Ch 3 · Reproductive Health

अध्याय 3 · जनन स्वास्थ्य

Class 12 Biology · NCERT based · English + हिंदी · ✍️ revision notes

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Reproductive Health · जनन स्वास्थ्य – 5 pillars



Infographic: chapter at a glance

1. Reproductive Health / जनन स्वास्थ्य

WHO definition: Reproductive health means a total well-being in all aspects of reproduction, i.e., **physical, emotional, behavioural and social**.

जनन स्वास्थ्य का अर्थ है जनन के सभी पहलुओं — शारीरिक, भावनात्मक, व्यवहारात्मक तथा सामाजिक — में पूर्ण स्वस्थ होना।

Problems & Strategies समस्याएँ व कार्यनीतियाँ

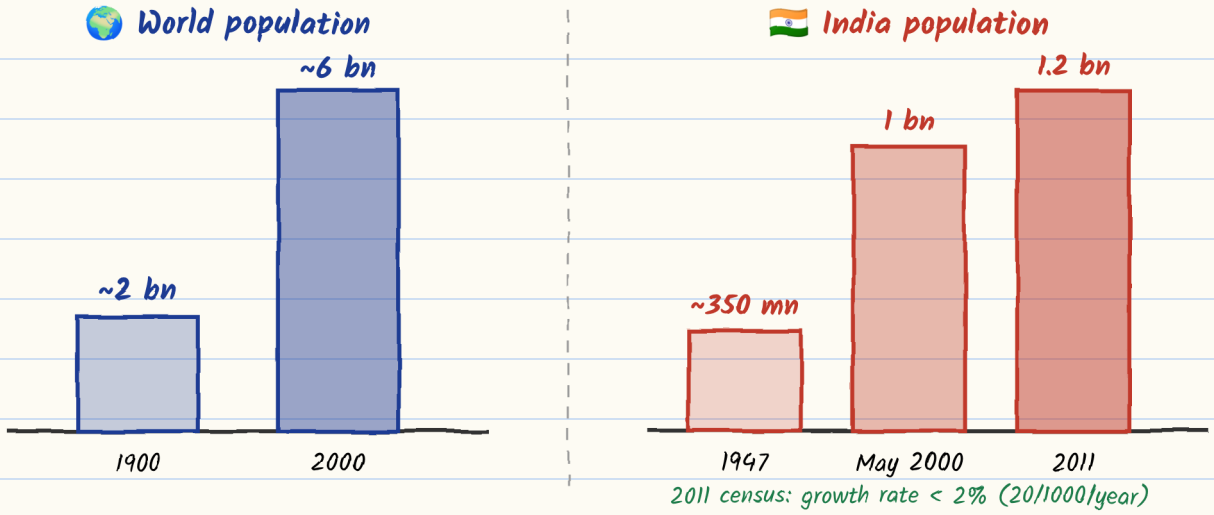
- India was amongst the **first countries** in the world to initiate action plans at national level for reproductive health – **"family planning" programme in 1951**.
- Improved programmes now called RCH – Reproductive and Child Health Care programmes (*जनन एवं बाल स्वास्थ्य सेवा*).

- **Awareness** through audio-visual & print media, by Govt & NGOs.
- **Sex education in schools** → correct info to young people, discourages myths & misconceptions about sex-related aspects.
- Info about reproductive organs, adolescence, safe & hygienic sexual practices, **STIs, AIDS**.
- Educating couples about **birth control**, care of pregnant mothers, **post-natal care**, importance of **breast-feeding**, **equal opportunities for male & female child**.
- Statutory ban on amniocentesis for sex determination → to check **female foeticide**.
- **Mass child immunisation**.

📌 **Exam Tip – Amniocentesis** (उल्बवेधन): Some amniotic fluid of developing foetus is taken to study **foetal cells & dissolved substances** → detects **genetic disorders** (e.g. Down syndrome) & also sex. Banned for sex determination in India.
Saheli – oral contraceptive developed by CDRI, Lucknow (Central Drug Research Institute).

Indicators of improved reproductive health: better awareness about sex-related matters, increased medically assisted deliveries & better post-natal care → decreased MMR & IMR (maternal & infant mortality rate), increased small families, better detection & cure of STIs.

2. Population Stabilisation & Birth Control / जनसंख्या स्थिरीकरण व जन्म नियंत्रण



Infographic: Population explosion · जनसंख्या विस्फोट (NCERT figures)

Reasons for population explosion कारण

1. Rapid **decline in death rate**
2. Decline in **MMR** (maternal mortality rate) & **IMR** (infant mortality rate)
3. Increase in number of people in **reproducible age**

कारण: मृत्यु दर, मातृ मृत्यु दर (MMR) व शिशु मृत्यु दर (IMR) में कमी तथा जनन योग्य आयु के लोगों की संख्या में वृद्धि।

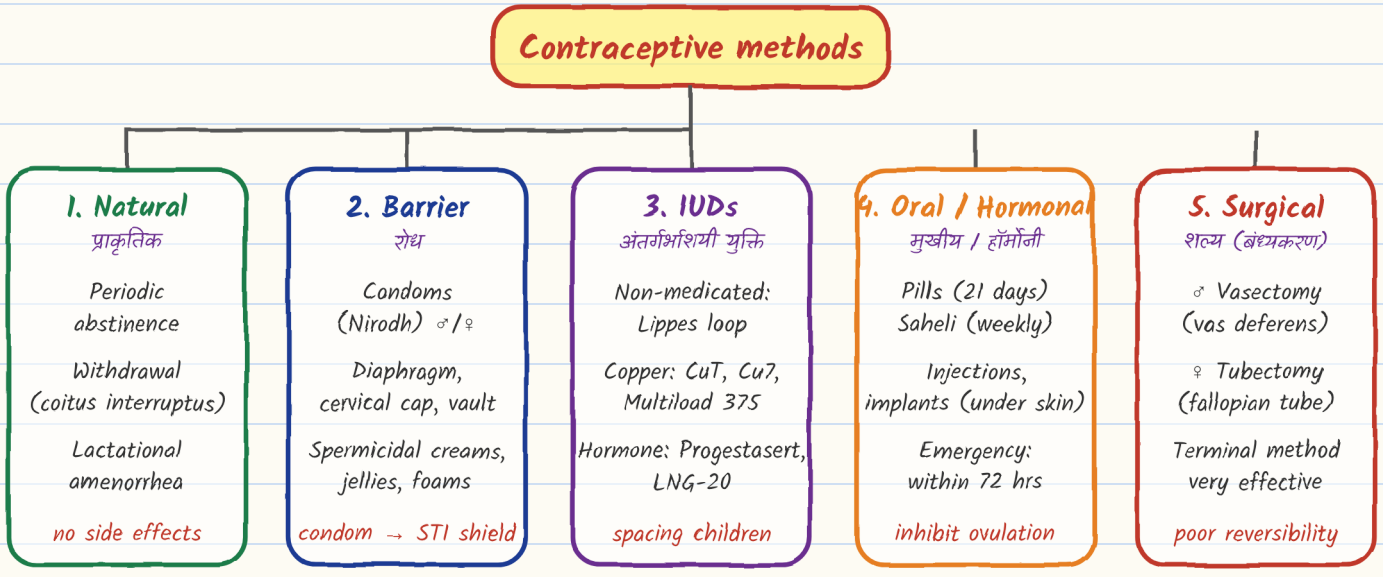
Steps taken उठाए गए कदम

- Motivate smaller families using contraceptive methods – slogan **"Hum Do Hamare Do"** (we two, our two); many couples adopt "one child norm".
- Raise **marriageable age**: female 18 yrs, male 21 yrs.
- Incentives to couples with small families.

Ideal contraceptive (आदर्श गर्भनिरोधक) should be:

1. User-friendly
2. Easily available
3. Effective
4. **Reversible**
5. No or least side effects
6. Should not interfere with sexual drive, desire or sexual act

3. Contraceptive Methods / गर्भनिरोधक उपाय



Infographic: Types of contraceptive methods · गर्भनिरोधक उपायों के प्रकार

(1) Natural / Traditional methods प्राकृतिक विधियाँ

Principle: **avoid chances of ovum & sperm meeting**.

- **Periodic abstinence** (आवधिक संयम): couple avoids coitus from day 10 to 17 of menstrual cycle, when ovulation is expected (= **fertile period**).

- **Withdrawal / Coitus interruptus** (बाह्य स्खलन): male withdraws penis from vagina just before ejaculation.
- **Lactational amenorrhea** (दुग्धस्रवण अनार्तव): absence of menstruation during intense lactation after parturition → ovulation & cycle don't occur → chances of conception nil. Effective only up to maximum 6 months after parturition, while mother breast-feeds fully.
- ✔ No side effects (no medicine/devices) ✘ High chances of failure.

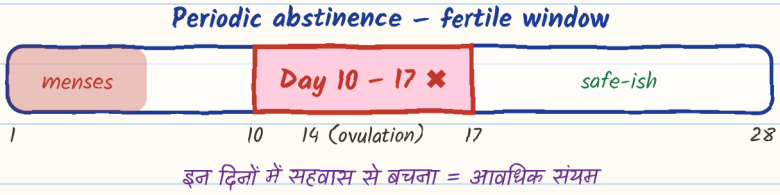


Fig: Fertile period in a 28-day cycle

(2) Barrier methods रोध विधियाँ

Ovum & sperms prevented from **physically meeting**. Available for both males & females.

- **Condoms** – thin rubber/latex sheath; cover penis (male) or vagina & cervix (female) just before coitus → ejaculated semen not released into female tract.
- "Nirodh" – popular brand of condom for males. Condoms are **disposable**, can be self-inserted → privacy.
- Condoms also protect from STIs & AIDS ⭐
- **Diaphragms, cervical caps & vaults** – rubber barriers inserted into female tract to **cover cervix** during coitus; reusable.
- **Spermicidal creams, jellies, foams** – used along with barriers to increase efficiency.

(3) IUDs – Intra Uterine Devices अंतर्गर्भाशयी युक्तियाँ

Inserted by **doctors or expert nurses** into the **uterus** through vagina.

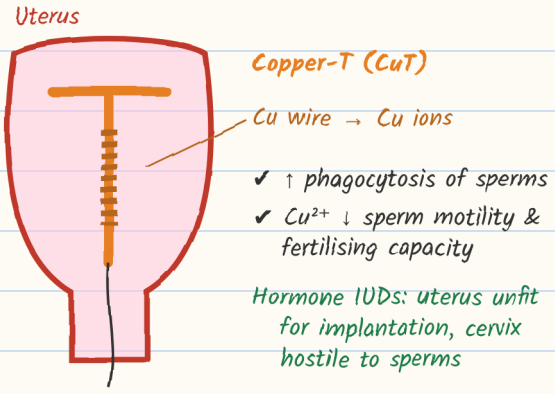


Fig: Copper-T placed in uterus · गर्भाशय में कॉपर-टी

Type	Examples	Action
Non-medicated	**Lippes loop**	↑ phagocytosis of sperms in uterus
Copper releasing	**CuT, Cu7, Multiload 375**	Cu ions suppress sperm motility & fertilising capacity
Hormone releasing	**Progestasert, LNG-20**	Uterus unsuitable for implantation; cervix hostile to sperms

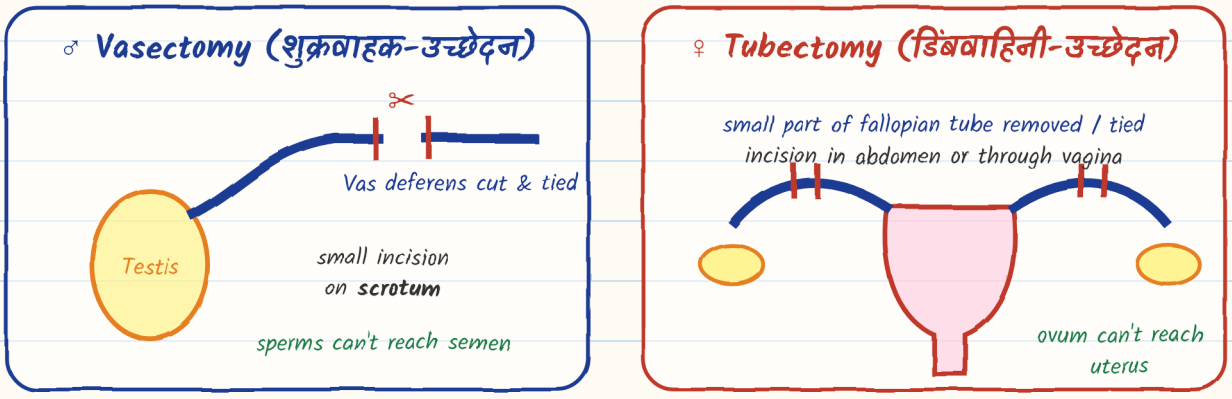
📌 **Exam Tip:** IUDs are ideal contraceptives for females who want to delay pregnancy and/or space children. One of the most widely accepted methods in India.

(4) Oral pills, injections & implants मुखीय गोलियाँ

- Small doses of **progestogens** or **progestogen–estrogen combinations**.
- Taken daily for 21 days, starting preferably within **first 5 days of menstrual cycle**. After gap of **7 days** (menstruation), repeat.
- **Action:** inhibit ovulation & implantation, alter quality of cervical mucus → prevent/retard entry of sperms.
- Pills very effective, lesser side effects, well accepted by females.
- Saheli – new oral contraceptive for females; **non-steroidal**; **once a week** pill; very few side effects; high contraceptive value. Developed at **CDRI, Lucknow**.
- Progestogens alone or with estrogen also used as **injections** or **implants under the skin** – longer effect.
- **Emergency contraceptives**: progestogens / progestogen-estrogen / IUDs within 72 hours of coitus → avoid pregnancy due to rape or casual unprotected intercourse.

(5) Surgical methods / Sterilisation शल्य विधियाँ / बंध्यकरण

Advised for **terminal method** – to prevent any more pregnancies. Blocks **gamete transport**.



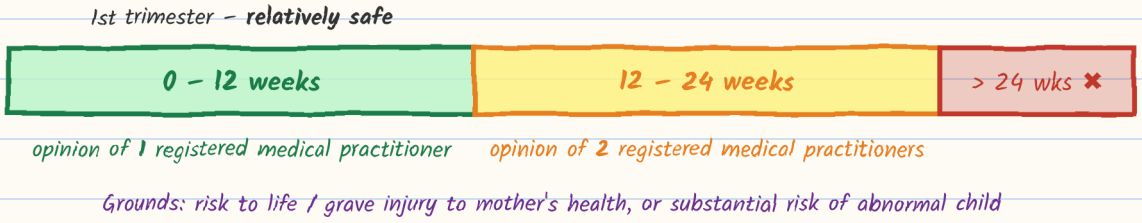
Infographic: Sterilisation methods · बंध्यकरण विधियाँ

✔ Highly effective ✘ Reversibility is very poor

📌 **Side effects of contraceptives:** nausea, abdominal pain, breakthrough bleeding, irregular menstrual bleeding, even **breast cancer** — so they're not regular requirements for a healthy person, but they help prevent unwanted pregnancies.
दुष्प्रभाव: मिचली, पेट दर्द, अनियमित रक्तस्राव, स्तन कैंसर।

4. Medical Termination of Pregnancy (MTP) / चिकित्सीय सगर्भता समापन

- **MTP / induced abortion** = intentional or voluntary termination of pregnancy **before full term**.
- Nearly 45–50 million MTPs worldwide every year (≈ **1/5th** of total conceived pregnancies).
- Role in decreasing population, though not meant for it. Emotional, ethical, religious & social issues involved.
- Govt of India enacted **MTP (Amendment) Act, 2017** to reduce illegal abortion & maternal mortality/morbidity.



Infographic: MTP time limits as per NCERT (MTP Amendment Act)

Why MTP is needed आवश्यकता

- To get rid of unwanted pregnancies – casual unprotected intercourse, failure of contraceptive, **rape**.
- When continuation of pregnancy is **harmful or fatal** to mother, foetus or both.

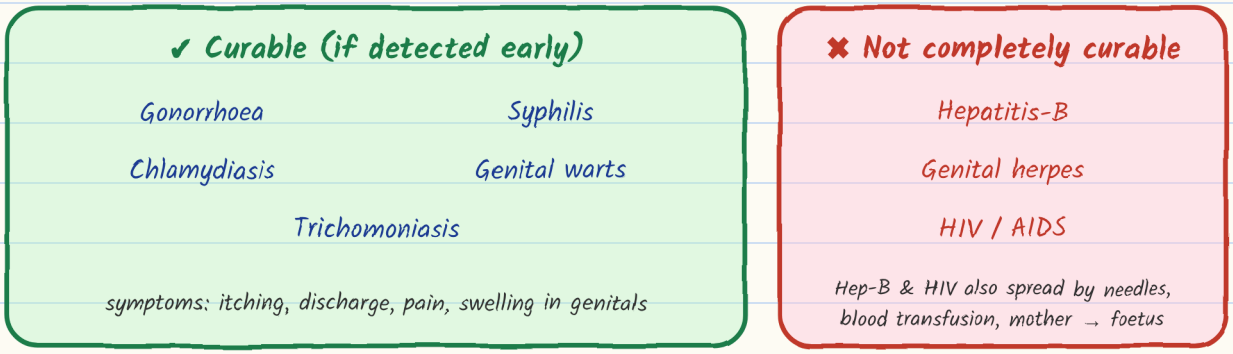
Problems / misuse दुरुपयोग

- Majority of MTPs are performed **illegally** by **unqualified quacks** → unsafe, can be fatal.
- Misuse of **amniocentesis** to determine sex → female foeticide.
- Done mostly by **unmarried girls** → need counselling & safe sex education.

📌 **Note:** NCERT text uses the 12 / 24-week limits above – write these in the board exam. (The current law, the MTP Amendment Act 2021, allows up to 20 weeks with one doctor and 20–24 weeks with two doctors for special categories.)

5. Sexually Transmitted Infections (STIs) / यौन संचारित संक्रमण

Diseases/infections transmitted through **sexual intercourse** = **STIs**, also called **VD** (venereal diseases) or **RTI** (reproductive tract infections).



Infographic: Common STIs · सामान्य यौन संचारित रोग

- Most common in age group 15–24 years.
- Early symptoms are minor → often not noticed; also social stigma → no timely detection.
- **Complications** if untreated: **PID** (pelvic inflammatory disease), abortions, still births, **ectopic pregnancies**, **infertility**, even **cancer of reproductive tract**.

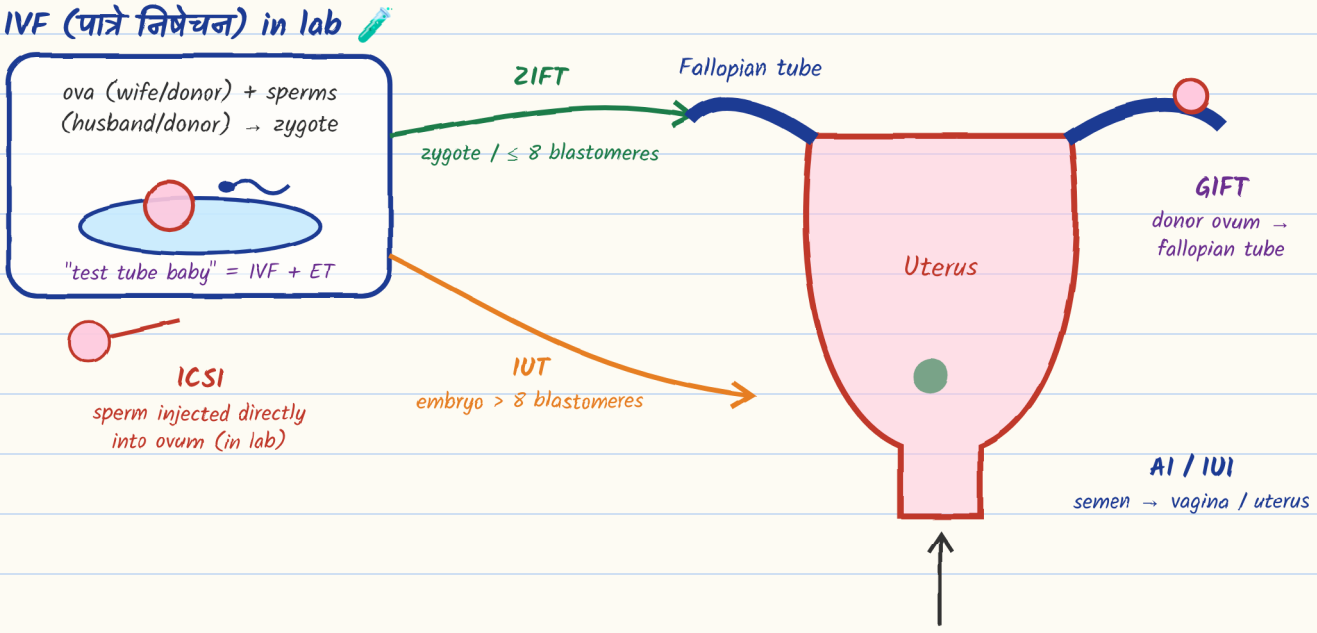
Prevention – simple principles (बचाव):

1. Avoid sex with **unknown partners / multiple partners**.
2. **Always use condoms** during coitus.
3. In case of doubt, go to a qualified doctor for **early detection & complete treatment**.

6. Infertility & ART / बंध्यता व सहायक जनन प्रौद्योगिकियाँ

Infertility: couple unable to produce children **in spite of unprotected sexual cohabitation**. Reasons: physical, congenital, diseases, drugs, immunological or even psychological. Problem may be in **male or female** (in India, the female is often wrongly blamed).

ART = **Assisted Reproductive Technologies** – special techniques to help infertile couples have children.



Infographic: Assisted Reproductive Technologies · सहायक जनन प्रौद्योगिकियाँ

Technique	Full form	What is done
IVF + ET	In Vitro Fertilisation + Embryo Transfer (पात्रे निषेचन)	Ova & sperms fertilised in lab in conditions similar to body → zygote/embryo transferred. Popularly **"test tube baby"** programme.
ZIFT	Zygote Intra Fallopian Transfer	Zygote or early embryo (up to 8 blastomeres) transferred into **fallopian tube**
IUT	Intra Uterine Transfer	Embryos with more than 8 blastomeres transferred into **uterus**
In vivo fertilisation	(fusion within female)	Embryos formed by in vivo fertilisation also transferred to assist females who cannot conceive
GIFT	Gamete Intra Fallopian Transfer	Ovum collected from a **donor** transferred into fallopian tube of a female who cannot produce ova but can provide suitable environment
ICSI	Intra Cytoplasmic Sperm Injection	Sperm **directly injected into ovum** in lab → embryo
AI / IUI	Artificial Insemination / Intra Uterine Insemination (कृत्रिम वीर्यसेचन)	Semen from husband or healthy donor artificially introduced into **vagina** or **uterus** – when male can't inseminate or has **very low sperm count**

📌 **Trick:** **Z**IFT → **Z**ygote to tube (≤8 cells) · **I**UT → **I**nto **U**terus (>8 cells) · **G**IFT → **G**amete (ovum) to tube.

Limitations of ART सीमाएँ

- Need **highly trained professionals** & **expensive instruments** → available only in very few centres.

- Emotional, religious & social factors are deterrents.
- Legal adoption is one of the best methods for couples looking for parenthood – there are many orphaned & destitute children who need care.

⚡ Quick Revision / त्वरित पुनरावृत्ति

Keyword	Remember
Family planning started	1951 (India – first country)
Marriageable age	Female 18, Male 21
Periodic abstinence	Day 10–17
Lactational amenorrhea	Max 6 months after delivery
Oral pills	21 days, start within first 5 days; 7-day gap
Saheli	Weekly, non-steroidal, CDRI Lucknow
Emergency contraceptive	Within 72 hours
Nirodh	Male condom brand
MTP	Safe up to 12 wks; 45–50 million/yr worldwide
STI age group	15–24 years
ZIFT vs IUT	≤ 8 blastomeres → tube; > 8 → uterus

⭐ Exam Corner / परीक्षा उपयोगी प्रश्न

1-Mark Questions IM

Q1. Define reproductive health according to WHO.

→ Total well-being in all aspects of reproduction – physical, emotional, behavioural & social.

Q2. Name an oral contraceptive developed in India. / भारत में विकसित एक मुखीय गर्भनिरोधक?

→ Saheli (CDRI, Lucknow) / सहेली

Q3. Why is amniocentesis banned in India for sex determination?

→ To check female foeticide.

Q4. Name two hormone-releasing IUDs.

→ Progestasert, LNG-20.

Q5. Which contraceptive also protects against STIs?

→ Condoms.

Q6. Name any two STIs which are not completely curable.

→ Hepatitis-B, genital herpes, HIV (any two).

Q7. What is the full form of ZIFT?

→ Zygote Intra Fallopian Transfer.

2/3-Mark Questions 2–3M

Q8. Give any four characteristics of an ideal contraceptive.

→ User-friendly, easily available, effective, reversible, no/least side effects, doesn't interfere with sexual drive.

Q9. How do Copper-releasing IUDs act as contraceptives?

→ Cu ions suppress sperm motility & fertilising capacity; IUDs also increase phagocytosis of sperms.

Q10. Explain lactational amenorrhea. Why is it a natural contraceptive?

→ No menstruation & ovulation during intense breast-feeding, up to 6 months after delivery → no conception.

Q11. How do oral pills prevent pregnancy?

→ Inhibit ovulation & implantation; alter cervical mucus quality.

Q12. Write differences between vasectomy and tubectomy.

→ Vasectomy: male, vas deferens cut/tied, incision on scrotum. Tubectomy: female, small part of fallopian tube removed/tied, incision in abdomen/vagina.

Q13. Differentiate between ZIFT and GIFT.

→ ZIFT: zygote/early embryo (≤8 cells) into tube. GIFT: donor ovum (gamete) into tube of female who can't produce ova.

Q14. Why is MTP considered safe only up to first trimester? Mention two misuses of MTP.

→ Fewer complications before 12 weeks. Misuse: female foeticide (after amniocentesis), illegal abortions by quacks.

Q15. What are the reasons for population explosion in India?

→ Decline in death rate, MMR, IMR; more people in reproducible age.

5-Mark Questions 5M ★★★

Q16. Describe the various contraceptive methods with examples and their mode of action.

→ Natural, barrier, IUDs, oral/injectables/implants, surgical – with examples & action (use the infographic).

Q17. What are STIs? Name four. List their complications and methods of prevention.

→ Definition; gonorrhoea, syphilis, herpes, HIV; PID, ectopic pregnancy, infertility, cancer; avoid multiple partners, condoms, early treatment.

Q18. What is infertility? Explain any four ART techniques.

→ Definition; IVF-ET, ZIFT, IUT, GIFT, ICSI, AI/IUI.

Q19. Explain the strategies taken by the Government of India to improve reproductive health of people.

→ Family planning 1951, RCH, awareness, sex education, amniocentesis ban, immunisation, research (Saheli), better medical facilities.

🎯 **Last-minute tips:** Always give **one example** with each contraceptive type · Remember the numbers (10–17, 21, 72, 6 months, 8 blastomeres) · In STI answers, mention **complications + prevention** · Case-based Qs often ask which method suits a couple who wants to "space children" → **IUD**; a "terminal method" → **sterilisation**.

~ All the best! / शुभकामनाएँ! ~