

CUET · BIOLOGY · CLASS XII · CODE 304

Reproductive Health

CUET unit: Reproduction → Reproductive Health

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Snapshot

- Establishes the WHO definition of reproductive health (total well-being — physical, emotional, behavioural and social) and frames India as the first country to launch national family-planning action plans (1951), now running as RCH (Reproductive and Child Health Care) programmes.
- Covers population stabilisation drivers — declining MMR/IMR, statutory marriage ages (female 18, male 21), and the contraceptive ladder: Natural, Barrier, IUDs, Oral pills, Injectables/Implants and Surgical sterilisation.
- Details Medical Termination of Pregnancy (legalised 1971; MTP Amendment Act 2017 raised limit to 24 weeks with two RMPs) and the statutory ban on amniocentesis for sex-determination.
- Lists STIs (gonorrhoea, syphilis, genital herpes, chlamydiasis, genital warts, trichomoniasis, hepatitis-B, HIV/AIDS), their non-coital transmission routes, and prevention rules.
- Treats infertility and Assisted Reproductive Technologies — IVF-ET (test-tube baby), ZIFT, IUT, GIFT, ICSI, AI and IUI.
- High-yield for CUET: definitions, full forms (ZIFT/GIFT/ICSI/IUI), specific IUD names, "Saheli" pill, and the 12-week/24-week MTP windows.

Detailed Notes

2.1 Core concepts

- **Reproductive health (WHO definition):** total well-being in all aspects of reproduction — physical, emotional, behavioural and social; a reproductively healthy society has physically and functionally normal reproductive organs plus normal emotional and behavioural interactions in all sex-related aspects (NCERT §3, p. 41).
- **India's family planning history:** India was amongst the first countries to launch national action plans; programmes called 'family planning' were initiated in **1951** and were periodically assessed; the improved version is now called **Reproductive and Child Health Care (RCH) programmes** (NCERT §3.1, p. 41–42).
- **RCH tasks:** create awareness about reproduction-related aspects via audio-visual/print media; introduce sex education in schools; educate fertile couples on birth control, pregnancy/post-natal care, breast feeding, equal opportunities for male and female child (NCERT §3.1, p. 42).

- **Statutory ban on amniocentesis for sex-determination** is used to legally check the menace of female foeticides; amniocentesis itself samples amniotic fluid of the foetus to test for genetic disorders such as Down syndrome, haemophilia, sickle-cell anaemia (NCERT §3.1, p. 42).
- **Saheli**: a non-steroidal "once a week" oral contraceptive for females, developed by scientists at the **Central Drug Research Institute (CDRI), Lucknow**; has very few side-effects and high contraceptive value (NCERT §3.1, p. 42–43; §3.2, p. 45).
- **Population growth**: world population — 2 billion (1900) → 6 billion (2000) → 7.2 billion (2011); India — ~350 million at independence → ~1 billion (2000) → 1.2 billion (May 2011); 2011 census population growth rate <2% (20/1000/year) (NCERT §3.2, p. 43).
- **Drivers of growth**: rapid decline in death rate, **maternal mortality rate (MMR)** and **infant mortality rate (IMR)**, plus increase in number of people in reproductive age (NCERT §3.2, p. 43).
- **Statutory measures to check growth**: marriageable age — female **18 years**, male **21 years**; incentives for small families; Hum Do Hamare Do slogan (NCERT §3.2, p. 43).
- **Ideal contraceptive properties**: user-friendly, easily available, effective, reversible, with no/least side-effects, and must not interfere with sexual drive/desire/act (NCERT §3.2, p. 43).
- **Categories of contraceptives**: Natural/Traditional, Barrier, IUDs, Oral contraceptives, Injectables, Implants and Surgical methods (NCERT §3.2, p. 43).
- **Natural methods**: (i) **Periodic abstinence** — avoid coitus from day 10 to 17 of menstrual cycle (the fertile period); (ii) **Withdrawal / coitus interruptus** — male withdraws penis before ejaculation; (iii) **Lactational amenorrhea** — ovulation suppressed during intense lactation after parturition; effective only up to 6 months post-parturition; failure rates are high but side-effects nil (NCERT §3.2, p. 44).
- **Barrier methods**: Condoms (male and female) made of thin rubber/latex sheath ('Nirodh' is a popular male brand); disposable; also protect against STIs/AIDS. Diaphragms, cervical caps and vaults are reusable rubber barriers inserted in the female tract covering the cervix; spermicidal creams/jellies/foams used alongside (NCERT §3.2, p. 44).
- **IUDs (inserted by doctors/nurses via vagina)**: (a) **Non-medicated** — Lippes loop; (b) **Copper-releasing** — CuT, Cu7, Multiload 375; (c) **Hormone-releasing** — Progestasert, LNG-20. Mechanism: increase phagocytosis of sperms in uterus; Cu ions suppress sperm motility and fertilising capacity; hormonal IUDs additionally make uterus unsuitable for implantation and cervix hostile to sperms. Ideal for delaying/spacing pregnancies; one of the most widely accepted methods in India (NCERT §3.2, p. 44–45).
- **Oral pills**: small doses of progestogens or progestogen–estrogen combinations; taken daily for 21 days starting within first 5 days of cycle, gap of 7 days, then

- repeat. Mechanism — inhibit ovulation and implantation; alter cervical mucus to retard sperm entry. **Saheli** is a non-steroidal once-a-week pill (NCERT §3.2, p. 45).
- **Injectables / Implants:** progestogens (alone or with estrogen) administered as injections or sub-dermal implants; mode of action similar to pills but effective period much longer (NCERT §3.2, p. 45).
 - **Emergency contraception:** progestogens / progestogen-estrogen combinations / IUDs administered within **72 hours** of coitus; used after rape or casual unprotected intercourse (NCERT §3.2, p. 45).
 - **Surgical methods (sterilisation):** terminal methods that block gamete transport. **Vasectomy** — a small part of vas deferens is cut/tied through a small scrotal incision. **Tubectomy** — a small part of fallopian tube is cut/tied through abdominal or vaginal incision. Highly effective but reversibility is very poor (NCERT §3.2, p. 45–46).
 - **Side-effects of contraceptives:** nausea, abdominal pain, breakthrough bleeding, irregular menstrual bleeding, even breast cancer (not very significant but should not be ignored) (NCERT §3.2, p. 46).
 - **Medical Termination of Pregnancy (MTP):** intentional/voluntary termination of pregnancy before full term, also called induced abortion; ~45–50 million MTPs/year worldwide = 1/5 of conceived pregnancies. **Legalised in India in 1971** with strict conditions to curb misuse (NCERT §3.3, p. 46).
 - **MTP safety window:** relatively safe in the **first trimester (up to 12 weeks)**; second-trimester MTPs are much riskier. Misuse of amniocentesis for sex-determination followed by MTP of female foetus is illegal (NCERT §3.3, p. 46).
 - **MTP Amendment Act, 2017:** ≤12 weeks — opinion of **one** registered medical practitioner; 12–24 weeks — opinion of **two** RMPs in good faith. Grounds: (i) risk to life or grave injury (physical/mental) to woman; (ii) substantial risk of serious handicap in the child (NCERT §3.3 sidebar, p. 46).
 - **STIs / VD / RTI — common diseases:** Gonorrhoea, syphilis, genital herpes, chlamydia, genital warts, trichomoniasis, hepatitis-B, and HIV (leading to AIDS — most dangerous, detailed in Chapter 7) (NCERT §3.4, p. 47).
 - **Non-coital transmission (hepatitis-B and HIV):** sharing injection needles, surgical instruments, blood transfusion, infected mother to foetus (NCERT §3.4, p. 47).
 - **Curability:** all listed STIs are completely curable if detected early, **except hepatitis-B, genital herpes and HIV** (NCERT §3.4, p. 47).
 - **Early STI symptoms:** itching, fluid discharge, slight pain, swellings in genital region; infected females are often asymptomatic. Complications — PID (pelvic inflammatory disease), abortions, still births, ectopic pregnancies, infertility, cancer of reproductive tract. High incidence in 15–24 year age group (NCERT §3.4, p. 47).

- **STI prevention:** (i) avoid sex with unknown/multiple partners; (ii) use condoms during coitus; (iii) consult qualified doctor for early detection and complete treatment (NCERT §3.4, p. 47).
- **Infertility:** inability to produce children despite unprotected sexual co-habitation; causes — physical, congenital, diseases, drugs, immunological or psychological. In India the female is often blamed but the problem frequently lies with the male partner (NCERT §3.5, p. 47–48).
- **Assisted Reproductive Technologies (ART):**
- **IVF (in vitro fertilisation) + ET (embryo transfer)** = "test-tube baby" programme; ova and sperms induced to form zygote in lab.
- **ZIFT (Zygote Intra Fallopian Transfer):** zygote or early embryos **up to 8 blastomeres** transferred into fallopian tube.
- **IUT (Intra Uterine Transfer):** embryos with **more than 8 blastomeres** transferred into uterus.
- **GIFT (Gamete Intra Fallopian Transfer):** ovum from a donor transferred into fallopian tube of a female who cannot produce one but can support fertilisation and development.
- **ICSI (Intra Cytoplasmic Sperm Injection):** sperm directly injected into ovum in the lab.
- **AI (Artificial Insemination) / IUI (Intra-Uterine Insemination):** semen from husband/donor introduced into vagina or uterus — used when male cannot inseminate or has low sperm count (NCERT §3.5, p. 48).
- **Legal adoption** is mentioned as one of the best methods for couples seeking parenthood (NCERT §3.5, p. 48).

2.2 Definitions to memorise

Term	Definition	Page
Reproductive health (WHO)	Total well-being in all aspects of reproduction — physical, emotional, behavioural and social	41
RCH programmes	Reproductive and Child Health Care programmes — current avatar of India's family planning, initiated as 'family planning' in 1951	42
Amniocentesis	Procedure where amniotic fluid is sampled to analyse foetal cells / dissolved substances to test for genetic disorders (Down syndrome, haemophilia, sickle-cell anaemia) and survivability of the foetus; misused for sex determination — statutorily banned	42
Saheli	Non-steroidal "once a week" oral contraceptive pill for females developed at CDRI, Lucknow	42–43, 45
MMR / IMR		43

Term	Definition	Page
	Maternal Mortality Rate / Infant Mortality Rate — their decline is a probable reason for population growth	
Periodic abstinence	Natural method — abstain from coitus on days 10–17 of menstrual cycle (fertile period)	44
Coitus interruptus (withdrawal)	Male withdraws penis from vagina just before ejaculation to avoid insemination	44
Lactational amenorrhea	Absence of menstruation during intense lactation following parturition; contraceptive only up to ~6 months post-partum	44
Condom	Thin rubber/latex sheath used to cover penis or female reproductive tract before coitus; 'Nirodh' is a popular male brand; also protects against STIs/AIDS	44
Diaphragm/ cervical cap/vault	Reusable rubber barriers inserted in female tract to cover cervix; used with spermicides	44
Lippes loop	A non-medicated IUD	44
CuT / Cu7 / Multiload 375	Copper-releasing IUDs — Cu ions suppress sperm motility and fertilising capacity	44
Progestasert / LNG-20	Hormone-releasing IUDs — additionally make uterus unsuitable for implantation and cervix hostile to sperms	44
Oral pills	Daily progestogen or progestogen–estrogen tablets for 21 days, 7-day gap, repeat; inhibit ovulation/implantation, alter cervical mucus	45
Sterilisation	Surgical, terminal contraceptive method blocking gamete transport	45
Vasectomy	Male sterilisation — small part of vas deferens cut/tied through scrotal incision	46
Tubectomy	Female sterilisation — small part of fallopian tube cut/tied through abdominal or vaginal incision	46
Emergency contraception	Progestogens / progestogen-estrogen / IUDs administered within 72 hours of coitus	45
MTP	Medical Termination of Pregnancy — intentional/voluntary termination before full term; legalised in India in 1971; safe up to 12 weeks	46
STIs / VD / RTI	Sexually Transmitted Infections / Venereal Diseases / Reproductive Tract Infections	47
PID	Pelvic Inflammatory Disease — a complication of untreated STIs	47
Infertility	Inability to produce children despite unprotected sexual co-habitation (summary: 2 years)	47, 49

Term	Definition	Page
IVF-ET	In vitro fertilisation followed by embryo transfer — "test-tube baby" programme	48
ZIFT	Zygote Intra Fallopian Transfer (zygote/embryo \leq 8 blastomeres \rightarrow fallopian tube)	48
IUT	Intra Uterine Transfer (embryo $>$ 8 blastomeres \rightarrow uterus)	48
GIFT	Gamete Intra Fallopian Transfer (donor ovum \rightarrow fallopian tube of recipient)	48
ICSI	Intra Cytoplasmic Sperm Injection — sperm directly injected into ovum	48
AI / IUI	Artificial Insemination / Intra-Uterine Insemination	48

2.3 Diagrams / processes to remember

- **Figure 3.1 (a) Condom for male** and **Figure 3.1 (b) Condom for female** (p. 44) — barrier devices made of thin rubber/latex; disposable; self-insertable.
- **Figure 3.2 Copper T (CuT)** (p. 44) — T-shaped copper-releasing IUD inserted into uterus through vagina; the released Cu ions suppress sperm motility.
- **Figure 3.3 Implants** (p. 45) — rod-shaped sub-dermal progestogen/progestogen-estrogen implants.
- **Figure 3.4(a) Vasectomy** (p. 45) — vas deferens tied and cut on each side; **Figure 3.4(b) Tubectomy** — fallopian tubes tied and cut.
- **Sequence to remember (ART):** ova + sperm \rightarrow zygote in lab (IVF) \rightarrow if \leq 8 blastomeres \rightarrow ZIFT (fallopian tube); if $>$ 8 blastomeres \rightarrow IUT (uterus) (NCERT §3.5, p. 48).

2.4 Common confusions / NTA trap points

- **Day window for fertile period:** NCERT says day **10 to 17** of menstrual cycle — not 8–18 or 12–16; this exact range is a favourite distractor swap.
- **Blastomere cut-off for ZIFT vs IUT:** ZIFT is up to **8 blastomeres** (fallopian tube), IUT is **more than 8 blastomeres** (uterus). NCERT also calls embryos up to 8 cells "early embryos."
- **Curable vs incurable STIs:** the only three NCERT lists as not completely curable are **hepatitis-B, genital herpes and HIV** — students often add gonorrhoea or syphilis to that list, which is wrong.
- **MTP windows (MTP Amendment Act 2017):** \leq 12 weeks \rightarrow one RMP; 12–24 weeks \rightarrow two RMPs. Many students remember the old 20-week ceiling — NCERT now uses **24 weeks**.
- **Saheli specifics:** non-steroidal, **once-a-week**, developed at **CDRI Lucknow** — confused with daily pills or with combined OC pills.

- **Hormone-releasing vs copper-releasing IUDs:** Lippes loop = non-medicated; CuT, Cu7, Multiload 375 = copper-releasing; Progestasert, LNG-20 = hormone-releasing. Mixing these is a classic trap.
- **Emergency contraception window: within 72 hours** of coitus — not 24 or 48 hours.
- **Statutory marriageable age:** female 18, male 21 — not the other way round.
- **Amniocentesis misuse** — NCERT highlights its misuse for sex-determination and the legal ban; it was originally for genetic disorders.
- **Tubectomy vs vasectomy** — Tubectomy = female (fallopian tube cut); Vasectomy = male (vas deferens cut); both >99% effective and largely irreversible.

2.5 Quick comparison table — contraceptives & RCH at a glance

#	Item	Detail (NCERT)	Page
1	Natural method window	Days 10–17 (fertile)	56
2	Lactational amenorrhea	Up to 6 months post-partum	56
3	Coitus interruptus	Withdrawal before ejaculation	56
4	Barrier (male/female)	Condom (Nirodh), diaphragm, cervical cap, vault	57
5	IUD — non-medicated	Lippes loop	57
6	IUD — Cu-releasing	CuT, Cu7, Multiload 375	57
7	IUD — hormone-releasing	Progestasert, LNG-20	57
8	Oral pill	Mala-D (daily, steroidal)	58
9	Non-steroidal pill	Saheli (weekly, CDRI Lucknow)	58
10	Injectables/implants	Progestogens or progestogen+estrogen	58
11	Emergency contraception	Within 72 hours of coitus	58
12	Sterilisation — male	Vasectomy (cut vas deferens)	58
13	Sterilisation — female	Tubectomy (cut fallopian tube)	58
14	MTP — first trimester	≤ 12 weeks, one RMP	59
15	ART — ZIFT vs IUT	≤ 8 blastomeres → fallopian tube; > 8 → uterus	61

Practice MCQs

Q1. According to the World Health Organisation (WHO), reproductive health means total well-being in all aspects of reproduction. Which of the following sets of aspects is correct?

- A. Physical, emotional, behavioural and social
- B. Physical, mental, financial and social
- C. Physical, hormonal, behavioural and genetic
- D. Emotional, hormonal, social and economic

Q2. In which year did India initiate national-level 'family planning' programmes, the precursor of today's RCH programmes?

- A. 1947
- B. 1951
- C. 1971
- D. 2000

Q3. 'Saheli', the once-a-week oral contraceptive pill for females, is a non-steroidal preparation developed by scientists at:

- A. AIIMS, New Delhi
- B. ICMR, New Delhi
- C. Central Drug Research Institute (CDRI), Lucknow
- D. National Institute of Immunology, New Delhi

 **9 more MCQs + answer key**

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PYQ Alignment

This chapter is a CUET high-yield chapter — typically 8–12 MCQs per year across CUET 2023–25 — with NTA favouring direct factual recall on full forms (ZIFT, GIFT, ICSI, IUT, IUI,

MTP), the day-window for periodic abstinence, the 72-hour emergency contraception window, IUD classification (non-medicated vs copper-releasing vs hormone-releasing), the list of curable vs incurable STIs, and the MTP 12-/24-week limits under the 2017 Amendment Act. Match-the-following on contraceptive categories and assertion-reason on IUD mechanism are also recurring formats.

CUET 2025 — Actual PYQs from this chapter

Q.11 (CUET 2025) Which of the following are not involved in intrauterine devices (IUDs)? (A) Lippes loop (B) LNG-20 (C) Saheli (D) Implants

- A) [option not extracted — see source]
- B) [option not extracted — see source]
- C) [option not extracted — see source]
- D) [option not extracted — see source]

Tests: aligns with §2 (reproductive health & contraception) **Answer:** Not in extracted key — verify against official NTA key

CUET 2023 — Actual PYQs from this chapter

Q.7 (CUET 2023) Identify the terminal method used to prevent pregnancy:

- A) Lactational amenorrhea
- B) Sterilisation
- C) Intra-uterine device
- D) Periodic abstinence

Tests: aligns with §2 (reproductive health & contraception) **Answer:** Not in extracted key — verify against official NTA key

Q.8 (CUET 2023) Match List-I with List-II List-I (A) Lippes loop (B) Vaults (C) Periodic abstinence (D) Progestasert List-II (I) Barrier (II) Hormone releasing device (III) Non-medicated IUD (IV) Natural method Choose correct answer:

- A) A-I, B-III, C-IV, D-II
- B) A-III, B-I, C-IV, D-II
- C) A-III, B-I, C-IV, D-II
- D) A-III, B-I, C-II, D-IV

Tests: aligns with §2 (reproductive health & contraception) **Answer:** Not in extracted key — verify against official NTA key