

# INI CET Community Medicine

## Sample Paper – 3

Duration: 14 Minutes

Maximum Marks: 15

### Instructions

- This paper contains **15** Multiple Choice Questions (Single Best Response), modelled on the Community Medicine (Preventive and Social Medicine) content of **INI CET** (Institutes of National Importance Combined Entrance Test) conducted by AIIMS New Delhi.
- The **15-question** length matches the number of Community Medicine items you actually meet in the real 200-question paper.
- Each correct answer carries **+1 mark**. There is **negative marking of one-third (0.33) mark** for every incorrect answer; unattempted questions carry no penalty.
- Every question has **exactly one best answer**. Choose the single most appropriate option, applying epidemiological reasoning and current national programme facts.
- Attempt this practice paper in one timed sitting of about **14 minutes**, the pace the real computer-based test demands.

### Epidemiology and Biostatistics

**Q1.** In the screening two-by-two table shown, the cell marked X holds people who truly have the disease but whose test result is negative. This cell represents the:

|      | Test+ | Test- |
|------|-------|-------|
| Dis+ | TP    | FP    |
| Dis- | FN    | TN    |

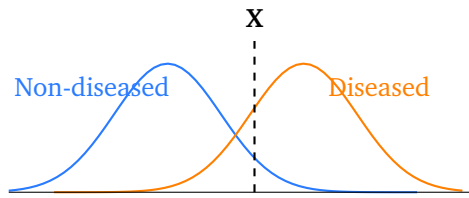
X

- (A) True positives
- (B) False positives



- (C) False negatives
- (D) True negatives

**Q2.** The figure shows the test-value distribution in diseased and non-diseased people with a chosen cut-off (marked X). By definition, the **sensitivity** of the test is the proportion of:



- (A) Truly diseased people who test positive
  - (B) Truly non-diseased people who test negative
  - (C) Test-positive people who actually have the disease
  - (D) Test-negative people who are actually free of disease
- Q3.** If the same screening test is applied to a population where the prevalence of the disease is much lower, the positive predictive value (PPV) of the test will:
- (A) Increase
  - (B) Remain unchanged
  - (C) Decrease
  - (D) Become 100 per cent

### Communicable Diseases

- Q4.** The mosquito vector responsible for transmitting both dengue and chikungunya is:
- (A) *Aedes aegypti*
  - (B) *Anopheles culicifacies*
  - (C) *Culex quinquefasciatus*
  - (D) *Phlebotomus argentipes*

- Q5.** Which of the following is a recognised warning sign of severe dengue that calls for urgent hospital admission?
- (A) A single episode of headache
  - (B) Low-grade fever with no other complaint
  - (C) Persistent vomiting with severe abdominal pain
  - (D) A brief, self-limiting skin rash
- Q6.** The most effective community-level measure to control dengue and chikungunya is:
- (A) Mass chemoprophylaxis of the whole population
  - (B) Strict isolation of every febrile patient
  - (C) Source reduction by removing stagnant water where Aedes breeds
  - (D) Routine antibiotic treatment of all suspected cases

### Non-communicable Diseases and Nutrition

- Q7.** Deficiency of thiamine (vitamin B1) in the diet characteristically produces which disease?
- (A) Pellagra
  - (B) Beriberi
  - (C) Scurvy
  - (D) Rickets
- Q8.** The classic triad of dermatitis, diarrhoea and dementia (pellagra) results from a dietary deficiency of:
- (A) Vitamin C (ascorbic acid)
  - (B) Thiamine (vitamin B1)
  - (C) Riboflavin (vitamin B2)
  - (D) Niacin (vitamin B3)

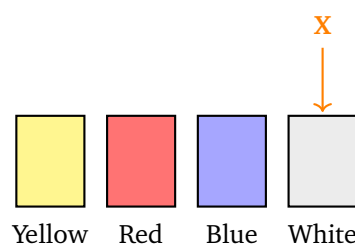
### Maternal, Child Health and Family Planning



- Q9.** The permanent method of contraception for a woman, done by surgically occluding the fallopian tubes, is:
- (A) Intra-uterine contraceptive device (IUCD)
  - (B) Tubectomy
  - (C) Combined oral contraceptive pill
  - (D) Barrier method (condom)
- Q10.** Vasectomy, the permanent method of male sterilisation, is performed by:
- (A) Removing both testes
  - (B) Occluding the urethra
  - (C) Ligating the ureters
  - (D) Cutting and ligating the vas deferens
- Q11.** The oral emergency contraceptive pill (levonorgestrel) is recommended to be taken within how long after unprotected intercourse for best effect?
- (A) 12 hours only
  - (B) 72 hours
  - (C) 2 weeks
  - (D) 1 month

### Environmental and Occupational Health

- Q12.** In the biomedical waste colour-coding scheme shown, sharps such as needles and scalpels must go into the puncture-proof container marked X. Its colour code is:



- (A) Yellow



- (B) Red
- (C) Blue
- (D) White (translucent)

**Q13.** Under the Biomedical Waste Management Rules, human anatomical waste and soiled waste that must be sent for incineration are collected in a bag or bin coloured:

- (A) Yellow
- (B) Red
- (C) Blue
- (D) White

**Health Programmes, Demog-  
raphy and Health Systems**

**Q14.** In India, the reliable continuous estimates of birth rate, death rate and infant mortality rate at the national and state level are generated mainly by the:

- (A) Decennial Census alone
- (B) Sample Registration System (SRS)
- (C) Hospital admission records only
- (D) Voluntary reporting by private clinics

**Q15.** The Human Development Index (HDI) is a composite measure that combines life expectancy, education (schooling), and:

- (A) Per capita income (Gross National Income)
- (B) Infant mortality rate
- (C) Adult literacy rate alone
- (D) Crude birth rate



**Detailed Solutions****Q1.****Solution**

**Concept – the screening two-by-two table:** Every person is cross-classified by disease status (rows) and test result (columns), giving four cells: TP, FP, FN and TN.

**Step 1 – read the cell X:** X sits in the diseased row but the test-negative column.

**Step 2 – name it:** A diseased person with a negative test is a **false negative (FN)**. These are the cases the test wrongly misses.

**Why the other options are wrong:**

- A, true positive: diseased and test-positive (top-left cell).
- B, false positive: non-diseased but test-positive.
- D, true negative: non-diseased and test-negative (bottom-right cell).

**Final Answer:** False negatives  $\Rightarrow$

**Answer: (C)** [Go Back to Q1](#)

**Q2.****Solution**

**Concept – sensitivity of a test:** Sensitivity measures how well a test detects those who truly have the disease.

**Step 1 – write the formula:** Sensitivity =  $\frac{TP}{TP + FN}$ , that is, the share of diseased people the test calls positive.

**Step 2 – match the wording:** This is the proportion of **truly diseased people who test positive**, exactly option A.

**Why the other options are wrong:**

- B, non-diseased who test negative: that defines specificity.
- C, test-positives who are diseased: that is positive predictive value.
- D, test-negatives who are disease-free: that is negative predictive value.

**Final Answer:** Truly diseased people who test positive  $\Rightarrow$

**Answer: (A)** [Go Back to Q2](#)



Q3.

**Solution**

**Concept – prevalence and predictive value:** Sensitivity and specificity stay fixed for a test, but predictive values depend on how common the disease is.

**Step 1 – effect of low prevalence:** When prevalence falls, there are fewer true cases, so among all test-positives a larger fraction are false positives.

**Step 2 – conclusion:** The positive predictive value therefore **decreases** as prevalence decreases.

**Why the other options are wrong:**

- A, increase: PPV rises with higher, not lower, prevalence.
- B, unchanged: PPV is prevalence-dependent, so it does change.
- D, become 100 per cent: impossible while false positives exist.

**Final Answer:** PPV decreases  $\Rightarrow$

**Answer: (C)** [Go Back to Q3](#)

Q4.

**Solution**

**Concept – vector-borne viral fevers:** Dengue and chikungunya are arboviral illnesses spread by the same day-biting mosquito.

**Step 1 – name the vector:** *Aedes aegypti* transmits dengue, chikungunya and Zika.

**Step 2 – habits:** It bites during daytime and breeds in clean, stagnant water in and around homes.

**Why the other options are wrong:**

- B, Anopheles: vector of malaria.
- C, Culex: vector of Japanese encephalitis and filariasis.
- D, Phlebotomus (sandfly): vector of kala-azar.

**Final Answer:** *Aedes aegypti*  $\Rightarrow$

**Answer: (A)** [Go Back to Q4](#)



Q5.

**Solution**

**Concept – dengue warning signs:** Certain features flag progression from ordinary dengue fever to severe dengue.

**Step 1 – pick the warning sign:** Persistent vomiting with severe abdominal pain is a classic warning sign needing admission.

**Step 2 – other danger signs:** Mucosal bleeding, restlessness, lethargy and a rapidly falling platelet count also warrant urgent care.

**Why the other options are wrong:**

- A and B, isolated headache or low fever: features of uncomplicated illness.
- D, brief self-limiting rash: common and not a warning sign.

**Final Answer:** Persistent vomiting with severe abdominal pain ⇒

**Answer: (C)** [Go Back to Q5](#)

Q6.

**Solution**

**Concept – vector control:** Since there is no specific cure and no widely used vaccine in routine programmes, prevention rests on controlling the mosquito.

**Step 1 – name the best measure:** Source reduction, that is, removing stagnant water in coolers, tyres and containers where Aedes lays eggs, is the mainstay.

**Step 2 – support measures:** Personal protection, larvicides and community clean-up drives reinforce source reduction.

**Why the other options are wrong:**

- A, mass chemoprophylaxis: no drug prevents these viral fevers.
- B, isolating every patient: dengue does not spread person to person.
- D, routine antibiotics: useless against a virus.

**Final Answer:** Source reduction of Aedes breeding sites ⇒

**Answer: (C)** [Go Back to Q6](#)





Q7.

**Solution**

**Concept – water-soluble vitamin deficiencies:** Each B-complex and vitamin C deficiency maps to a named disease.

**Step 1 – match thiamine:** Thiamine (vitamin B1) deficiency causes **beriberi**.

**Step 2 – forms:** Wet beriberi affects the heart (high-output failure); dry beriberi causes peripheral neuropathy.

**Why the other options are wrong:**

- A, pellagra: niacin (B3) deficiency.
- C, scurvy: vitamin C deficiency.
- D, rickets: vitamin D deficiency (fat-soluble).

**Final Answer:** Beriberi ⇒

**Answer: (B)** [Go Back to Q7](#)

Q8.

**Solution**

**Concept – pellagra:** Pellagra is remembered by the three D's: dermatitis, diarrhoea and dementia.

**Step 1 – name the vitamin:** It is caused by deficiency of **niacin (vitamin B3)**, and can also occur when tryptophan is lacking (as in maize-based diets).

**Step 2 – clinical clue:** The dermatitis is symmetrical and worsens on sun-exposed skin (Casal's necklace on the neck).

**Why the other options are wrong:**

- A, vitamin C: deficiency causes scurvy (bleeding gums, poor healing).
- B, thiamine: deficiency causes beriberi.
- C, riboflavin: deficiency causes angular stomatitis and glossitis, not pellagra.

**Final Answer:** Niacin (vitamin B3) ⇒

**Answer: (D)** [Go Back to Q8](#)



Q9.

**Solution**

**Concept – permanent female contraception:** Sterilisation methods give near-permanent protection.

**Step 1 – name it:** **Tubectomy** occludes or cuts the fallopian tubes so ova cannot meet sperm.

**Step 2 – feature:** It is a one-time terminal method with a very low failure rate.

**Why the other options are wrong:**

- A, IUCD: a long-acting but reversible spacing method.
- C, oral pill: a reversible hormonal method.
- D, condom: a reversible barrier method.

**Final Answer:** Tubectomy ⇒

**Answer: (B)** [Go Back to Q9](#)

Q10.

**Solution**

**Concept – male sterilisation:** Vasectomy is the permanent method for men.

**Step 1 – name the step:** The surgeon **cuts and ligates the vas deferens**, blocking sperm from reaching the ejaculate.

**Step 2 – caution:** The man is not sterile immediately; another method is used until semen analysis confirms azoospermia (about 3 months or 15–20 ejaculations).

**Why the other options are wrong:**

- A, removing testes: castration is not vasectomy and is never done for contraception.
- B, occluding the urethra: would obstruct urine, not sperm alone.
- C, ligating the ureters: those are urinary tubes from the kidney, unrelated.

**Final Answer:** Cutting and ligating the vas deferens ⇒

**Answer: (D)** [Go Back to Q10](#)



Q11.

**Solution**

**Concept – emergency contraception:** The levonorgestrel emergency pill prevents pregnancy after unprotected sex, mainly by delaying or inhibiting ovulation.

**Step 1 – timing:** It should be taken as early as possible and within **72 hours** of intercourse.

**Step 2 – efficacy:** The sooner it is taken, the better it works; effectiveness falls with delay.

**Why the other options are wrong:**

- A, 12 hours: too restrictive; the licensed window is longer.
- C and D, 2 weeks or 1 month: far too late for the emergency pill to act.

**Final Answer:** Within 72 hours  $\Rightarrow$  **B**

**Answer: (B)** [Go Back to Q11](#)

Q12.

**Solution**

**Concept – biomedical waste colour coding:** The Biomedical Waste Management Rules assign each waste category a colour-coded container.

**Step 1 – identify X:** Sharps go into a puncture-proof container marked **white (translucent)**.

**Step 2 – handling:** Needles, syringes with fixed needles, scalpels and blades are disinfected and mutilated before final disposal.

**Why the other options are wrong:**

- A, yellow: human anatomical and soiled waste for incineration.
- B, red: contaminated recyclable plastic waste such as tubing and catheters.
- C, blue: broken or discarded glassware and metallic implants.

**Final Answer:** White (translucent)  $\Rightarrow$  **D**

**Answer: (D)** [Go Back to Q12](#)



Q13.

**Solution**

**Concept – yellow-category waste:** The yellow bag carries the waste that needs incineration or deep burial.

**Step 1 – name the colour:** Human anatomical waste and soiled waste (dressings, cotton contaminated with body fluids) go into the **yellow** bag.

**Step 2 – disposal:** This category is sent for incineration or plasma pyrolysis, not recycled.

**Why the other options are wrong:**

- B, red: recyclable contaminated plastic.
- C, blue: glassware and metallic implants.
- D, white: sharps.

**Final Answer:** Yellow  $\Rightarrow$  A

**Answer: (A)** [Go Back to Q13](#)

Q14.

**Solution**

**Concept – sources of vital statistics:** India draws demographic rates from the Census, the Civil Registration System and the Sample Registration System.

**Step 1 – name the source:** The **Sample Registration System (SRS)** is a large, continuous dual-record survey that gives reliable annual estimates of birth rate, death rate and infant mortality rate.

**Step 2 – contrast:** The Census runs only once in ten years, and civil registration is still incomplete in many states, so SRS fills the gap for continuous rates.

**Why the other options are wrong:**

- A, Census alone: a snapshot every ten years, not continuous.
- C, hospital records only: cover only institutional events, biased and incomplete.
- D, voluntary private-clinic reports: fragmentary and unrepresentative.

**Final Answer:** Sample Registration System (SRS)  $\Rightarrow$  B

**Answer: (B)** [Go Back to Q14](#)



Q15.

**Solution**

**Concept – composite development indices:** The HDI, published by UNDP, summarises development in a single figure from 0 to 1.

**Step 1 – list the three components:** It combines a long and healthy life (life expectancy), knowledge (schooling), and a decent standard of living, measured by **per capita income (Gross National Income)**.

**Step 2 – contrast with PQLI:** The Physical Quality of Life Index (PQLI) instead uses infant mortality, life expectancy at age one and literacy, and does not include income.

**Why the other options are wrong:**

- B, infant mortality rate: a component of PQLI, not of HDI.
- C, adult literacy alone: only part of the education dimension.
- D, crude birth rate: a fertility measure, not part of HDI.

**Final Answer:** Per capita income (Gross National Income) ⇒ A

Answer: (A)   [Go Back to Q15](#)



**Answer Key**

| Q  | Ans | Q  | Ans | Q  | Ans | Q  | Ans | Q  | Ans |
|----|-----|----|-----|----|-----|----|-----|----|-----|
| 1  | C   | 2  | A   | 3  | C   | 4  | A   | 5  | C   |
| 6  | C   | 7  | B   | 8  | D   | 9  | B   | 10 | D   |
| 11 | B   | 12 | D   | 13 | A   | 14 | B   | 15 | A   |

