Chapter 26. Reproductive Health

1. Match the following sexually transmitted diseases (column I) with their causative agent (column II) and select the correct option.

	Column I	Column II
A.	Gonorrhoea	(i) HIV
B.	Syphilis	(ii) *Neisseria*
C.	Genital warts	(iii) *Treponema*
D.	AIDS	(iv) Human papilloma virus

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

(NEET 2017)

2. The function of copper ions in copper releasing IUDs is
(a) they inhibit gametogenesis
(b) they make uterus unsuitable for implantation
(c) they inhibit ovulation
(d) they suppress sperm motility and fertilising capacity of sperms. *(NEET 2017)*

3. In case of a couple where the male is having a very low sperm count, which technique will be suitable for fertilisation?
(a) Gamete intracytoplasmic Fallopian transfer
(b) Artificial Insemination
(c) Intracytoplasmic sperm injection
(d) Intrauterine transfer
(NEET 2017)

4. Which of the following is hormone-releasing IUD?
(a) LNG-20 (b) Multiload 375
(c) Lippes loop (d) Cu7
(NEET-II 2016)

5. 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-II 2016)*

6. 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-II 2016)

7. Which of the following approaches does not give the defined action of contraceptive?

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

(NEET-I 2016)

8. In context of amniocentesis, which of the following statements is incorrect?
(a) It can be used for detection of Down's syndrome.
(b) It can be used for detection of cleft palate.
(c) It is usually done when a woman is between 14-16 weeks pregnant.
(d) It is used for prenatal sex determination.
(NEET-I 2016)

9. A childless couple can be assisted to have a child through a technique called GIFT. The full form of this technique is
(a) Gamete Internal Fertilisation and Transfer
(b) Germ cell Internal Fallopian Transfer
(c) Gamete Inseminated Fallopian Transfer
(d) Gamete Intra Fallopian Transfer.
(2015)

10. Which of the following is not a sexually transmitted disease?
(a) Trichomoniasis
(b) Encephalitis
(c) Syphilis
(d) Acquired Immuno Deficiency Syndrome (AIDS) *(2015 Cancelled)*

11. Which of the following viruses is not transferred through semen of an infected male?
(a) Chikungunya virus
(b) Ebola virus
(c) Hepatitis B virus
(d) Human immunodeficiency virus *(2015 Cancelled)*

12. Tubectomy is a method of sterilization 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. *(2014)*

13. Which of the following is a hormone releasing Intra Uterine Device (IUD)?
(a) Multiload 375 (b) LNG - 20
(c) Cervical cap (d) Vault *(2014)*

14. Assisted reproductive technology, IVF involves transfer of
(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. *(2014)*

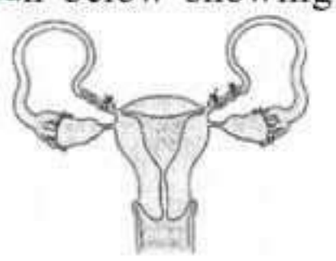
15. Artificial insemination means
(a) artificial introduction of sperms of a healthy donor into the vagina
(b) introduction of sperms of a healthy donor directly into the ovary
(c) transfer of sperms of a healthy donor to a test tube containing ova
(d) transfer of sperms of husband to a test tube containing ova. *(NEET 2013)*

16. One of the legal methods of birth control is
(a) by having coitus at the time of day break
(b) by a premature ejaculation during coitus
(c) abortion by taking an appropriate medicine
(d) by abstaining from coitus from day 10 to 17 of the menstrual cycle.
(NEET 2013)

17. The stage transferred into the uterus after induced fertilization of ovum in the laboratory is
(a) embryo at 4 blastomeres stage
(b) embryo at 2 blastomeres stage
(c) morula
(d) zygote. *(Karnataka NEET 2013)*

18. 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 *(Karnataka NEET 2013)*

19. What is the figure given below showing in particular?



(a) Ovarian cancer
(b) Uterine cancer
(c) Tubectomy
(d) Vasectomy *(2012)*

20. The test-tube baby programme employs which one of the following techniques?
(a) Intra cytoplasmic sperm injection (ICSI)
(b) Intra uterine insemination (IUI)
(c) Gamete intra Fallopian transfer (GIFT)
(d) Zygote intra Fallopian transfer (ZIFT) *(2012)*

21. Which one of the following is the most widely accepted method of contraception in India at present?
(a) Cervical caps
(b) Tubectomy
(c) Diaphragms
(d) IUDs (Intra uterine devices) *(2011)*

22. Medical Termination of Pregnancy (MTP) is considered safe up to how many weeks of pregnancy?
(a) Eight weeks (b) Twelve weeks
(c) Eighteen weeks (d) Six weeks *(2011)*

23. 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) whose cervical canal is too narrow to allow passage for the sperms
(d) who cannot provide suitable environment for fertilization. *(Mains 2011)*

24. *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 *(2010)*

25. 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. *(2010)*

26. 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. *(2010)*

27. Consider the statements given below regarding contraception and answer as directed there after
(1) medical termination of pregnancy (MTP) during first trimester is generally safe
(2) generally chances of conception are nil until mother breast-feeds the infant upto two years
(3) intrauterine devices like copper-T are effective contraceptives
(4) contraception pills may be taken upto one week after coitus to prevent conception.
Which two of the above statements are correct?
(a) 1, 3 (b) 1, 2
(c) 2, 3 (d) 3, 4 *(2008)*

28. 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) A – (iii), B – (iv), C – (i), D – (ii)
(b) A – (ii), B – (iii), C – (i), D – (iv)
(c) A – (iii), B – (i), C – (iv), D – (ii)
(d) A – (iv), B – (i), C – (ii), D – (iii) *(2008)*

29. The formula for exponential population growth is
(a) dN/dt = rN (b) dt/dN = rN
(c) dN/rN = dt (d) rN/dN = dt. *(2006)*

30. 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 fertilized externally and thereafter implanted in the uterus
(d) it develops from a non-fertilized uterus. *(2003)*

31. Two opposite forces operate in the growth and development of every population. One of them is related to the ability to reproduce at a given rate. The force opposite to it is called
(a) fecundity
(b) environmental resistances
(c) biotic control
(d) mortality. *(2003, 1998)*

32. In a population, unrestricted reproductive capacity is called as
(a) biotic potential (b) fertility rate
(c) carrying capacity (d) birth rate. *(2002)*

33. What is the work of copper-T?
(a) To inhibit ovulation
(b) To inhibit fertilization
(c) To inhibit implantation of blastocyst
(d) To inhibit gametogenesis *(2000)*

34. What is the work of progesterone which is present in oral contraceptive pills?
(a) To inhibit ovulation
(b) To check oogenesis
(c) To check entry of sperms into cervix and to make them inactive
(d) To check sexual behaviour *(2000)*

35. Tablets to prevent male contraception contain
(a) progesterone (b) LH
(c) FSH (d) both (b) and (c). *(1999)*

36. The most important component of the oral contraceptive pills is
(a) thyroxine
(b) luteinizing hormone
(c) progesterone
(d) growth hormone. *(1998)*

37. The present population of the world is about
(a) 15 trillion (b) 6 billion
(c) 500 million (d) 100 million.
(1997)

38. Foetal sex can be determined by examining cells from the amniotic fluid by looking for
(a) chiasmata (b) kinetochore
(c) barr bodies (d) autosomes.
(1997)

39. The test tube baby means
(a) fertilization and development both in uterus
(b) fertilization in *vitro* and then transplantation in uterus
(c) a baby grown in test tube
(d) fertilized and developed embryo in test tube.
(1996)

40. In India, human population is heavily weighed towards the younger age groups as a result of
(a) short life span of many individuals and high birth rate
(b) long life span of many individuals and high birth rate
(c) short life span of many individuals and low birth rate
(d) long life span of many individuals and low birth rate. *(1995)*

41. Which of the following statements is correct with reference to a test tube baby?
(a) Fertilization of the egg is effected outside the body; the fertilized egg is then placed in the womb of the mother where the gestation is completed.
(b) Fertilization of the egg is effected 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) Fertilization of the egg and growth of the embryo are affected in a large test tube.
(1994)

Answer Key

1.	(d)	**2.**	(d)	**3.**	(b,c)	**4.**	(a)	**5.**	(b)	**6.**	(a)	**7.**	(b)	**8.**	(b)	**9.**	(d)	**10.**	(b)
11.	(a)	**12.**	(a)	**13.**	(b)	**14.**	(b)	**15.**	(a)	**16.**	(c)	**17.**	(c)	**18.**	(b)	**19.**	(c)	**20.**	(d)
21.	(d)	**22.**	(b)	**23.**	(a)	**24.**	(b)	**25.**	(d)	**26.**	(c)	**27.**	(a)	**28.**	(c)	**29.**	(a)	**30.**	(c)
31.	(b)	**32.**	(a)	**33.**	(b,c)	**34.**	(a)	**35.**	(d)	**36.**	(c)	**37.**	(b)	**38.**	(c)	**39.**	(b)	**40.**	(a)
41.	(a)																		

EXPLANATIONS

1. (d)

2. (d) : Copper releasing IUDs (*i.e.*, CuT, LNG-20) are placed in the uterus of the females. They are an efficient birth control methods. Copper ions released by them suppress motility and fertilising capacity of the sperms.

3. (b, c)

4. (a) : LNG-20 is the hormone releasing IUD, multiload 375 and Cu7 are copper releasing IUDs and Lippes loop is a non-medicated IUD.

5. (b) : Vasectomy is a surgical contraception method performed in males. In vasectomy, a small part of the vas deferens is removed or tied up through a small cut on the scrotum. This prevents sperm transport. Vasectomy has a poor reversibility. There is no effect on libido and erectile functioning. Seminal vesicles are one pair of sac like structures which join vasa deferentia to form ejaculatory duct. They secrete seminal fluid which contains fructose, prostaglandins and clotting protein, but no sperms. In a male who has undergone vasectomy, the ejaculatory duct will receive seminal fluid but due to cut in vasa deferentia sperms will not be transported from epididymis hence the semen will lack sperms.

6. (a) : Embryo with more than 16 blastomeres formed due to *in vitro* fertilisation is transferred into uterus (intra-uterine transfer, IUT).

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

8. (b) : Amniocentesis is fetal sex determination and disorder test based on the chromosomal pattern in the amniotic fluid surrounding the developing embryo. It can be used to determine the sex of the infant, to identify some abnormalities in the number of chromosomes and to detect certain biochemicals and enzymatic abnormalities. It is usually done when woman is 14-16 weeks pregnant. Cleft palate can be detected by ultrasound.

9. (d) : Gamete Intra Fallopian Transfer (GIFT) is an assisted reproductive technology in which both the sperm and unfertilised oocytes are transferred into the Fallopian tubes. Fertilisation takes place *in vivo* (inside the body of the female).

10. (b)

11. (a) : Chikungunya virus is transmitted through an *Aedes aegypti* mosquito.

12. (a) : Sterilization provides a permanent and sure birth control. In females, it is called tubectomy. Tubectomy involves the blocking of the Fallopian tubes. A small part of the Fallopian tube is removed or tied up through a small incision in the abdomen or through vagina.

13. (b) : Intra uterine devices (IUDs) are plastic or metal objects which are inserted by doctors in the uterus through vagina. These are available as non-medicated IUDs (*i.e.*, Lippes loop), copper releasing IUDs (CuT, Cu7, Multiload 375) and hormone releasing IUDs (progestasert, LNG-20). Vault cap is hemispheric dome like rubber or plastic cap with a thick rim which is meant for fitting over the vaginal vault over the cervix.

14. (b) : Assisted reproductive technologies (ART) include a number of special techniques which assist infertile couples to have children. An important technique of ART is test tube baby programme. 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). Zygote or embryo upto 8 blastomeres is transferred into the Fallopian tube (ZIFT - Zygote Intra Fallopian Transfer) and mature embryo with more than 8 blastomeres is transferred to uterus to complete its further development.

15. (a) : In artificial insemination technique, the semen of a healthy donor male is collected and is introduced artificially through a flexible polyethylene catheter into the vagina or into uterus called intra-uterine insemination (IUI). Best results are obtained when the motile sperm count is more than 10 million. The fertilizing capacity of spermatozoa (sperms) is for 24- 48 hours. The procedure may be repeated 2-3 times over a period of 2 – 3 days.

16. (c) : Intentional or voluntary termination of pregnancy by taking an appropriate medicine 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

account to 1/5th of the total number of conceived pregnancies in a year. MTP has a significant role in decreasing the population though it is not meant for that purpose. Government of India legalized MTP in 1971 with some strict conditions to avoid its misuse. Such restrictions are all the more important to check indiscriminate and illegal female foeticides.

17. (c) : Cleavage divisions produce a solid ball of cells called morula. It has 8–16 cells, occasionally 32 cells. It is transferred into uterus (IUT-Intra-uterine transfer) for further development.

18. (b) : Oxytocin is a birth hormone and vasopressin (anti-diuretic hormone) reabsorbs water from the renal tubules to conserve water in the body. They have no role in contraception.

19. (c) : Tubectomy involves blocking of the Fallopian tubes. The Fallopian tube 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.

20. (d) : In *in vitro* fertilization method, popularly known as test tube baby programme, ova from the wife/donor (female) and sperms from the husband/ donor (male) are collected and are induced to form zygote under simulated conditions in the laboratory. The zygote or early embryos (with upto 8 blastomeres) could then be transferred into the Fallopian tube (ZIFT-zygote intra Fallopian transfer) and embryos with more than 8 blastomeres, into the uterus (IUT-intra uterine transfer), to complete its further development.

21. (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.

22. (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.

23. (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.

24. (b) : *Refer to answer 14.*

25. (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.

26. (c) : *Refer to answer 2.*

27. (a) : Intrauterine devices like copper T are effective contraceptives for birth control. It suppresses sperm motility and the fertilising capacity of the sperm. Medical termination of pregnancy or induced abortion is voluntary or intentional termination of pregnancy before full term of foetus. It is comparatively safe upto 12 weeks (the first trimester) of pregnancy.

28. (c) : Pills also called contraceptive pills contain small doses of either progestogens or progestogen-oestrogen combinations. They inhibit ovulation and implantation. Condoms are made of thin rubber/latex sheath used to cover the penis in the male or vagina and cervix in the female just before coitus so that the ejaculated semen is not released in the female reproductive tract, thus preventing sperms reaching cervix. In vasectomy, a small part of the vas deferens is removed or tied up through a small cut on the scrotum, thus blocking gamete (sperm) transport. However semen is a collection of secretions from the seminal vesicles, prostate gland, Cowper's gland and sperms from testes. So as the sperm is blocked semen is free of sperms. Copper T is an intrauterine device, which is inserted by doctors in the uterus through vagina. The copper ions released by them suppress sperm motility and also make the uterus unstable for implantation.

29. (a) : Nearly all populations will tend to grow exponentially as long as there are resources available. The formula for exponential population growth is $dN/dt = rN$. In this equation d is the rate of change, N is the number of existing individuals, r is the intrinsic

growth rate, *t* is time, and dN/dt is the rate of change in population size.

30. (c) : By *in vitro* fertilization, the ovum is fertilized with sperm outside the body of a woman, providing the ovum with the same environmental conditions as it would have got inside the uterus. The zygote is grown inside a culture and when embryo is formed, it is then implanted into uterus where it develops into foetus and then into a child. This is called test tube baby.

Methodology involves the following steps :

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

31. (b) : The environmental factors which can check the growth of population size constitute the environmental resistance. These include predators, food, water, nesting sites, similar competitors, etc. All living things tend to reproduce until the point at which their environment becomes a limiting factor. No population, human or otherwise, can grow indefinitely; eventually, some biotic or abiotic variable will begin to limit population growth.

32. (a) : Biotic potential is defined as the physiological capacity of organisms to produce their offspring under natural conditions. It is also called reproductive potential. In nature, the biotic potential of organisms is enormous but all the organisms do not survive due to the lack of food and space. There are also a number of diseases and the predatory organisms, that feed upon other organisms. The carrying capacity is the maximum number of individuals which the environment can support or sustain.

33. (b, c) : Copper-T is an intrauterine device (IUD) used by women as a birth control. An IUD is a small device which is placed inside the uterus. The vertical and horizontal arms of the Copper - T contain copper which is slowly released into the uterine cavity. Copper stops sperm from making their way up through the uterus into the tubes, and it reduces the ability of sperm to fertilize the egg. It also prevents a fertilized egg (blastocyst) from successfully implanting in the lining of the uterus if fertilization has occurred.

34. (a) : Pills also called contraceptive pills contain small doses of either progestogens or progestogen-oestrogen combinations. They inhibit ovulation and implantation.

35. (d) : Male contraceptives work by interfering with sperm production or delivery, that means they inhibit the spermatogenesis as well as the function of male sex hormone testosterone.
LH and FSH (both called gonadotropic hormone are secreted from anterior pituitary) have specific functions in the testis. FSH stimulates male germ cells for spermatogenesis and LH stimulates accessory cells, called Leydig cells to produce sex steroids, especially testosterone. Thus, these two hormones (FSH and LH) prevent male contraception.

36. (c) : The most common type of pill is the so called "combined pill". It contains a combination of synthetic progestins (acting like progesterone) and estrogen. Combined pills inhibit ovulation by inhibiting the normal release of FSH and LH from the pituitary. They mimic the hormones produced by the corpus luteum, causing the uterine walls to thicken, as during normal menstrual cycle, and suppressing the release of FSH and LH.

37. (b) : As this question appeared in 1997, so the population of world in mid 1997 was 5, 840, 324, 240 *i.e.*, approximately 6 billion.

38. (c) : Barr body is a structure consisting of a condensed X chromosome that is found in nondividing nuclei of female mammals. Amniotic fluid contains foetal skin cells, that are stained to determine the presence of sex chromatin (barr body). The presence of barr body indicates that the developing foetus is female with two X-chromosome.

39. (b) : *Refer to answer 30.*

40. (a) : A population having mostly younger age group means its birth rate is high. If death rate is increased then the proportion of old age group will be increased. But in this case death rate has increasing trend thence in a human population which is heavily weighted towards the younger age groups, there will be short life span and high birth rate.

41. (a) : *Refer to answer 30.*