q.36** 'Nirodh' is a popular brand of
 (A) IUDs for female
 (B) Contraceptive pill for female
 (C) Condom for male
 (D) Condom for female
- Q.37** All the following statements are correct about 'Saheli', but one is wrong. Which one is wrong?
 (A) New oral contraceptive pill for females.
 (B) Contains non-steroidal preparation.
 (C) It is 'once a week pill'.
 (D) It increases the phagocytosis of the sperm within the uterus.
- Q.38** Natural methods of contraception work on the principle of avoiding chances of ovum and sperm meeting. It includes
 a. Periodic abstinence
 b. Withdrawal
 c. Coitus interruptus
 d. Lactational amenorrhoea
 (A) a & b only (B) b & c only
 (C) a, b & c (D) a, b, c & d
- Q.39** In contraception, sperm motility decreases due to
 (A) Cu ion (B) Fe ion
 (C) Zn ion (D) Se ion
- Q.40** Which of the following is the world's first non-hormonal oral contraceptive pill for females, developed by scientists at the Central Drug Research Institute (CDRI), Lucknow, India?
 (A) Mala-D (B) Saheli
 (C) Morning after pill (D) POP
- Q.41** Sterilisation method used in human beings is/are called
 (A) vasectomy (B) tubectomy
 (C) Both (A) and (B) (D) None of the above
- Q.42** Amongst the following methods of contraception, which can be regarded as the most cost effective and easily reversible method of contraception?
 (A) Cu-T
 (B) Tubectomy
 (C) Vasectomy
 (D) Sterilisation method
- Q.43** Example of copper releasing IUD is
 (A) Cu-T (B) Cu-7
 (C) multiload-375 (D) All of these
- Q.44** Which of the following method of contraception has maximum chances of failure?
 (A) Rhythm/Periodic abstinence
 (B) Lactational amenorrhoea
 (C) Condoms
 (D) IUDs

- Q.45** Day of periodic abstinence is
 (A) 10-11 days of menstrual phase
 (B) 10-17 days of menstrual phase
 (C) 17-20 days of menstrual phase
 (D) 20-28 days of menstrual phase
- Q.46** Which of the following is a terminal method of contraception to prevent any more pregnancies?
 (A) Barrier method (B) IUD
 (C) Hormonal method (D) Sterilisation method
- Q.47** Which of the following contraceptive device is inserted by the doctor or trained nurse in the uterus through the vagina?
 (A) Diaphragm (B) Cu-T
 (C) Condom (D) Vault
- Q.48** IUD stands for
 (A) Inter Uterine Devices
 (B) Intra Uterine Devices
 (C) Inter Uterine Development
 (D) Intra Uterine Development
- Q.49** A sterilisation technique in females which blocks gamete transport and thereby prevents conception is
 (A) Vasectomy (B) Copper-T
 (C) Condom (D) Tubectomy

PART - 3 : MEDICAL TERMINATION OF PREGNANCY (MTP)

- Q.50** During which phase of the pregnancy MTP is safe?
 (A) 1st trimester (B) 2nd trimester
 (C) 3rd trimester (D) 4th trimester
- Q.51** Government of India legalised MTPs in with some strict conditions to avoid its misuse.
 (A) 1951 (B) 1971
 (C) 1947 (D) 1986
- Q.52** MTP helps in –
 (A) unwanted pregnancy
 (B) unsafe sex
 (C) failure of contraceptive
 (D) All of the above

PART - 4 : SEXUALLY TRANSMITTED DISEASES (STDs)

- Q.53** STDs are also called –
 (A) VD (B) RTI
 (C) Both (A) and (B) (D) None of these
- Q.54** What measures should be taken to avoid the transmission of STD?
 I. avoid sex with unknown
 II. avoid sex with multiple partner
 III. do protected sex
 IV. avoid sharing needle.
 (A) I, II and IV (B) I, II and III
 (C) I, III and IV (D) All of these
- Q.55** Most of the sexually transmitted diseases are completely curable if detected early and treated properly, except
 (A) Hepatitis-B (B) Genital herpes
 (C) HIV infection (D) All of these
- Q.56** STDs caused by bacteria is/are
 (A) syphilis (B) gonorrhoea
 (C) Both (A) and (B) (D) None of the above
- Q.57** Which of the following sexually transmitted disease can also be transmitted by sharing of injection needles, surgical instruments and blood transfusion?
 (A) Hepatitis-B (B) HIV infection
 (C) Genital herpes (D) Both (A) & (B)
- Q.58** Hepatitis-B and HIV spreads through –
 (A) sharing needles
 (B) transfusion of blood
 (C) infected mother to child
 (D) All of the above
- Q.59** What are the measures that one has to take to prevent from contracting STDs?
 (A) Avoid sex with unknown partners or multiple partners
 (B) Always use condoms during coitus
 (C) In case of doubt, go to a qualified doctor for early detection and get complete treatment if diagnosed with disease.
 (D) All of these

PART - 5 : INFERTILITY

- Q.60** Infertile couples can produce a baby with the help of –
 (A) ART (B) AIT
 (C) GIFT (D) All of the above
- Q.61** Surrogate mother is
 (A) Mother without lactation.
 (B) Future mother with embryo implanted from another.
 (C) Carrying several embryos
 (D) Artificially inseminated female
- Q.62** ZIFT stands for –
 (A) Zygote Intra Fallopian Transfer
 (B) Zygote Inter Fallopian Transfer
 (C) Zygote In Fallopian Transfer
 (D) All of the above
- Q.63** Which of the following is a specialised procedure in which the sperm is directly injected into the ovum?
 (A) ZIFT (B) GIFT
 (C) ICSI (D) AI
- Q.64** ICSI stands for –
 (A) Inter Cytoplasmic Semen Injection
 (B) Intra Cytoplasmic Semen Injection
 (C) Inter Cytoplasmic Semen Injection
 (D) In Cytoplasmic Semen Injection
- Q.65** Which of the following is the most appropriate statement defining infertility?
 (A) Couple is unable to produce children in spite of unprotected sexual co-habitation even after two years.
 (B) It is the inability to produce a viable offspring and is always due to defects abnormalities in the female partner
 (C) Infertility is due to immature sex organs.
 (D) Infertility cannot be helped by ART.
- Q.66** Secondary infertility is
 (A) patient who can't do coitus (sex)
 (B) sterility
 (C) impotency
 (D) it indicate previous pregnancy but failure to conceive subsequently
- Q.67** NACO stands for –
 (A) National Acid Control Organisation
 (B) National Asisted Control Organisation
 (C) National AIDS Control Organisation
 (D) National AIM for Control Organisation
- Q.68** Test-tube baby means a baby born when –
 (A) Complete development occurs in a test tube
 (B) It is developed through tissue culture
 (C) IVF followed by ET
 (D) It develops from unfertilised egg
- Q.69** Difference between ZIFT and IUT lies in the –
 (A) methodology
 (B) nature of the sperms
 (C) nature of the cells
 (D) number of the cells
- Q.70** IVF in which zygote with _____ then 8 blastomere is transferred into female body it is called _____.
 (A) more; IUT (B) less; IUT
 (C) less; ZIFT (D) less; ICSI
- Q.71** The technique called Gamete Intra Fallopian Transfer (GIFT) is recommended for the females
 (A) who can't produce an ovum.
 (B) who can't retain the foetus inside the uterus
 (C) whose cervical canal is too narrow to allow the passage for the sperms.
 (D) who can't provide suitable environment for fertilisation.

EXERCISE - 2 (LEVEL-2)

Choose one correct response for each question.

- Q.1** Lactational amenorrhoea is
 (A) absence of menses in adult age.
 (B) absence of menses in elderly age.
 (C) absence of menses during lactation.
 (D) No menses during pregnancy.
- Q.2** Which of the following contraceptive device is inserted by the doctor or trained nurse in the uterus through the vagina?
 (A) Diaphragm (B) Cu-T
 (C) Condom (D) Vault
- Q.3** Select the **incorrect** statement w.r.t. ZIFT
 (A) It is zygote intra fallopian transfer.
 (B) Zygote is transferred into the fallopian tube after IVF.
 (C) Early embryos upto 8 blastomeres can also be transferred into the fallopian tube.
 (D) Embryos with more than 8 blastomeres are also transferred into the fallopian tubes.
- Q.4** Progestasert and LNG-20 are the examples of
 (A) non-mediated IUDs
 (B) copper releasing IUDs
 (C) hormonal releasing IUDs
 (D) All of the above
- Q.5** Castration cannot be taken as a contraceptive device, because –
 (A) Deficiency of testosterone hormone, will deprive a person of sexual drive, desire and/ or the sexual act.
 (B) It inhibits gamete transport.
 (C) It is surgical method of contraception also called sterilisation.
 (D) This technique is highly effective but its reversibility is poor.
- Q.6** MTPs are considered relatively safe during
 (A) First trimester of pregnancy
 (B) 20 weeks of pregnancy
 (C) Second trimester of pregnancy
 (D) Third trimester of pregnancy
- Q.7** Which of the following statement is/are correct about diaphragms, cervical caps and vaults?
 a. Barrier methods of contraception
 b. Cover the cervix during coitus
 c. Protect the user from contracting STDs
 d. They are reusable
 (A) a & b only (B) a, b & c
 (C) a, b & d (D) a, b, c & d
- Q.8** Which of the following is incorrectly matched?
 (A) Non-medicated IUDs - Lippes loop
 (B) Copper releasing IUD - LNG-20
 (C) Hormone releasing IUD - Progestasert
 (D) Saheli - Once a week contraceptive pill
- Q.9** Which of the following sexually transmitted disease is caused by a protozoan?
 (A) Gonorrhoea (B) Trichomoniasis
 (C) Chlamydia (D) Syphilis
- Q.10** Injections and implants (the progesterone or progesterone-oestrogen combination) are used by the females under the –
 (A) skin of the inner arm above elbow
 (B) vagina
 (C) stomach's upper skin
 (D) cervix
- Q.11** Which of the following have been found to be very effective as emergency contraceptive as they could be used to avoid possible pregnancy due to rape if given within 72 hours?
 a. Administration of progestogens
 b. Progestogen-estrogen combination
 c. IUDs inserted within 72 hours of coitus
 (A) a only (B) a & b only
 (C) b only (D) a, b & c
- Q.12** Choose the correct statement regarding the ZIIT procedure.
 (A) Ova is collected from the female donor and transferred to the Fallopian tube to facilitate zygote formation.
 (B) Zygote is collected from a female donor and transferred to Fallopian tube.

- (C) Zygote is collected from a female donor and transferred to the uterus.
- (D) Ova is collected from a female donor and transferred to the uterus.
- Q.13** In lactational amenorrhoea, there is no ovulation or menstruation during the period of intense lactation following parturition, due to high level of prolactin, which?
- (A) Inhibits the release of gonadotropins.
- (B) Inhibits the release of estrogen and progesterone.
- (C) Stimulate the release of FSH and LH.
- (D) Stimulates the release of estrogen and progesterone.
- Q.14** What is the difference in oral contraceptives and hormonal implants?
- (A) They differ in their sites of implantation
- (B) They differ in their duration of action
- (C) Both (A) and (B)
- (D) None of the above
- Q.15** Which of the following is an additional advantage of hormone releasing IUDs?
- (A) Increase phagocytosis of sperms
- (B) Suppress sperm motility and the fertilising capacity of sperms
- (C) They make the uterus unsuitable for implantation and cervix hostile to the sperms
- (D) They always inhibit ovulation.
- Q.16** Amniocentesis is a process to –
- (A) determine any disease of heart.
- (B) determine any hereditary disease of the embryo.
- (C) know about the diseases of the brain.
- (D) grow the cells on the culture medium.
- Q.17** Which of the following assisted reproductive technologies involves the transfer of an ovum collected from a donor into the fallopian tube of another female who cannot produce one, but can provide suitable environment for fertilisation and further development?
- (A) ZIFT (B) GIFT
- (C) AI (D) IUT
- Q.18** A birth control implant having six small, plastic cylinders and with the effective period much longer upto 5 years is
- (A) Norplant (B) Multiload-375
- (C) Injectable (D) LNG-20
- Q.19** AIDS day is
- (A) 11th July (B) 1st December
- (C) 1st July (D) 7th April
- Q.20** Which one of the following is the most widely used method of contraception by females in India?
- (A) Oral contraceptive pills
- (B) Condoms
- (C) IUDs
- (D) Sterilisation
- Q.21** Which of the following can be complications resulting from STDs without timely detection and treatment?
- a. Pelvic inflammatory disease (PID)
- b. Still births
- c. Infertility or even cancer of reproductive tract
- d. Ectopic pregnancies
- (A) a & b only (B) a, b & c
- (C) a only (D) a, b, c & d
- Q.22** Which of the following is a **wrong** match between the type of contraception and its function?
- | Contraceptive device | Function |
|-------------------------|---|
| (A) Contraceptive pills | - Inhibit ovulation |
| (B) Sterilisation | - Inhibit gamete formation |
| (C) IUDs | - Inhibit implantation |
| (D) Natural methods | - Avoid chances of ovum and sperm meeting |
- Q.23** STDs caused by viruses are
- I. AIDS II. Hepatitis-B
- III. Genital herpes.
- (A) I, II and III (B) I and III
- (C) II and III (D) I and II

- Q.24** Which of the following statement is not correct about oral contraceptive pills?
 (A) They have to be taken daily for a period of 21 days, starting preferably within the first five days of menstrual cycle.
 (B) They contain small doses of progestogen-estrogen combination.
 (C) They inhibit ovulation and implantation.
 (D) Ovum and sperms are prevented from physically meeting with the help of barriers.
- Q.25** Vasectomy has no effect on the sexual life of male because:
 (A) He can still ejaculate and has normal secretion of sex hormones in blood.
 (B) Vasectomy affects the hormonal secretion but the person can ejaculate semen with normal number of sperms.
 (C) He cannot ejaculate but the hormone levels are normal.
 (D) Vasectomy does not affect the sexual desire but can cause impotency.
- Q.26** Oral contraceptives have hormonal preparation of –
 (A) progesterone (B) oestrogen
 (C) Both (A) and (B) (D) None of the above
- Q.27** Implants under the skin and injectables contain
 (A) Progestogen alone
 (B) Progestogen and estrogen
 (C) FSH and LH
 (D) Both (A) & (B) are correct
- Q.28** Ovulation do not occur in lactational period because of
 (A) inhibin (B) prolactin
 (C) prostaglandin (D) oxytocin
- Q.29** The success of birth control programmes in controlling population growth is dependent on –
 (A) Use of contraceptives
 (B) Tubectomy
 (C) Vasectomy
 (D) Acceptability of the above by the people
- Q.30** Trade name of weekly oral contraceptive pill is
 (A) Mala (B) Saheli
 (C) Mala A (D) Mala D
- Q.31** Daily oral contraceptive pill is –
 (A) Mala C (B) Mala N & Mala D
 (C) Mala A (D) Mala D
- Q.32** Test tube babies are produced by –
 (A) Fertilising the egg removed from the body of the female with the husband's sperm outside in vitro culture. The zygote is transferred back.
 (B) External fertilisation and development in vitro culture till 32 cells stage before putting the embryo back into mother's uterus.
 (C) Complete development of a baby in vitro.
 (D) Development upto 32 cells stage and transplanting embryo in the uterus of a surrogate mother.
- Q.33** Which one of the following is tested by the technique of amniocentesis –
 (A) Biochemical abnormalities in the foetus
 (B) Errors of metabolism in the foetus
 (C) Chromosomal abnormalities in the foetus
 (D) All of the above
- Q.34** Foetal sex can be determined by examining cells from the amniotic fluid by looking for –
 (A) Barr bodies (B) Autosomes
 (C) Chiasmata (D) Kinetochores
- Q.35** Which of the following is a method for birth control –
 (A) IUDs (B) GIFT
 (C) HTF (D) IVE-ET
- Q.36** In amniocentesis, the fluid is taken from –
 (A) Foetal blood
 (B) Mother's blood
 (C) Body fluid of mother
 (D) Fluid surrounding foetus

- Q.37** Amniocentesis involves the analysis of –
 (A) Amnion
 (B) Body fluid of amniotes
 (C) Amino acids of protein
 (D) Amniotic fluid
- Q.38** Surrogate mother is used for –
 (A) Induction of lactation
 (B) Artificially inseminated female
 (C) Future mother with transplanted embryo.
 (D) Artificial in semination
- Q.39** A contraceptive pill contains –
 (A) Progesterone and estrogen
 (B) Spermicidal salts
 (C) Chemicals that cause automatic abortion
 (D) Chemicals that prevents fertilization of ovum
- Q.40** Progesterone pill helps in preventing pregnancy by not allowing –
 (A) Ova formation (B) Fertilization
 (C) Implantation (D) None of these
- Q.41** The method of sterilisation is –
 (A) Loop (B) IUD
 (C) Diaphragm (D) Tubectomy
- Q.42** MTP means –
 (A) Many transferable pregnancies
 (B) Medically temporary pregnancy
 (C) Medical termination of pregnancy
 (D) Multiple temporary pregnancy
- Q.43** Action of jelly and cream is –
 (A) Spermicidal and immoalizing the sperms also.
 (B) Entangles the sperms.
 (C) Preventing the ova to be released.
 (D) Enables the sperms to reach towards ovum speedly .
- Q.44** Action of contraceptive is –
 (A) Prevent the ovulation only.
 (B) Prevention of ovulation and fertilization only
 (C) Prevention of ovulation, fertilization & implantation only.
 (D) Prevent the rapid passing of eggs in oviduct
- Q.45** Assisted Reproductive Technology does not include
 (A) Zygote extra fallopian transfer.
 (B) In vitro fertilization and embryo transfer.
 (C) Artificial insemination.
 (D) Gamete intra fallopian transfer.
- Q.46** The method of directly injecting a sperm into ovum in assisted by reproductive technology is called:
 (A) GIFT (B) ZIFT
 (C) ICSI (D) ET
- Q.47** Increased IMR and decreased MMR in a population will:
 (A) Cause rapid increase in growth rate
 (B) Result in decline in growth rate
 (C) Not cause significant change in growth rate
 (D) Result in an explosive population/exp
- Q.48** Intensely lactating mothers do not generally conceive due to the:
 (A) Suppression of gonadotropins
 (B) Hyper secretion of gonadotropins
 (C) Suppression of gametic transport
 (D) Suppression of fertilisation
- Q.49** A national level approach to build up a reproductively healthy society was taken up in our country in:
 (A) 1950s (B) 1960s
 (C) 1980s (D) 1990s
- Q.50** Emergency contraceptives are effective if used within:
 (A) 72 hrs of coitus
 (B) 72 hrs of ovulation
 (C) 72 hrs of menstruation
 (D) 72 hrs of implantation
- Q.51** Choose the right one among the statements given:
 (A) IUDs are generally inserted by the user herself
 (B) IUDs increase phagocytosis reaction in the uterus
 (C) IUDs suppress gametogenesis
 (D) IUDs once inserted need not be replaced

- Q.52** Following statements are given regarding MTP. Choose the correct options given below:
- MTPs are generally advised during first trimester
 - MTPs are used as a contraceptive method
 - MTPs are always surgical
 - MTPs require the assistance of qualified medical personnel.
- (A) ii and iii (B) ii and iii
(C) i and iv (D) i and ii
- Q.53** From the sexually transmitted diseases mentioned below, identify the one which does not specifically affect the sex organs:
- (A) Syphilis (B) AIDS
(C) Gonorrhoea (D) Genital warts
- Q.54** Condoms are one of the most popular contraceptives because of the following reasons:
- These are effective barriers for insemination.
 - They do not interfere with coital act.
 - These help in reducing the risk of STDs.
 - All of the above
- Q.55** Choose the correct statement regarding the ZIFT procedure:
- Ova collected from a female donor are transferred to the fallopian tube to facilitate zygote formation.
 - Zygote is collected from a female donor and transferred to the fallopian tube.
 - Zygote is collected from a female donor and transferred to the uterus.
 - Ova collected from a female donor and transferred to the uterus.
- Q.56** The correct surgical procedure as a contraceptive method is:
- (A) Ovarietomy (B) Hysterectomy
(C) Vasectomy (D) Castration
- Q.57** Diaphragms are contraceptive devices used by the females. Choose the correct option from the statements given below:
- They are introduced into the uterus
 - They are placed to cover the cervical region
 - They act as physical barriers for sperm entry
 - They act as spermicidal agents
- (A) i and ii (B) i and iii
(C) ii and iii (D) iii & iv

EXERCISE - 3 (LEVEL-3)

Choose one correct response for each question.

Q.1 Diaphragms are the contraceptive devices, used by the females.

Choose the correct statements for diaphragm given below.

- I. They are introduced into the uterus.
- II. They are placed to cover the cervical region.
- III. They acts as physical barriers for the sperm entry.
- IV. They acts as spermicidal agents.

- (A) I and II (B) I and III
- (C) II and III (D) III and IV

Q.2 Which of the following is an incorrect statement for periodic abstinence?

- (A) The couple should abstain from coitus from day 10 to 17 of the menstrual cycle when ovulation could be expected.
- (B) 10th to 17th day of the cycle is fertile period, when the chances of fertilisation are high.
- (C) This prevents the chances of union of male and female gametes.
- (D) In this method, the ovum and sperms are prevented from physically meeting with the help of barriers.

Q.3 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 V (D) I, III, IV and V

Q.4 Mark the incorrect statements -?

- a. Castration is a method of contraception.
- b. MTPs have a significant role in decreasing the size of population, so it is legal.
- c. Amniocentesis for sex determination is banned in our country.
- d. Nearly 45 to 50 million MTPs are performed in a year all over the world.

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

Q.5 Find out the right aspects of lactational amenorrhoea

- I. Ovulation do not occur during the lactational period.
- II. Chances of the failure of contraception are almost nil upto six months following parturition.
- III. Side effects are almost nil.
- IV. It is a natural method of contraception.
- V. It increases phagocytosis of sperms.

- (A) II, III, IV and V (B) All except V
- (C) II, III, IV and V (D) All of these

Q.6 Match the following columns.

Column I (STD)

Column II

(Causal agent)

- | | |
|------------------|--|
| a. Chancroid | i. <i>Haemophilus ducreyi</i> |
| b. Genital warts | ii. Human Papilloma Virus (HPV) |
| c. Hepatitis-B | iii. Hepatitis-B virus |
| d. Hepatitis-C | iv. Hepatitis-C virus |
| e. AIDS | v. Human Immuno deficiency Virus (HIV) |

Codes

- (A) (a)–(i), (b)–(iii), (c)–(ii), (d)–(iv), (e)–(v)
- (B) (a)–(iv), (b)–(v), (c)–(iii), (d)–(ii), (e)–(i)
- (C) (a)–(i), (b)–(ii), (c)–(iii), (d)–(iv), (e)–(v)
- (D) (a)–(i), (b)–(ii), (c)–(iv), (d)–(iii), (e)–(v)

Q.7 Later complications of STDs are

- I. pelvic inflammation disease
- II. abortion
- III. still birth
- IV. ectopic pregnancies
- V. infertility
- VI. cancer.

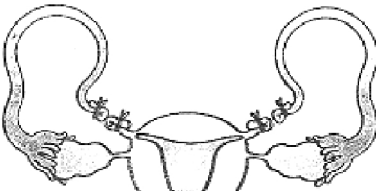
Choose the correct combinations.

- (A) I, II, III, IV and V
- (B) I, II, III, V and VI
- (C) I, III, IV, V and VI
- (D) I, II, III, IV, V and VI

- Q.8** The sexually transmitted disease, that can affect both the male and the female genitals and may damage the eyes of babies born of infected mothers is
 (A) Gonorrhoea (B) Hepatitis
 (C) AIDS (D) Syphilis
- Q.9** Match the contraceptive methods given under Column-I with their examples given under Column-II. Select the correct choice from those given below:
- | Column-I
(Contraceptive Method) | Column-II
(Examples) |
|------------------------------------|---|
| a. Chemical | i. Tubectomy and vasectomy |
| b. IUDs | ii. Copper T and Loop |
| c. Barriers | iii. Condom and Cervical cap |
| d. Sterilization | iv. Spermicidal Jelly and foam |
| | v. Coitus interruptus and calendar method |
- Codes
 (A) (a)–(i), (b)–(iii), (c)–(ii), (d)–(iv)
 (B) (a)–(iv), (b)–(i), (c)–(iii), (d)–(ii)
 (C) (a)–(iv), (b)–(ii), (c)–(iii), (d)–(i)
 (D) (a)–(i), (b)–(ii), (c)–(iv), (d)–(iii)
- Q.10** IUDs which are used by females –
 (A) act as spermicidal jellies.
 (B) block the entry of sperms into vagina.
 (C) are implanted under the skin and they release progestogen and estrogen.
 (D) release copper ions in the uterus that increase phagocytosis of sperms.
- Q.11** Progestasert is an IUD which makes the uterus unsuitable and cervix hostile to the sperms as they are –
 (A) Hormone releasing IUDs
 (B) Copper releasing IUDs
 (C) Ideal contraceptive
 (D) Non-medicated IUDs
- Q.12** Sterilisation techniques are generally fool proof methods of contraception with least side effects. Yet, this is the last option for the couples because
 i. It is almost irreversible
 ii. Of the misconception that it will reduce sexual urge/drive
 iii. It is a surgical procedure
 iv. Of lack of sufficient facilities in many parts of the country.
 Choose the correct option:
 (a) i and iii (b) ii and iii
 (c) ii and iv (d) i, ii, iii and iv
- For Q.13-Q.14**
 (A) Statement- 1 is True, Statement-2 is True, Statement-2 is a correct explanation for Statement -1
 (B) Statement -1 is True, Statement -2 is True ; Statement-2 is NOT a correct explanation for Statement - 1
 (C) Statement - 1 is True, Statement- 2 is False
 (D) Statement -1 is False, Statement -2 is False
- Q.13** **Statement 1** : Test tube baby has raised several legal problems.
Statement 2 : It involves in vitro fertilization followed by embryo transfer.
- Q.14** **Statement 1** : Copper-T is an effective contraceptive device in human females.
Statement 2 : Copper-T prevents passage of sperms from vagina upwards into Fallopian tubes.

EXERCISE - 4 (PREVIOUS YEARS AIPMT/NEET EXAM QUESTIONS)

Choose one correct response for each question.

- Q.1** In vitro fertilization is a technique that involves transfer of which one of the following into the Fallopian tube? [AIPMT 2010]
 (A) Embryo only, upto 8 cell stage
 (B) Either zygote or early embryo upto 8 cell stage
 (C) Embryo of 32 cells stage
 (D) Zygote only
- Q.2** The permissible use of the technique amniocentesis is for [AIPMT 2010]
 (A) Detecting sex of the unborn foetus
 (B) Artificial insemination
 (C) Transfer of embryo into the uterus of a surrogate mother
 (D) Detecting any genetic abnormality.
- Q.3** Cu ions released from copper releasing intra uterine devices (IUDs) [AIPMT 2010]
 (A) Make uterus unsuitable for implantation
 (B) Increase phagocytosis of sperms
 (C) Suppress sperm motility
 (D) Prevent ovulation
- Q.4** Which one of the following is the most widely accepted method of contraception in India at present? [AIPMT 2011]
 (A) Cervical caps
 (B) Tubectomy
 (C) Diaphragms
 (D) IUDs (Intra uterine devices)
- Q.5** Medical Termination of Pregnancy (MTP) is considered safe up to how many weeks of pregnancy? [AIPMT 2011]
 (A) Eight weeks (B) Twelve weeks
 (C) Eighteen weeks (D) Six weeks
- Q.6** The technique called Gamete Intra Fallopian Transfer (GIFT) is recommended for those females – [AIPMT 2011]
 (A) Who cannot produce an ovum.
 (B) Who cannot retain the foetus inside uterus.
 (C) Whose cervical canal is too narrow to allow passage for the sperms.
 (D) Who cannot provide suitable environment for fertilization.
- Q.7** What is the figure given below showing in particular? [AIPMT 2012]
- 
- (A) Ovarian cancer (B) uterine cancer
 (C) Tubectomy (D) Vasectomy
- Q.8** Which of the following cannot be detected in a developing foetus by amniocentesis? [NEET 2013]
 (A) Jaundice (B) Klinefelter syndrome
 (C) Sex of the foetus (D) Down syndrome
- Q.9** One of the legal methods of birth control is [NEET 2013]
 (A) by a premature ejaculation during coitus.
 (B) abortion by taking an appropriate medicine.
 (C) by abstaining from coitus from day 10 to 17 of the menstrual cycle.
 (D) by having coitus at the time of day break.
- Q.10** Artificial insemination means: [NEET 2013]
 (A) introduction of sperms of a healthy donor directly into the ovary.
 (B) transfer of sperms of a healthy donor to a test tube containing ova.
 (C) transfer of sperms of husband to a test tube containing ova.
 (D) artificial introduction of sperms of a healthy donor into the vagina.
- Q.11** Tubectomy is a method of sterilization in which – [AIPMT 2014]
 (A) Small part of the fallopian tube is removed or tied up.
 (B) Ovaries are removed surgically.
 (C) Small part of vas deferens is removed or tied up.
 (D) Uterus is removed surgically.

- Q.12** Which of the following is a hormone releasing Intra Uterine Device (IUD)? [AIPMT 2014]
 (A) Multiload 375 (B) LNG-20
 (C) Cervical cap (D) Vault
- Q.13** Assisted reproductive technology, IVF involves transfer of— [AIPMT 2014]
 (A) Ovum into the fallopian tube.
 (B) Zygote into the fallopian tube.
 (C) Zygote into the uterus.
 (D) Embryo with 16 blastomeres into the fallopian tube.
- Q.14** Which of the following is not a sexually transmitted disease? [AIPMT 2015]
 (A) Acquired Immuno Deficiency Syndrome (AIDS)
 (B) Trichomoniasis
 (C) Encephalitis
 (D) Syphilis
- Q.15** Which of the following viruses is not transferred through semen of an infected male? [AIPMT 2015]
 (A) Human immunodeficiency virus
 (B) Chikungunya virus
 (C) Ebola virus
 (D) Hepatitis B virus
- Q.16** A childless couple can be assisted to have a child through a technique called GIFT. The full form of this technique is [RE-AIPMT 2015]
 (A) Gamete intra fallopian transfer
 (B) Gamete internal fertilization and transfer
 (C) Germ cell internal fallopian transfer
 (D) Gemete inseminated fallopian transfer
- Q.17** In context of amniocentesis, which of the following statement is incorrect? [NEET 2016 PHASE 1]
 (A) It is usually done when a woman is between 14 - 16 weeks pregnant.
 (B) It is used for prenatal sex determination.
 (C) It can be used for detection of Down syndrome.
 (D) It can be used for detection of Cleft palate.
- Q.18** Which of the following approaches does not give the defined action of contraceptive? [NEET 2016 PHASE 1]
 (A) Barrier - Prevent fertilization methods
 (B) Intra uterine - Increase phagocytosis of sperms, suppress sperm motility and fertilizing capacity of sperms.
 (C) Hormonal - Prevent/retard entry of contraceptives sperms, prevent ovulation and fertilization.
 (D) Vasectomy - Prevents spermatogenesis
- Q.19** Which of the following is hormone releasing IUD? [NEET 2016 PHASE 2]
 (A) LNG-20 (B) Multiload-375
 (C) Lippes loop (D) Cu-7
- Q.20** Which of the following is incorrect regarding vasectomy? [NEET 2016 PHASE 2]
 (A) No sperm occurs in seminal fluid
 (B) No sperm occurs in epididymis
 (C) Vasa deferentia is cut and tied
 (D) Irreversible sterility
- Q.21** Embryo with more than 16 blastomeres formed due to in-vitro fertilization is transferred into [NEET 2016 PHASE 2]
 (A) Uterus (B) Fallopian tube
 (C) Fimbriae (D) Cervix
- Q.22** The function of copper ions in copper releasing IUD's is— [NEET 2017]
 (A) They suppress sperm motility and fertilising capacity of sperms.
 (B) They inhibit gametogenesis.
 (C) They make uterus unsuitable for implantation.
 (D) They inhibit ovulation
- Q.23** In case of a couple where the male is having a very low sperm count, which technique will be suitable for fertilisation? [NEET 2017]
 (A) Intrauterine transfer
 (B) Gamete intracytoplasmic fallopian transfer
 (C) Artificial Insemination
 (D) Intracytoplasmic sperm injection.

- Q.24** The contraceptive 'SAHELI' [NEET 2018]
- (A) is an IUD.
 - (B) increases the concentration of estrogen and prevents ovulation in females.
 - (C) blocks estrogen receptors in the uterus, preventing eggs from getting implanted.
 - (D) is a post-coital contraceptive.
- Q.25** Which of the following contraceptive methods do involve a role of hormone? [NEET 2019]
- (A) Lactational amenorrhea, Pills Emergency contraceptives.
 - (B) Barrier method, Lactational amenorrhea, Pills.
 - (C) CuT, Pills, Emergency contraceptives.
 - (D) Pills, Emergency contraceptives, Barrier methods.
- Q.26** Select the hormone-releasing Intra-Uterine Devices. [NEET 2019]
- (A) Vaults, LNG-20
 - (B) Multiload 375, Progestasert
 - (C) Progestasert, LNG-20
 - (D) Lippes Loop, Multiload 375
- Q.27** Which of the following sexually transmitted diseases is not completely curable? [NEET 2019]
- (A) Gonorrhoea
 - (B) Genital warts
 - (C) Genital herpes
 - (D) Chlamydia

ANSWER KEY

EXERCISE-1(SECTION-1&2)

- | | | |
|------------------------------------|---------|------------------------------|
| (1) (B) | (2) (C) | (8) Outside, embryo transfer |
| (3) (C) | (4) (C) | (9) 8; ZIFT |
| (5) Hormonal releasing IUD; sperms | | (10) Ovulation; mucous |
| (6) vas deferens; vasectomy | | (11) True |
| (7) Fallopian tube; tubectomy | | (12) True |
| | | (13) False |
| | | (14) True |
| | | (15) True |
| | | (16) False |
| | | (17) False |
| | | (18) False |
| | | (19) False |

EXERCISE - 1 [SECTION-3 & 4]

Q	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
A	C	D	C	A	C	C	B	C	B	B	D	D	C	A	D	C	C	D	D	A
Q	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
A	B	C	A	D	A	B	D	B	B	D	A	B	D	C	D	D	C	D	D	D
Q	60	61	62	63	64	65	66	67	68	69	70	71								
A	D	B	A	C	B	A	D	C	C	D	A	A								

EXERCISE - 2

Q	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
A	C	B	D	C	A	A	C	B	B	A	D	B	A	C	C	B	B	A	B	C
Q	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
A	D	B	A	D	A	C	D	B	D	B	B	B	C	A	A	D	D	C	A	A
Q	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57			
A	D	C	A	B	A	C	B	A	A	A	B	C	B	D	B	C	C			

EXERCISE - 3

Q	1	2	3	4	5	6	7	8	9	10	11	12	13	14
A	C	D	B	A	B	C	D	D	C	D	A	D	B	C

EXERCISE - 4

Q	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
A	B	D	C	D	B	A	C	A	B	D	A	B	B	C	B	A	D	D	A	B
Q	21	22	23	24	25	26	27													
A	A	A	C	C	A	C	C													

SOLUTIONS

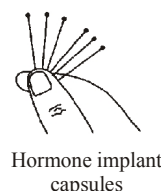
EXERCISE-1

- (1) (B) (2) (C)
 (3) (C) (4) (C)
 (5) Hormonal releasing IUD; sperms
 (6) vas deferens; vasectomy
 (7) Fallopian tube; tubectomy
 (8) Outside, embryo transfer
 (9) 8; ZIFT
 (10) Ovulation; mucous
 (11) True
 (12) True
 (13) **False.** Infertility is defined as the inability of the couple to produce baby even after unprotected coitus. It might occur due to abnormalities/ defects in either male or female or both.
 (14) True
 (15) True
 (16) **False.** Surgical method of contraception prevents gamete motility.
 (17) **False.** Some of the sexually transmitted diseases are curable if they are detected early and treated properly. AIDS is still an incurable disease.
 (18) **False.** Oral pills are very popular contraceptives among urban women.
 (19) **False.** In embryo transfer technique, 8 celled embryos are transferred into the fallopian tube while more than 8 celled embryos are transferred into the uterus.
 (20) (C) (21) (D) (22) (C)
 (23) (A). RCH stands for Reproductive and Child Health care.
 (24) (C) (25) (C)
 (26) (B). Ovulation is expected to occur are at the 12th-14th day of the menstrual cycle.
 (27) (C) (28) (B)
 (29) (B). Mostly female barrier contraceptive like diaphragms, cervical caps, vaults are reusable.
 (30) (D)
 (31) (D)
 (32) (C)
 (33) (A). IUD
 (i) Increases phagocytosis of sperms.
 (ii) Releases ions that suppresses the sperm motility and fertilising capacity of sperms.
- (iii) Makes uterus unsuitable for implantation.
 (34) (D)
 (35) (C). Suppressing the mortality of sperm.
 (36) (C) (37) (D) (38) (D)
 (39) (A). Sperm motility decreases due to Cu ion.
 (40) (B) (41) (C)
 (42) (A) (43) (D) (44) (A)
 (45) (B). Probable ova releasing day is 12-14 day of menstrual phase, and sperm can live for 2-3 days in female reproductive system. So, 10-17 days are the most probable days for fertilisation
 (46) (D) (47) (B)
 (48) (B). Intra Uterine Devices (IUDs) for contraception
 (i) There devices are inserted by the doctors into the uterus through vagina.
 (ii) There are three types of IUDs
Non-medicated IUDs : They increases the phagocytosis of the sperm within the uterus, e.g., Lippes loop.
Copper Releasing IUDs : Along with phagocytosis of the sperms, the copper ions released, suppresses the sperm motility and the fertilising capacity of the sperm. e. g., Cu-T, Cu-7, multiloop-375.
Hormone Releasing IUDs : They makes the uterus unsuitable for implantation and the cervix hostile to the sperms, e. g, progestasert, LNG-20.
 (49) (D)
 (50) (A). MTP is safe until 1st trimester (12 weeks) of the pregnancy. It becomes more risky after the 1st trimester period of pregnancy as the foetus becomes intimately associated with the maternal tissue.
 (51) (B)
 (52) (D). MTP is used to get rid of unwanted pregnancy due to
 (i) genetic abnormality
 (ii) failure of contraceptive method
 (iii) rapes.

- (53) (C). Diseases or infections, which are transmitted through sexual intercourse with infected persons are collectively called Sexually Transmitted Diseases (STDs) or Venerable Diseases (VD) or Reproductive Tract Infections (RTI).
- (54) (D). Simple precautions that can prevent STDs are –
- Avoid sex with unknown and multiple partners.
 - Always use condoms during coitus.
 - In case of Doubt go to the qualified doctors.
- (55) (D)
- (56) (C). Bacterial STDs are –
- | Diseases | Pathogens |
|------------|-------------------------------|
| Syphilis | – <i>Treponema pallidum</i> |
| Gonorrhoea | – <i>Neisseria gonorrhoea</i> |
| Chancroid | – <i>Haemophilus ducrey</i> |
- (57) (D)
- (58) (D). Mode of Infection (MOI) of AIDS and hepatitis are same and both are also incurable also.
- (59) (D)
- (60) (D). ART (Assisted Reproductive Technologies) are the applications of reproductive technologies to solve infertility problems. These are
- Test tube baby/In vitro fertilisation (IVF)
 - Artificial Insemination Technologies (AIT)
 - Gamete Intra Fallopian Transfer (GIFT)
 - Intra Cytoplasmic Sperm Injection (ICSI).
- (61) (B)
- (62) (A). IVF – In vitro fertilisation.
IUI – Intra Uterine Insemination
ICSI – Intra Cytoplasmic Sperm Injection
ZIFT – Zygote Intra Fallopian Transfer
- (63) (C)
- (64) (B). ICSI-Intra Cytoplasmic Semen Injection.
- (65) (A)
- (66) (D). Secondary in fertility indicates the previous pregnancy but failure to conceive subsequently.
- (67) (C). NACO (National AIDS Control Organisation) was established in 1992 in India.
- (68) (C)
- (69) (D). Difference between ZIFT and IUT lies in the number of the cells.
- (70) (A). The zygote or the early embryo is transferred into Fallopian tube (ZIFT-Zygote Intra Fallopian Transfer). If embryo contains more than 8 blastomere (cells) and it is transferred into uterus then, it is called IUT (Intra Uterine Transfer).
- (71) (A). The women who can't conceive but can give the suitable environment to foetus. In this case, GIFT is used.

EXERCISE-2

- (1) (C). **Lactational Amenorrhoea Method LAM** (absence of menstruation) This method is effective only upto maximum period of six months after child birth.
- (2) (B) (3) (D)
- (4) (C). Progestasert and LNG-20 are the examples of hormonal releasing IUDs.
- (5) (A) (6) (A) (7) (C)
- (8) (B) (9) (B)
- (10) (A). Six matchstick-sized capsules containing steroids are inserted under the skin of the inner arm above the elbow. These steroid capsules slowly releases the synthetic progesterone for about five years.



- (11) (D)
- (12) (B). In ZIFT, zygote is collected from the female donor and transferred to Fallopian tube.
- (13) (A)
- (14) (C). Hormonal implants and oral contraceptives have the combination of oestrogen and progesterone hormones. Their mode of working is same but the site of implantation and the duration is different.
- (15) (C)
- (16) (B). Determine any hereditary disease of the embryo.
- (17) (B) (18) (A) (19) (B)
- (20) (C) (21) (D) (22) (B)

- (23) (A). Viral STDs are
- | Diseases | Pathogens |
|---|------------------|
| AIDS – HIV(Human Immuno deficiency Virus) | |
| Hepatitis-B – HBV (Hepatitis-B-Virus) | |
| Genital herpes – Herpes simplex virus | |
| Genital warts – HPV (Human Papilloma Virus) | |
- (24) (D) (25) (A)
- (26) (C). Oral contraceptives contains two hormones, progesterone and oestrogen. Oral contraceptive pills works in four ways
- (i) Inhibition of ovulation
 - (ii) Inhibition of motility and the secretory activities of the oviducts (Fallopian tubes).
 - (iii) Changes in the cervical mucous, impairing its ability to allow passage and transport of the sperms.
 - (iv) Alteration in the uterine endometrium to make it unsuitable for implantation.
- (27) (D)
- (28) (B). In lactating mother, there is the release and the production of milk secreting hormone. These hormones suppresses the release of Follicle Stimulating Hormone (FSH), so during intense lactation there is no ovulation hence, no pregnancy.
- (29) (D)
- (30) (B). Saheli (centchroman/ormeloxifene) safe once a week oral oc pill. Dosage: This pill is to be taken twice a week on fixed days for the first three months, followed by one pill in a week thereafter.
- (31) (B) (32) (B)
- (33) (C). Amniocentesis (also referred to as amniotic fluid test or AFT) is a medical procedure used in prenatal diagnosis of chromosomal abnormalities and fetal infections, and also used for sex determination in which a small amount of amniotic fluid, which contains fetal tissues, is sampled from the amniotic sac surrounding a developing fetus, and the fetal DNA is examined for genetic abnormalities.
- (34) (A). A Barr body (named after discoverer Murray Barr) is the inactive X chromosome in a female somatic cell, rendered inactive in a process called lyonization, in those species in which sex is determined by the presence of the Y (including humans) or W chromosome rather than the diploidy of the X.
- (35) (A). Intra utrine device (Copper MIT) inhibit fertilization and help in birth control.
- (36) (D) (37) (D)
- (38) (C). Surrogate mother is woman who bears a baby for another couple.
- (39) (A). Most birth control pills are "combination pills" containing a combination of the hormones estrogen and progesterone to prevent ovulation (the release of an egg during the monthly cycle).
- (40) (A)
- (41) (D). Tubal ligation or tubectomy (also known as having one's "tubes tied") is a surgical procedure for sterilization in which a woman's fallopian tubes are clamped and blocked or severed and sealed, either of which prevents eggs from reaching the uterus for fertilization.
- (42) (C) (43) (A) (44) (B)
- (45) (A). ART includes –
1. Zygote intra fallopian transfer
 2. IVF and Embryo transfer
 3. Artificial insemination
 4. Gamete intra fallopian transfer
- (46) (C). ICSI is intra cytoplasmic sperm injection. It is one of the techniques of Assisted Reproductive Technology (ART) that help couples to overcome their infertility. In ICSI, sperm is directly injected into ovum, in vitro to form zygote embryo, which is later implanted through ZIFT into woman.
- (47) (B). If there is an increase in infant mortality rate (IMR) and decrease in maternal mortality rate (MMR), mothers are available to give birth to infants but the infants survival rate is low, which will ultimately hinder the growth fate of that particular population.
- (48) (A). Presence of prolactin hormone in the blood of lactating mothers suppresses the release of gonadotropins (FSH and LH) from the pituitary gland. Gonadotropins are required for ovulation to occur. Thus, in the absence of gonadotropins, ovum is not released and

hence chances of fertilization are nil upto 6 months following parturition (if the mother is regularly breast-feeding). Therefore, intensely lactating mothers do not generally conceive.

- (49) (A) (50) (A)
- (51) (B). Copper releasing IUDs (CuT, multiload) increase phagocytosis of sperms within the uterus and the Cu iron released suppress sperm motility and the fertilizing capacity of sperms. The hormone releasing IUDs (progestasert, LNG-20), make the uterus unsuitable for implantation and the cervix hostile to the sperms. IUDs are inserted and removed by trained doctors and they are ideal contraceptives for the females. IUDs, once inserted can be there for a long period of time (even years), especially, copper releasing IUDs. But eventually they need to be removed and replaced, as they are foreign to the body. Fertility returns, once IUDs are removed.
- (52) (C). Voluntary termination of pregnancy before full term is called Medical Termination of Pregnancy (MTP). It is less riskier during first trimester (upto 12th week) and requires assistance of qualified medical personnel. It can also be induced using chemical drugs. Mifepristone + prostaglandin are examples of this. These drugs are taken only in the supervision of qualified medical personnel.
- (53) (B). AIDS (Acquired Immuno Deficiency syndrome) is caused by HIV (Human Immunodeficiency Virus, a retro virus). It mainly affects the T-helper lymphocytes by infecting them. There is generally a long time lag between infection and occurrence of symptoms. Because of lowering of TH cell count, the person become vulnerable to infectious microorganisms, that otherwise, wouldn't have caused any disease (opportunistic infection). A major example of this is tuberculosis. Weight loss also occurs in such persons.
- (54) (D).
- (55) (B). In test tube baby programme, the zygote is allowed to divide upto 8 blastomeres in the

laboratory, then it is transferred into the Fallopian tube. This technique is called ZIFT (Zygote Intra Fallopian Transfer).

- (56) (C). Vasectomy is a surgical contraception method performed in males.
- (57) (C). Diaphragms do not act as spermicidal agents and are placed to cover cervical region, acting as physical barrier for sperm entry.

EXERCISE-3

- (1) (C). Diaphragms are the contraceptive devices, used by the females. They are placed to cover the cervical region. They acts as physical barriers for the sperm entry.
- (2) (D)
- (3) (B). **Types of Oral Contraceptive Pills :**
They contains either progesterone alone or a combination of progestogen and oestrogen. Thus, oral contraceptive pills are of two types
- (i) **Mini Pills :** They contains progestin only. Saheli contains a monosteroidal preparation called centchroman, which is taken once in a week after an initial intake of twice a week dose for 3 months. It has high contraceptive value with very little side effects.
- (ii) **Combined Pills :** They are most commonly used oral contraceptive pills. They contains synthetic progesterone and oestrogen to check ovulation. Pill like Mala D and Mala N are commonly used combined contraceptive pills. They are taken daily.
- (4) (A)
- (5) (B). IUDs (Intra Uterine Devices) increases the phagocytosis of sperms.
- (6) (C).

Infectious Disease	Causative Agent
HIV/AIDS	Human Immuno deficiency Virus
Gonorrhoea	<i>Neisseria gonorrhoeae</i> (bacteria)
Syphilis	<i>Treponema pallidum</i> (bacteria)
Chlamydiasis	<i>Chlamydia trachomatis</i>
Genital herpes	Herpes Simplex Virus
Genital warts	Human Papilloma Virus
Hepatitis-B	Hepatitis-B virus
Trichomoniasis	<i>Trichomonas vaginalis</i> (protozoan)
Enterobiasis	<i>Enterobius vermicularis</i> (nematode)
Scabies	<i>Sarcoptes scabies</i> (ectoparasite)
Candidiasis	<i>Candida albicans</i> (fungus)

(7) (D)

(8) (D). Syphilis is a sexually transmitted infection caused by the spirochete bacterium *Treponema pallidum* subspecies *pallidum*. The primary route of transmission is through sexual contact; it may also be transmitted from mother to fetus during pregnancy or at birth, resulting in congenital syphilis.

(9) (C).

(10) (D). Inert intrauterine devices release copper ion in the uterus that increases phagocytosis of sperms.

(11) (A).

(12) (D). Sterilization techniques are surgical procedures in which, in males, vas deferens are cut and tied and in females, fallopian tubes are cut and tied, preventing gamete transport. Even though it is very effective it is often used as a last option by most couples. One, because it is almost irreversible. Second, because of some misconceptions like absence of ejaculation and lowering of sexual urge. Third, because it is a surgical procedure, there are certain risk of infection. Last but not least, there are lack of sufficient facilities in many parts of our country (e.g. lack of hygiene, lack of qualified personnel)

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

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

(14) (C). Intrauterine device (IUD) Copper-T is plastic or metal object placed in the uterus by a doctor. Copper-T prevent the fertilization of the egg or implantation of the embryo. Their presence perhaps acts as a minor irritant and this makes the egg to move down the fallopian tubes and uterus rather quickly before fertilization or implantation.

EXERCISE-4

(1) (B). The baby produced by conceiving in a culture dish and nursing in the uterus is called a test tube baby. This method involves in vitro fertilization (IVF), i.e., fertilization of male and female gamete outside the body in almost similar conditions as that in the body followed by embryo transfer (ET). Either zygote or early embryo upto 8 blastomeres is transferred into the Fallopian tube (ZIFT - Zygote Intra Fallopian Transfer) to complete its further development. If the embryo is with more than 8 blastomeres, it is transferred into uterus (IUT - Intra Uterine Transfer) to complete its further development.

(2) (D). Amniocentesis is withdrawal of a sample of the fluid (amniotic fluid) surrounding a foetus in the uterus by piercing the amniotic sac through the abdominal wall, under direct ultrasound guidance. As the amniotic fluid contains cells from the foetus, cell cultures enable chromosome patterns to be studied so that prenatal diagnosis of chromosomal abnormalities can be made. Certain metabolic errors and other abnormalities, such as spina bifida, can also be diagnosed prenatally from analysis of the cells or of the fluid.

As this technique also helps in detection of sex of the unborn foetus, it has been banned in order to legally check increasing female foeticides.

(3) (C). Intra uterine devices (IUDs) are inserted by doctors or expert nurses in the uterus through vagina. These intra uterine devices are 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 fertilizing capacity of sperms. The hormone releasing IUDs, in addition, make the uterus unsuitable for implantation and the cervix hostile to the sperms.

- (4) (D). At present the most widely accepted method of contraception in India is IUDs. These Intra Uterine Devices (IUDs) are presently available as the non-medicated IUDs (e.g., lippes loop), copper releasing IUDs (CuT, Cu7, Multiload 375) and the hormones releasing IUDs (Progestasert, LNG-20). IUDs increase phagocytosis of sperms within the uterus and the Cu-ions released suppress sperm motility and the fertilizing capacity of sperms. The hormone releasing IUDs make the uterus unsuitable for implantation and cervix hostile to the sperms.
- (5) (B). Medical termination of pregnancy (MTP) or abortion is the termination of pregnancy before the foetus becomes viable. MTP is comparatively safe upto 12 weeks (the first trimester) of pregnancy. It becomes more risky after the first trimester period of pregnancy as the foetus becomes intimately associated with the maternal tissues.
- (6) (A). Gamete Intra Fallopian Transfer (GIFT) is transfer of an ovum collected from a donor into the Fallopian tube of another female who cannot produce ova but can provide proper environment for fertilization and further development.
- (7) (C). Tubectomy involves blocking of the Fallopian tubes. The Fallopian tubes are tied twice and cut between the knot. It prevents the sperms from reaching the ovum and thus prevents fertilization. It is a permanent method of sterilization.
- (8) (A). Amniocentesis is a foetal sex determination test based on the chromosomal pattern in the amniotic fluid surrounding the developing embryo.
- (9) (B). One of the legal methods of birth control is abortion by taking an appropriate medicine.
- (10) (D). **Artificial Insemination technique:** In this technique, the semen collected either from the husband or a healthy donor is artificially introduced either into the vagina or into the uterus (IUI-intrauterine insemination) of the female.
- (11) (A). In tubectomy, small part of fallopian tube is removed or tied up.
- (12) (B). LNG-20 is a hormone releasing intra-uterine device (IUD).
- (13) (B). In IVF, zygote or the embryo upto 8-celled stage is transferred into the fallopian tube.
- (14) (C). Encephalitis is not an STD. This is actually an acute inflammation of the brain.
- (15) (B). Chikungunya virus spreads by *Aedes* mosquito.
- (16) (A). GIFT - Gamete intra fallopian transfer.
- (17) (D). Cleft palate is a developmental abnormality and can be detected by sonography. Amniocentesis is a foetal sex determination test and is banned in India for sex determination to legally check increasing female foeticides.
- (18) (D). Vasectomy blocks the gamete transport and does not affect spermatogenesis.
- (19) (A). LNG-20 (Levonorgestrel) is a hormone releasing IUDs.
- (20) (B). In vasectomy, sperms occur in epididymis. In this, vas deferens are cut so sperms are not present in semen.
- (21) (A). In intrauterine transfer (IUT), embryo more than 8 blastomeres formed due to in-vitro fertilization is transferred in uterus.
- (22) (A). Cu^{2+} interfere in the sperm movement, hence suppress the sperm motility and fertilising capacity of sperms.
- (23) (C). Infertility cases due to inability of the male partner to inseminate the female or due to very low sperm count in the ejaculates, could be corrected by artificial insemination (AI).
- (24) (C). Saheli is the first non-steroidal, once a week pill. It contains centchroman and its functioning is based upon selective Estrogen Receptor modulation.
- (25) (A).
- In lactational amenorrhoea, due to high prolactin level, gonadotropin level decreases.
 - Oral pills are either progestogens or progestogen-estrogen combinations used by the females.

- Emergency contraceptives includes the administration of progestogens or progestogen-estrogen combination or IUDs within 72 hour of coitus.
So, lactational amenorrhoea, oral pills and emergency contraceptives involve a role of hormone.
- (26) (C). Progestasert and LNG-20 are hormone releasing IUDs which make the uterus unsuitable for implantation and the cervix hostile to sperms.
- (27) (C). Genital herpes is caused by type-II-herpes simplex virus. At present there is no cure for type-II-herpes simplex virus and therefore the disease caused, genital herpes. Other noncurable STIs are hepatitis-B and HIV.