

# 3 Reproductive Health



## 3.1. Reproductive Health-Problems and Strategies

1. Given below are two statements: one is labelled as Assertion (A) and other is labelled as Reason (R).

**Assertion (A):** Amniocentesis for sex determination is one of the strategies of Reproductive and Child Health Care Programme.

**Reason (R):** Ban on amniocentesis checks increasing menace of female foeticide.

In the light of the above statements, choose the correct answer from the options given below.

- (A) (A) is true but (R) is false.
- (B) (A) is false but (R) is true.
- (C) Both (A) and (R) are true and (R) is the correct explanation of (A).
- (D) Both (A) and (R) are true and (R) is NOT the correct explanation of (A) [NEET 2023]

2. In context of amniocentesis, which of the following statement is incorrect?

- (A) It is used for prenatal sex determination.
- (B) It can be used for detection of down syndrome.
- (C) It can be used for detection of cleft palate.
- (D) It is usually done when a woman is between 14-16 weeks pregnant. [NEET Phase-I 2016]

3. Which of the following cannot be detected in a developing foetus by amniocentesis?

- (A) Klinefelter's syndrome
- (B) Sex of the foetus
- (C) Down's syndrome
- (D) Jaundice [NEET 2013]

4. The permissible use of the technique amniocentesis is for:

- (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. [AIPMT Screening 2010]

5. Amniocentesis is a process to:

- (A) determine any disease in heart
- (B) determine any hereditary disease in the embryo
- (C) know about the disease of brain
- (D) all of the above. [AIPMT 1997]

6. Foetal sex can be determined by examining cells from the amniotic fluid by looking for:

- (A) chiasmata (B) kinetochore
- (C) barr bodies (D) autosomes. [AIPMT 1997]

7. Human population growth in India:

- (A) tends to follow a sigmoid curve as in case of many other animal species
- (B) tends to reach zero population growth as in case of some animal species
- (C) can be reduced by permitting natural calamities and enforcing birth control measures
- (D) can be regulated by following the National programme of family planning [AIPMT 1996]

## 3.2. Population Explosion and Birth Control

8. Match List-I with List-II relating to examples of various kind of IUDs and barrier:

List-I	List-II
(a) Copper releasing IUD	(i) Vaults
(b) Non-medicated IUD	(ii) Multiload 375
(c) Contraceptive barrier	(iii) LNG-20
(d) Hormone releasing IUD	(iv) Lipper loop

Choose the correct answer from the options given below:

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

9. Which of the following is not a natural/traditional contraceptive method? [Re-NEET 2024]

- (A) Periodic abstinence  
(B) Lactational amenorrhea  
(C) Vaults  
(D) Coitus interruptus

[NEET 2024]

10. Match List I with List II:

List I	List II
(a) Non-medicated IUD	(i) Multiload 375
(b) Copper releasing IUD	(ii) Progestogens
(c) Hormone releasing IUD	(iii) Lippes loop
(d) Implants	(iv) LNG-20

Choose the correct answer from the options given below:

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

[NEET 2024]

11. Match List I with List II.

List I	List II
(a) Vasectomy	(i) Oral method
(b) Coitus interruptus	(ii) Barrier method
(c) Cervical caps	(iii) Surgical method
(d) Saheli	(iv) Natural method

Choose the correct answer from the options given below:

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

[NEET 2023]

12. Lippe's loop is a type of contraceptive used as:

- (A) Vault barrier  
(B) Non-Medicated IUD  
(C) Copper releasing IUD  
(D) Cervical barrier

[NEET 2022]

13. Match List-I with List-II with respect to methods of Contraception and their respective actions.

List-I	List-II
(a) Diaphragms	(i) Inhibit ovulation and Implantation
(b) Contraceptive	(ii) Increase phagocytosis of sperm within Uterus
(c) Intra uterine Devices	(iii) Absence of Menstrual cycle and ovulation following parturition
(d) Lactational Amenorrhea	(iv) They cover the cervix blocking the entry of sperms

Choose the correct answer from the options given below:

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

[NEET 2022]

14. Match List-I with List-II.

List-I	List-II
(a) Vaults	(i) Entry of sperm through cervix is blocked
(b) IUDs	(ii) Removal of vas deferens
(c) Vasectomy	(iii) Phagocytosis of sperms within the uterus
(d) Tubectomy	(iv) Removal of fallopian tube

Choose the correct answer from the options given below:

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

[NEET 2021]

15. Which one of the following is an example of Hormone releasing IUD?

- (A) Cu-T (B) LNG 20  
(C) Cu-7 (D) Multiload 375

[NEET 2021, NEET Phase-II 2016, AIPMT 2014]

16. Which of the following is a correct statement?

- (A) IUDs once inserted need not be replaced  
(B) IUDs are generally inserted by the user herself  
(C) IUDs increase phagocytosis of sperms in the uterus  
(D) IUDs suppress gametogenesis [NEET Odisha 2019]

17. Select the hormone-releasing Intra-Uterine Devices.

- (A) Multiload 375, Progestasert  
(B) Progestasert, LNG-20  
(C) Lippes Loop, Multiload 375  
(D) Vaults, LNG-2

[NEET National 2019]

18. Which of the following contraceptive methods do involve a role of hormone?

- (A) Barrier method, Lactational amenorrhea, Pills  
(B) Cu-T, Pills, Emergency contraceptives  
(C) Pills, Emergency contraceptives, Barrier methods  
(D) Lactational amenorrhea, Pills, Emergency contraceptives [NEET National 2019]

19. The contraceptive 'SAHELI':

- (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. [NEET 2018]
20. The function of copper ions in copper releasing IUD's is:  
(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. [NEET 2017]
21. Which of the following approaches does not give the defined action of contraceptive?  
(A) Intra uterine – Increase phagocytosis of sperms, suppress sperm motility and fertilising capacity of sperms  
(B) Hormonal contraceptives – Prevent/ retard entry of sperms, prevent ovulation and fertilisation  
(C) Vasectomy – Prevents spermatogenesis  
(D) Barrier methods – Prevent fertilisation [NEET Phase-I 2016]
22. Which of the following is incorrect regarding vasectomy?  
(A) No sperm occurs in seminal fluid.  
(B) No sperm occurs in epididymis.  
(C) Vasa deferentia is cut and tied.  
(D) Irreversible sterility. [NEET Phase-II 2016]
23. Hysterectomy is surgical removal of:  
(A) uterus (B) prostate gland  
(C) vas deferens (D) mammary glands. [AIPMT Cancelled 2015]
24. Tubectomy is a method of sterilisation in which:  
(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. [AIPMT 2014]
25. One of the legal methods of birth control is:  
(A) abortion by taking an appropriate medicine  
(B) by abstaining from coitus from day 10-17 of the menstrual cycle  
(C) by having coitus at the time of day break  
(D) by a premature ejaculation during coitus. [NEET 2013]
26. One of the following is not a method of contraception. Which one?  
(A) Condoms  
(B) Pills of a combination of oxytocin and vasopressin

- (C) Lippes loop  
(D) Tubectomy

[NEET Karnataka 2013]

27. What is the figure given alongside showing in particular?



- (A) Ovarian cancer (B) Uterine cancer  
(C) Tubectomy (D) Vasectomy

[AIPMT Screening 2012]

28. Which one of the following is the most widely accepted method of contraception in India, as at present?

- (A) Tubectomy  
(B) Diaphragms  
(C) IUDs (Intra Uterine Devices)  
(D) Cervical caps

[AIPMT Screening 2011]

29. 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.

[AIPMT Screening 2010]

30. 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) The pill	(i) Prevents sperms reaching cervix
(b) Condom	(ii) Prevents implantation
(c) Vasectomy	(iii) Prevents ovulation
(d) Copper-T	(iv) Semen contains no sperms

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

[AIPMT Screening 2008]

31. Progesterone, which is the most important component of oral contraceptive pills, prevents pregnancy by:

- (A) preventing the formation of egg  
(B) preventing the cleavage of the fertilised egg  
(C) creating unfavourable chemical environment for the sperms to survive in the female reproductive tract  
(D) blocking ovulation

[AIPMT 2000]

32. What is the work of copper-T?  
 (A) To inhibit ovulation  
 (B) To inhibit fertilisation  
 (C) To inhibit implantation of blastocyst  
 (D) To inhibit gametogenesis [AIPMT 2000]

33. Tablets to prevent contraception contain:  
 (A) progesterone (B) FSH  
 (C) LH (D) Both (B) and (C)  
 [AIPMT 1999]

34. The most important component of the oral contraceptive pills is:  
 (A) thyroxine (B) luteinising hormone  
 (C) progesterone (D) growth hormone  
 [AIPMT 1998]

### 3.3. Medical Termination of Pregnancy

35. Medical Termination of Pregnancy (MTP) is considered safe up to how many weeks of pregnancy?  
 (A) Twelve weeks (B) Eighteen weeks  
 (C) Six weeks (D) Eight weeks  
 [AIPMT Screening 2011]

36. The technique called Gamete Intra Fallopian Transfer (GIFT) is recommended for those females:  
 (A) who cannot produce an ovum  
 (B) who cannot retain the foetus inside uterus  
 (C) who's cervical canal is too narrow to allow passage for the sperms  
 (D) who cannot provide suitable environment for fertilisation.  
 [AIPMT Mains 2011]

### 3.4. Sexually Transmitted Diseases

37. Following is the list of STDs. Select the diseases which are not completely curable.  
 (I) Genital warts (II) Genital herpes  
 (III) Syphilis (IV) Hepatitis-B  
 (V) Trichomoniasis

Choose the correct answer from the options given below:

- (A) (I) and (IV) only  
 (B) (II) and (IV) only  
 (C) (I) and (III) only  
 (D) (IV) and (V) only [Re-NEET 2024]

38. Which one of the following common sexually transmitted diseases is completely curable when detected early and treated properly?  
 (A) Hepatitis-B (B) HIV Infection  
 (C) Genital herpes (D) Gonorrhoea [NEET 2023]

39. Venereal diseases can spread through:  
 (I) Using sterile needles  
 (II) Transfusion of blood from infected person  
 (III) Infected mother to foetus  
 (IV) Kissing  
 (V) Inheritance  
 Choose the correct answer from the options given below.  
 (A) (I), (II) and (III) only (B) (II), (III) and (IV) only  
 (C) (II) and (III) only (D) (I) and (III) only  
 [NEET 2021]

40. Which of the following STDs are not curable?  
 (A) Genital herpes, hepatitis-B, HIV infection  
 (B) Chlamydia, syphilis, genital warts  
 (C) HIV, gonorrhoea, trichomoniasis  
 (D) Gonorrhoea, trichomoniasis, hepatitis-B  
 [NEET Oct. 2020]

41. Select the option including all sexually transmitted diseases.  
 (A) Gonorrhoea, Malaria, Genital herpes  
 (B) AIDS, Malaria, Filariasis  
 (C) Cancer, AIDS, Syphilis  
 (D) Gonorrhoea, Syphilis, Genital herpes  
 [NEET Sept. 2020]

42. Which of the following sexually transmitted disease(s) is not completely curable?  
 (A) Genital warts (B) Genital herpes  
 (C) Chlamydia (D) Gonorrhoea  
 [NEET National 2019]

43. Which of the following sexually transmitted diseases do not specifically affect reproductive organs?  
 (A) Genital warts and Hepatitis-B  
 (B) Syphilis and Genital herpes  
 (C) AIDS and Hepatitis-B  
 (D) Chlamydia and AIDS [NEET Odisha 2019]

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

Column-I	Column-II
(a) Gonorrhea	(i) HIV
(b) Syphilis	(ii) <i>Neisseria</i>
(c) Genital Warts	(iii) <i>Treponema</i>
(d) AIDS	(iv) Human Papilloma Virus

Choose the correct option.

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



(C) (iv) (ii) (iii) (i)

(D) (iv) (iii) (ii) (i)

[NEET 2017]

45. Which of the following is not a sexually transmitted disease?

- (A) Syphilis
- (B) Acquired Immuno Deficiency Syndrome (AIDS)
- (C) Trichomoniasis
- (D) Encephalitis

[AIPMT Cancelled 2015]

46. Which one of the following statements is correct regarding sexually transmitted diseases (STDs)?

- (A) A person may contract syphilis by sharing milk with one already suffering from the disease.
- (B) Haemophilia is one of the STDs.
- (C) Genital herpes and sickle-cell anaemia are both STDs.
- (D) The chances of a 5-years boy contacting a STD are very little.

[NEET Karnataka 2013]

### 3.5. Infertility

47. In which of the following techniques, the embryos are transferred to assist those females who cannot conceive?

- (A) GIFT and ZIFT
- (B) ICSI and ZIFT
- (C) GIFT and ICSI
- (D) ZIFT and IUT

[NEET Sept. 2020]

48. Embryo with more than 16 blastomeres formed due to *in-vitro* fertilisation is transferred into:

- (A) uterus
- (B) fallopian tube
- (C) fimbriae
- (D) cervix.

[NEET Phase-II 2016]

49. A childless couple can be assisted to have a child through a technique called GIFT. The full form of this technique is:

- (A) Gamete Inseminated Fallopian Transfer
- (B) Gamete Intra Fallopian Transfer

(C) Gamete Internal Fertilisation and Transfer

(D) Germ Cell Internal Fallopian Transfer.

[AIPMT Latest July 2015]

50. Artificial insemination means:

- (A) transfer of sperms of a healthy donor to a test-tube containing ova
- (B) transfer of sperms of husband to a test-tube containing ova
- (C) artificial introduction of sperms of a healthy donor into the vagina
- (D) introduction of sperms of healthy donor directly into the ovary.

[NEET 2013]

51. *In-vitro* fertilisation is a technique that involves transfer of which one of the following into the fallopian tube?

- (A) Embryo only, upto 8 cell stage
- (B) Either zygote or early embryo upto 8 cell stage
- (C) Embryo of 32 cell stage
- (D) Zygote only

[AIPMT Screening 2010]

52. Test tube baby means a baby born when:

- (A) it is developed in a test tube
- (B) it is developed through tissue culture method
- (C) the ovum is fertilised externally and thereafter implanted in the uterus
- (D) it develops from a non-fertilised uterus.

[AIPMT 2003]

53. Which of the following statements is with reference to a test tube baby?

- (A) Fertilisation of the egg is completed outside the body; the fertilised egg is then placed in the womb of the mother where the gestation is completed.
- (B) Fertilisation of the egg is completed in the female genital tract. It is then taken out and grown in a large test tube.
- (C) A prematurely born baby is reared in an incubator.
- (D) Fertilisation of the egg and growth of the embryo is completed in a large test tube.

[AIPMT 1994]

## SOLUTIONS

1. (B) Amniocentesis is a prenatal diagnostic technique that involves the extraction of amniotic fluid for analysis of genetic disorders, not for sex determination.

2. (C) Amniocentesis is a procedure in which amniotic fluid is removed from the uterus for testing or treatment. Amniotic fluid is the fluid that surrounds and protects a baby during pregnancy. This fluid contains foetal cells and various proteins. Amniocentesis is done to find genetic abnormalities in the foetus, prenatal

diagnosis of genetic defects and sex of the foetus. It is usually done between 14-16 weeks of pregnancy period. Cleft palate is a phenotypic birth defect, hence cannot be assessed with amniocentesis.



### Related Theory

➤ **Procedure of amniocentesis:** The first step in the procedure is to perform an ultrasound of the uterus. With ultrasound, the doctor can see the foetus, amniotic fluid, and the placenta. After cleaning the abdomen, the doctor inserts a needle and uses the ultrasound picture to guide the needle safely into a



pocket of amniotic fluid. The doctor removes a small amount of fluid [about one ounce (30 mL)]. Occasionally, the doctor will need to insert the needle more than once to get enough fluid. If there is more than one foetus, the doctor will need to take a sample of fluid from around each foetus. The sample of amniotic fluid is then sent to a laboratory for testing.

3. (D) Some amniotic fluid is extracted during amniocentesis. It contains some foetal cells as well as dissolved compounds that can be evaluated for genetic abnormalities such as Down's syndrome, Klinefelter's syndrome, sickle cell anaemia, and so on. The unborn foetus's gender is also detected by this technique.

Jaundice occurs when the liver does not function properly, resulting in an excess of bilirubin in the bloodstream. This is a metabolic abnormality that amniocentesis cannot identify.

4. (D) Amniotic fluid surrounds and protects the foetus, is utilised in the medical technique of amniocentesis to identify any genetic abnormalities in the foetus.
5. (B) Amniocentesis is a medical technique used in prenatal diagnosis of genetic abnormalities such as haemophilia, down's syndrome, etc. and also for sex determination.

### Related Theory

Amniocentesis is a medical procedure used to take out a small sample of the amniotic fluid for testing. Amniotic fluid is a clear, pale yellow fluid that surrounds the foetus in a pregnant woman. Amniotic fluid protects the foetus from injury and against infection. This fluid also allows the baby to move and develop properly.

6. (C) Foetal sex can be determined by examining barr bodies. Barr body is a structure consisting of a condensed X chromosome that is found in non-dividing nuclei of female mammals. Presence of barr bodies is an indication of X chromosome. In XX females, one barr body is present, while the male has XY chromosomes, they will show no barr body. Thus, barr bodies are present in females only.
7. (D) Despite the fact that India is a very crowded and overpopulated country, human population can be controlled by adhering to the National Family Planning Program. India was one of the first countries in the world to launch national action plans and programmes to achieve complete reproductive health as a societal aim. These 'family planning' programmes were launched in 1951 and have been evaluated on a regular basis over the years.
8. (D) Multiload 375 releases copper ions, which are toxic to sperm and create an inflammatory reaction in the uterus to prevent pregnancy. Lippes loop prevents pregnancy by creating a physical barrier in the uterus.

Vaults act as a physical barrier to block sperm from entering the uterus. LNG-20 releases hormones that thicken cervical mucus and inhibit sperm mobility and function.

9. (C) Vaults are barriers made of rubber that are inserted into the female reproductive tract to cover the cervix during coitus. This prevents physical meeting of ovum and sperm.

### Related Theory

Periodic abstinence, lactational amenorrhea and coitus interruptus are all natural methods of contraception that work on the principle of avoiding chances of ovum and sperm meeting.

10. (C) The Lippes loop is an example of a non-medicated IUD. Multiload 375 is an example of a copper-releasing IUD. LNG-20 comes under the category of hormone-releasing IUDs. Implants have progesterone and its combinations in them.

11. (D) Vasectomy is a permanent method of contraception for males, in which the vas deferens is surgically cut and tied or sealed. This prevents sperm from reaching the semen that is ejaculated from the penis during sexual intercourse. Therefore, it is a surgical method.

Coitus interruptus, also known as withdrawal method, it involves withdrawing the penis from the vagina before ejaculation to prevent sperm from entering the female reproductive tract. It is a natural method.

Cervical caps is a barrier method of contraception in which a small cup made of silicone or latex is inserted into the vagina to cover the cervix and prevent sperm from entering the uterus.

Saheli is an oral contraceptive pill for females that contains a non-steroidal molecule called centchroman. Hence, it is an oral method of contraception.

12. (B) A variety of contraceptive methods are currently available on the market that can be used to control the growing population. Intra Uterine Devices (IUDs) are a common and effective approach. These devices are implanted into the uterus through the vagina by doctors or experienced nurses. These intrauterine devices are currently available in the following forms:

- (1) **Non-medicated IUDs:** They promote sperm phagocytosis within the uterus. Lippe's loop, for example, is an S-shaped IUD.
- (2) **Copper-releasing IUDs:** They release copper, which reduces sperm motility and its fertilisation potential. CuT, Cu7, and Multiload 375 are a few examples.



- (3) **Hormone releasing IUDs:** They make the uterus unsuitable for implantation and the cervix unfriendly to sperm. For example, Progestasert and LNG-20.

Diaphragms, cervical barriers, and vault barriers, on the other hand, are effective birth control barriers made of rubber that are put into the female reproductive tract during copulation. They prevent sperm from entering the cervix.



### Related Theory

In 1962, the first Lippe's loop intrauterine device was introduced. It was a trapezoid-shaped IUD with a plastic double "S" loop that comfortably fit around the contours of the uterine cavity, limiting the probability of expulsion. From the 1960s until the 1980s, this IUD was widely utilized. Prolonged use of this device was prevalent, although it was linked to problems such as uterine bleeding after menopause and inflammatory pelvic diseases.

13. (A) There are numerous contraceptive techniques available today, which can be broadly classified as Natural/Traditional, Barrier, IUDs, Oral contraceptives, Injectables, Implants, and Surgical procedures.

Diaphragms are a type of barrier contraception made of rubber that is inserted into the female reproductive tract to cover the cervix during coitus. They prevent pregnancy by blocking sperm entrance via the cervix. They can be reused.

Females also employ oral administration of tiny dosages of progestogens or progestogen-estrogen combinations as a contraceptive technique. They are commonly referred to as pills since they are administered in the form of tablets. They hinder or delay sperm entry by inhibiting ovulation and implantation and altering the quality of cervical mucus.

The use of intrauterine devices (IUDs) is another effective and popular method. These devices are implanted into the uterus through the vagina by doctors or expert nurses. IUDs promote sperm phagocytosis within the uterus.

Lactational amenorrhea (menstrual absence) is a natural method of contraception. It is based on the fact that ovulation and thus the cycle do not occur during the postpartum period of heavy lactation.

14. (B) Vaults are barrier methods of contraception that are inserted into the vagina before intercourse. They work by blocking the entry of sperm through the cervix, preventing them from reaching the egg. IUDs are small devices that are inserted into the uterus. They work primarily by causing a local inflammatory reaction within the uterus that leads to phagocytosis (destruction) of sperms, preventing them from fertilising an egg.

Vasectomy is a surgical procedure for male sterilization. During a vasectomy, the vasa deferentia are cut, tied, or otherwise sealed. This prevents sperm from reaching the semen that is ejaculated from the penis.

Tubectomy is a surgical procedure for female sterilization. In this procedure, the fallopian tubes are blocked. This prevents the egg from reaching the uterus and also keeps sperm from reaching the egg.

15. (B) LNG-20 is an IUD that releases levonorgestrel (LNG), causes endometrial atrophy and alters the stroma to inhibit implantation. It also increases sperm phagocytosis in the uterus, and make cervix hostile to the sperms. On the other hand, Cu-T, Cu-7 and Multiload 375 are copper releasing IUDs. The Cu ions released from the IUDs suppress sperm motility and the fertilising capacity of sperms.



### Related Theory

Intrauterine device is a device used to prevent pregnancy. It is a contraceptive device which is placed inside the uterus. It is one of the safest and effective methods of birth control. The IUDs are mostly copper-based devices.



### Mnemonics

Let us learn the examples of copper and hormone releasing IUDs with this quick trick.

**Copper releasing IUDs:**

**MC<sup>2</sup>**

**M** – Multiload 375

**C<sup>2</sup>** – Cu-T, Cu-7

**Hormone releasing IUDs:**

**LPG**

**L** – LNG-20

**P** – Progestasert

16. (C) Intra Uterine Devices (IUDs) are devices that come in a variety of forms and are placed into the uterus via the vagina. Cu-T, Cu-7, LNG-20 are some examples. IUDs function by either increasing sperm phagocytosis or reducing sperm motility within the uterus. IUDs, such as copper-releasing IUDs, are only effective for a limited time. As a result, they must be replaced on a regular basis. For IUDs to be effective, they must be properly implanted in the female reproductive system. It can only be done by a skilled and qualified doctor or nurse. The user should not do this. If IUDs are not implanted appropriately, they might cause health problems. IUDs have no effect on gametogenesis. They inhibit sperm motility in order to prevent gametes from fertilisation.
17. (B) Hormone releasing IUDs make uterus unsuitable for implantation and the cervix unfriendly to sperm. For example, Progestasert and LNG-20.
18. (D) Lactational amenorrhea, a temporary period of infertility defined by the absence of menstrual cycle, can occur when a woman is breastfeeding.



It is induced by a disruption in hypothalamic gonadotropin-releasing hormone (GnRH) secretion as a result of high prolactin levels.

Females take progestogens or progestin-estrogen combinations as oral tablets (pills). The hormones in the tablet successfully suppress ovulation. There can be no pregnancy if there is no ovulation since there is no egg for the sperm to fertilise. The pill's hormones help thicken the mucus in the cervix, preventing sperm from swimming to an egg by inhibiting their motility.

Medication used as emergency contraception works largely to prevent ovulation or conception. They are effective when administered within 72 hours of coitus. Thus, hormones have a role in lactational amenorrhea, oral pills, and emergency contraception.

19. (C) SAHELI is a mini pill that contains non-steroidal preparation. This non-hormonal pill contains progestin only and no estrogen. It blocks estrogen receptor in the uterus by modulating them selectively and thus preventing egg to be implanted.



### Related Theory

- Saheli is an oral contraceptive pill that has very high contraceptive value with little side effects. It is taken once in a week and contains synthetic progesterone and centchroman. It decreases risk of cancer. The active ingredient includes Ormeloxifene. It is the World's only non-hormonal birth control pill made in India.

20. (A) Copper ions releasing IUDs, such as Cu-T are effectively used as contraceptive. They primarily work by disrupting the sperm motility and fertilising capacity of the sperm.  $\text{Cu}^{2+}$  ions act as spermicides. IUDs do not inhibit gametogenesis or ovulation. However, hormonal contraceptive may affect ovulation and implantation in females.



### Related Theory

- There are three types of IUDs, non-medicated IUDs, Cu-releasing IUDs and hormonal IUDs. Hormonal IUDs release Progesterone or oestrogen or both, which affect the menstrual cycle (mainly ovulation) and make uterus unsuitable for implantation.



### Caution

- Students often get confused between option (A) and (C) as both are correct. However, Cu ions act as spermicides, thus affect sperm motility.

21. (C) In Vasectomy, a small part of vas deferens is cut and tied up through small incision on scrotum in males. It blocks the sperm transfer through the genital tract.



### Related Theory

- Vasectomy and tubectomy are permanent methods of contraception, also known as sterilisation technique. These methods are generally advised to male or female partner

as a terminal method to prevent any more pregnancies. In vasectomy, a small part of vas deferens is removed and then tied up through a small incision in the scrotum whereas in tubectomy a small part of the fallopian tube is removed and then tied up through a small incision in the abdomen or through vagina. These techniques are highly effective but their reversibility is poor. Both techniques block gamete transport and thereby prevent contraception.



### Caution

- In surgical methods, like vasectomy or tubectomy, gametogenesis is not hampered. Rather their transport through their respective tract is blocked and hence, they are unavailable for fertilisation.



### Mnemonics

- Are you confused by the large number of contraceptive methods available? They are easily remembered by the mechanism of action based on **Block, Disable, and Suppress**, abbreviated as **BDS**.

Contraceptive methods: **BDS**

**B** – Block sperms (Barrier methods)

**D** – Disable sperms (Chemical methods)

**S** – Suppress egg maturation (Hormonal methods)

22. (B) Sperms are developed in testes and pass to vas deferens via epididymis. Epididymis is a highly convoluted duct behind the testis. Vasectomy is irreversible, surgical method of contraception, in which a portion of vas deferens is cut and tied, blocking the sperm from entering seminal vesicle.

23. (A) Surgical removal of uterus is hysterectomy. It is complete or partial removal of uterus. Surgical removal of prostate gland is prostatectomy. Vasectomy is the surgical process of cutting or tying up the portion of vas deferens as a method of contraception. Mammectomy is the removal of mammary glands.

24. (A) Tubectomy is irreversible, surgical method of contraception, in which a portion of fallopian tube is cut and tied, blocking the passage of the egg from ovary to the uterus. On the other hand, ovariectomy is the surgical removal of one or both ovaries. It is usually performed to treat an ovarian cyst, ovarian cancer or some other problem related to the ovary. Vasectomy, also known as vasoligation, is a surgical technique used for male sterilisation or permanent contraception. The male vasa deferentia are cut and tied or sealed during the procedure to prevent sperm from entering the urethra and thereby preventing female conception through sexual intercourse.

25. (B) One of the legal methods of birth control is periodic abstinence, i.e., abstaining from coitus, from 10-17 days of menstrual cycle, as it is the time around which ovulation occurs and the chances of



conceiving is highest. Abortion is considered as illegal method, when done without proper procedures and conditions. A day break coitus and premature ejaculation increase the chances of conceiving.

26. (B) Oxytocin is a birth hormone, while vasopressin (ADH) reabsorb water from renal tubules to conserve water in the body. These both the hormones have no relation with the contraceptive methods. Condom on the other hand, is the physical method of contraception. Lippes loop is intrauterine contraceptive device made of inert plastic and tubectomy is a sterilisation method of contraception in females.



### Related Theory

*Saheli is an oral pill used as a contraceptive by females. Oral pills inhibit ovulation and implantation, as well as, alter the quality of cervical mucus to prevent and retard entry of sperms. Progestogens or progestin-oestrogen combination plays an important role in contraception.*

27. (C) In females, a small part of the fallopian tube is removed or tied up through a small incision in the abdomen or through vagina. This is called tubectomy. In males, a small part of the vas deferens is removed or tied up through a small incision on the scrotum. This is called vasectomy. Ovarian cancer occurs due to tumour growth in the ovary, while uterine cancer occurs due to tumour growth in the uterus.
28. (C) Of all the contraceptive methods, IUDs are widely accepted methods of contraception in India. These devices are inserted by doctors or expert nurses in the uterus through vagina. 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.
29. (C) The copper ions released from copper releasing IUDs, suppress sperms motility and the fertilising capacity of the sperms. On the other hand, hormone releasing IUDs make the uterus unsuitable for implantation and the cervix hostile to the sperms.
30. (A) Pill is a hormonal method of contraception, which contain progestin or mixture of oestrogen and progestin, and prevents ovulation by disturbing the hormonal balance in the body. Condom is the physical barrier of contraception and it prevents sperms from reaching the cervix in female. Vasectomy is the sterilization procedure, in which vas deferens is cut and tied up, preventing the flow of sperms into the semen. Copper-T is an IUD, which makes the uterus unsuitable for implantation and hampers the motility of the sperms.
31. (D) The progesterone hormone is primarily responsible for preventing pregnancy. It inhibits follicular development and thus prevents ovulation.



### Related Theory

*The hormones oestrogen and progesterone are present in most contraceptive pills. Progesterone along with oestrogen disrupts the normal menstrual cycle and inhibits ovulation. It prevents secretion of FSH and LH from pituitary and thus leads to ovulation being prevented.*

32. (B) Copper-T also called 'intrauterine device (IUD)', is a birth control device inserted into the uterine cavity by a physician. It works by preventing a sperm from reaching the egg. Copper acts as a spermicide and thus kills the sperms. Therefore, it helps to prevent fertilisation.



### Related Theory

*The Intrauterine Devices (IUDs) are the devices that are implanted inside the uterus of the female to prevent pregnancy. IUDs are a safe and effective method of preventing unintended pregnancies.*

33. (D) Female sex hormones oestrogen and progesterone, or both in combination, are found in contraceptive pills for women. These prevent egg formation and ovulation by suppressing FSH secretion. Some pills contain solely progesterone; in such circumstances, ovulation may occur, but cervical mucus thickens, inhibiting sperm entry.
34. (C) Oral contraceptive pills are formed either from progesterone only or from combination of progesterone and estrogen. These pills prevent pregnancy in four ways:
- (1) Inhibition of ovulation.
  - (2) Inhibition of motility and secretory activity of fallopian tubes.
  - (3) Changes in cervical mucus impairing its ability to allow passage and transport of sperms.
  - (4) Makes uterine endometrium unsuitable for implantation.
35. (A) MTP is considered safe up to the first trimester or 12 weeks. As a woman enters the second trimester, risk factors may increase and can even be fatal to the mother.
36. (A) Gamete Intra Fallopian Transfer (GIFT) is an assisted reproductive technology against infertility. It is used in case of females who cannot produce eggs. In this, eggs are removed from a donor woman's ovaries, and placed in one of the fallopian tubes of another woman who cannot produce one, along with the man's sperm. This technique is useful in case of woman who represent normal environment of fertilisation.



### Related Theory

*Other techniques used includes in-vitro fertilisation, ICSI, ZIFT, etc.*



37. (B) Genital herpes, which is caused by the herpes simplex virus (HSV) and hepatitis-B, which is caused by the hepatitis-B virus (HBV) are not completely curable STDs. Hepatitis-B can be managed and treated, but it is not completely curable in all cases.

38. (D) The sexually transmitted disease that is completely curable when detected early and treated properly is gonorrhoea. Gonorrhoea is caused by the bacteria *Neisseria gonorrhoeae* and can infect the genitals, rectum, and throat. It can be transmitted during vaginal, anal, or oral sex.

39. (C) Sexually transmitted diseases (STDs) or sexually transmitted infections (STIs) or venereal diseases (VD) are generally acquired by sexual contact. The bacteria, viruses or parasites that cause sexually transmitted diseases may pass from person to person via blood, semen, or vaginal and other bodily fluids. As well as these are transmitted from an infected mother to the foetus. Some of the examples of sexually transmitted disease are gonorrhoea, syphilis, genital herpes, chlamydia, genital warts, trichomoniasis, hepatitis-B and AIDS.



#### Related Theory

Although kissing is considered to be low-risk factor in case of STDs compared to intercourse and oral sex, it's possible for kissing to transmit CMV, herpes, and syphilis. CMV can be present in saliva, and herpes and syphilis can be transmitted through skin-to-skin contact, particularly at times when sores are present.



#### Caution

Students often think that all the STDs are not completely curable but this is a big myth. The truth is that, except for hepatitis-B, genital herpes and HIV infections, other STDs are completely curable if detected early and treated properly.

40. (A) Except for hepatitis-B, genital herpes and HIV infections, all STDs are completely curable if detected early and treated properly. Even though these infections can't be cured, they can be managed with treatment and medication. Hepatitis B is a potentially life-threatening liver infection caused by the hepatitis B virus (HBV). Genital herpes is marked by genital pain and sores. It is caused by the Herpes Simplex Virus (HSV). HIV (Human Immunodeficiency Virus) is a virus that attacks the body's immune system. It can lead to AIDS (Acquired Immunodeficiency Syndrome).



#### Related Theory

More than 30 different bacteria, viruses and parasites are known to be transmitted through sexual contact. Eight of these pathogens are linked to the greatest incidence of sexually transmitted disease. STDs are spread predominantly by sexual contact, including vaginal, anal and oral sex. Some STDs can

also be spread through non-sexual means such as via blood or blood products. Many STDs—including syphilis, hepatitis B, HIV, chlamydia, gonorrhoea, herpes, and HPV—can also be transmitted from mother to child during pregnancy and childbirth.

41. (D) Gonorrhoea, a STD, is caused by *Neisseria gonorrhoeae* in both male and females. Syphilis is caused by *Treponema pallidum*. Genital herpes is caused by Type II Herpes simplex virus. AIDS is a STD, caused by HIV virus. Malaria is a protozoan disease caused by *Plasmodium*. Cancer is a disease caused when cells divide uncontrollably and spread into surrounding tissues. Cancer is caused by changes or mutations in DNA.



#### Related Theory

Sorts of Sexually Transmitted Diseases (STDs): Bacterial STDs includes Chancroid, Gonorrhoea, Syphilis. Viral STDs includes AIDS, Genital Herpes, Hepatitis B, Genital Warts; Protozoan STD include Trichomoniasis; and Fungal STD include Candidiasis.



#### Mnemonics

Students usually find it hard to remember the names of causative agents and examples of STDs? Here's a simple trick to memorize it. Check it out!

##### Bacterial STDs:

Boys Come & Go to Left Side

Come – Chlamydia (caused by *Chlamydia trachomatis*)  
Go – Gonorrhea (caused by *Neisseria gonorrhoeae*)  
Left – Lymphogranuloma venereum (caused by *Chlamydia trachomatis*)

Side – Syphilis (caused by *Treponema pallidum*)

##### Viral STDs:

Government General Hospital for All

Government – Genital warts (caused by Human Papilloma Virus)

General – Genital herpes (caused by Herpes simplex virus)

Hospital – Hepatitis (caused by Hepatitis virus)

All – AIDS (caused by Human immunodeficiency virus)

##### Protozoan STDs:

Physical Teacher

Physical – Protozoan

Teacher – Trichomoniasis (caused by *Trichomonas vaginalis*)

42. (B) Genital herpes and HIV infections, all STDs are completely curable except hepatitis-B if detected early and treated properly. Even though these infections can't be cured, they can be managed with treatment and medication.

The prevalent sexually transmitted illness genital herpes can affect both men and women. It causes herpetic sores, which are painful blisters (fluid-filled bumps) that can break open and ooze fluid. Pain, itching, and tiny sores are the early symptoms.



Ulcers and scabs form. Genital herpes is dormant in the body after the initial infection. Symptoms can reoccur over time. Genital herpes is caused by two types of herpes simplex virus (HSV):

**HSV-1:** This variety is typically associated with cold sores, although it can also cause genital herpes.

**HSV-2:** This variety is typically associated with genital herpes, but it can also produce cold sores.

43. (C) AIDS is caused by HIV which affects the overall immune system of an individual. Hepatitis B caused by hepatitis B virus (HBV) which affects the liver. Genital warts is caused by Human Papilloma Virus (HPV), and shows symptoms like itching or bleeding from genitals, one or more small, flesh-coloured or grey painless growths or lumps around the vagina, penis, etc. Syphilis is caused by *Treponema pallidum* and involves a painless sore and rashes on the genitals, rectum or mouth. Genital herpes is caused by herpes simplex virus which causes blisters on penis or around vagina. Chlamydiasis is caused by *Chlamydia trachomatis* due to which female experience pain during intercourse and testicular pain in men. Thus, AIDS and Hepatitis-B are two sexually transmitting diseases which do not specifically affect reproductive organs.



#### Related Theory

- HIV infects a type of white blood cell in the body's immune system called a T-helper cell (also called a CD4 cell). These vital cells keep us healthy by fighting off infections and diseases. HIV cannot reproduce on its own. Instead, the virus attaches itself to a T-helper cell and fuses with it (joins together). It then takes control of the cell's DNA, makes copies of itself inside the cell, and finally releases more HIV into the blood.

44. (A) Gonorrhoea is caused by bacterium *Neisseria gonorrhoeae*. Syphilis is caused by bacterium *Treponema pallidum*. Genital warts is caused by Human Papilloma Virus. AIDS (Acquired Immuno deficiency Syndrome) is caused by HIV (Human Immunodeficiency Virus).



#### Related Theory

- Sexually Transmitted Diseases (STDs), or Sexually Transmitted Infections (STIs), are infections that are passed from one person to another through sexual contact. The contact is usually vaginal, oral, and anal sex. But sometimes they can spread through other intimate physical contact. This is because some STDs, like herpes and HPV, are spread by skin-to-skin contact. STDs can be caused by bacteria, viruses, and parasites. They are usually transmitted by sexual contact. They may pass from person to person from blood, semen, or vaginal and other bodily fluids.



#### Caution

- There are four completely curable STDs: syphilis, gonorrhoea, chlamydia and trichomoniasis. The other three STDs which are incurable are hepatitis B, genital herpes caused by Herpes Simplex Virus (HSV), AIDS caused by HIV.

45. (D) Encephalitis is an acute inflammation of brain caused by bacteria, viral or other pathogens. While syphilis is caused by *Treponema pallidum*, AIDS is caused by HIV (Human Immunodeficiency Virus) and Trichomoniasis is caused by *Trichomonas vaginalis*, which are STDs.
46. (D) The chances of a 5-years boy contacting STD are very little. However, it is not impossible entirely, as STD does not only spread through sexual contact. It spreads through body fluids. A person cannot contract STD by sharing milk with infected person, as STD does not spread by a mere touch. However, risk of infection increases when the non-infected person comes in contact with sores on the body of infected person. Haemophilia is not a STD, but X-linked recessive genetic disorder. Sickle cell anaemia is an autosomal recessive genetic disorder.



#### Related Theory

- Reproductive health is a state of complete physical, mental and social well-being and not merely the absence of disease relating to the reproductive system and its functions and process, while reproductive fitness is the individual's reproductive success (equal to average contribution to gene pool).

47. (D) ZIFT (Zygote Intra-fallopian Transfer) and IUT (Intra Uterine Transfer) are assisted reproductive techniques of embryo transfer, to assist females who cannot conceive. GIFT (Gamete Intra-fallopian Transfer) includes transfer of gamete into fallopian tube of female, who cannot produce ova. ICSI (Intra Cytoplasmic Sperm Injection) is a method used in which sperm is directly injected into ovum.



#### Related Theory

- Some commonly used methods of ART include:
  - In-vitro fertilisation (IVF):** fertilisation occurs outside the body;
  - Artificial insemination:** deliberate introduction of sperms into the female's cervix or uterus to achieve pregnancy without sexual intercourse. It can be intrauterine insemination, intracervical insemination or intratubal insemination.
  - Intrauterine transfer (IUT):** fertilisation takes place outside the body. It involves the transfer of embryos with more than 8 blastomeres into the uterus, to complete its further development.

48. (A) IUT or Intra Uterine Transfer includes transfer of embryo with more than 16 blastomere into the uterus. Zygote Intra Fallopian Transfer (ZIFT) includes the

transfer of zygote or early embryo having up to 8 blastomeres into the fallopian tube. No gametes or embryo is implanted in cervix or fimbriae.

### Caution

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

49. (B) Gamete Intra Fallopian Transfer is a method of assisting pregnancy, which includes removing the female egg from a donor and transferring it into the fallopian tube of another female (who cannot produce one) for *in-vivo* fertilisation. Unlike *in-vitro* fertilisation, the process of fertilisation is in the fallopian tube rather than in the petri dish. However, a healthy fallopian tube is very important for gamete transplantation.

50. (C) Artificial insemination (or Intrauterine Insemination (IUI) is the introduction of sperms from a healthy donor into the vagina or into the uterus. It is a procedure in which a fine catheter (tube) is inserted through the cervix into the uterus to directly deposit a sperm sample. It is done to achieve fertilisation and pregnancy. The transfer of sperms of a healthy donor to a test tube containing ova is called *in-vitro* fertilisation. While introduction of sperms of a healthy donor directly into the ova is called Intra Cytoplasmic Sperm Injection (ICSI).



### Related Theory

- Insemination is the process of deposition of sperms in the genital tract of the female during copulation or coitus. After passing into vagina, semen is converted into coagulum which later dissolves after 15-30 minute and the free sperm become motile. It takes 5-6 hours for the sperms to reach the site of fertilisation. The sperms have to pass through many hurdles to reach the egg cells, like— acidity of vaginal tract, phagocytic action of vaginal epithelium and abrupt contractions at the cervix and uterine muscles.

51. (B) ZIFT (Zygote Intra Fallopian Transfer) is an example of IVF (*In-vitro* fertilisation) in which zygote or early embryo's upto 8 blastomeres are transferred into the fallopian tube. If the embryo is more than 8 blastomeres then it is transferred into uterus known as IUT (Intra Uterine Transfer).

52. (C) Test tube baby is a method of *in-vitro* fertilisation, which involves fertilising an egg outside the body, in a laboratory dish, and then implanting it in a woman's uterus.



### Related Theory

- The only difference between a test tube baby and a normal baby is that test tube babies are born with the help of special fertility treatment, whereas normal babies born with the natural conception.

53. (A) The ovum is fertilised with the sperm outside of a woman's body using the test tube baby or *in-vitro* fertilisation procedure, giving the ovum the same environmental conditions as it would have received inside the uterus. Once the zygote has developed into an embryo with 8 or more blastomeres, it is inserted into the uterus where it grows into a baby.

