

# INI CET Medicine

## Sample Paper – 1

Duration: 14 Minutes

Maximum Marks: 15

### Instructions

- This paper contains **15** Multiple Choice Questions (Single Best Response), modelled on the General 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 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.
- Attempt this practice paper in one timed sitting of about **14 minutes**, the pace the real computer-based test demands.

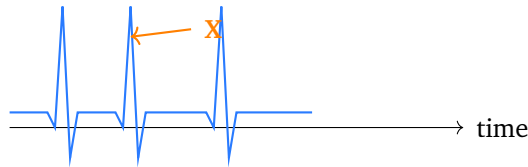
### Cardiology

- Q1.** Heart failure with reduced ejection fraction (HFrEF) is defined by a left ventricular ejection fraction of:
- (A) Greater than or equal to 50%
- (B) 50 to 59%
- (C) 41 to 49%
- (D) Less than or equal to 40%
- Q2.** Which drug class is a cornerstone (pillar) of guideline-directed medical therapy that reduces mortality in HFrEF?
- (A) Beta-blockers (for example carvedilol)



- (B) Loop diuretics (for example furosemide)
- (C) Dihydropyridine calcium channel blockers (for example amlodipine)
- (D) Class I antiarrhythmic drugs (for example flecainide)

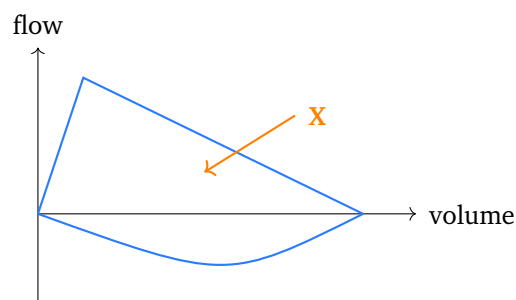
**Q3.** The ECG rhythm strip below (the broad complex marked X) is from a patient with HFrEF and left bundle branch block. A broad QRS (greater than or equal to 150 ms) with LBBB identifies patients who benefit from:



- (A) Cardiac resynchronization therapy (biventricular pacing)
- (B) Immediate coronary artery bypass grafting
- (C) Permanent single-chamber ventricular pacing for bradycardia
- (D) Radiofrequency ablation of the atrioventricular node

### Respiratory Medicine

**Q4.** The flow-volume loop below is from a patient assessed for COPD. Diagnosis is confirmed when the post-bronchodilator FEV<sub>1</sub>/FVC ratio (marked X) is:



- (A) Greater than 0.80
- (B) Less than 0.70
- (C) Exactly 1.00
- (D) Greater than 0.90



- Q5.** In the GOLD spirometric grading of airflow limitation in COPD, GOLD grade 2 (moderate) corresponds to a post-bronchodilator FEV1 of:
- (A) Greater than or equal to 80% predicted
  - (B) Less than 30% predicted
  - (C) 50 to 79% predicted
  - (D) 30 to 49% predicted

### Gastroenterology and Hepatology

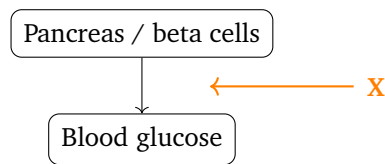
- Q6.** The most life-threatening complication of portal hypertension, arising from dilated submucosal veins at the gastro-oesophageal junction, is:
- (A) Bleeding oesophageal varices
  - (B) Caput medusae
  - (C) Internal haemorrhoids
  - (D) Splenomegaly
- Q7.** The first-line drug used to lower portal pressure and prevent variceal rebleeding in cirrhosis is a:
- (A) Loop diuretic
  - (B) Proton pump inhibitor
  - (C) Dihydropyridine calcium channel blocker
  - (D) Non-selective beta-blocker (for example propranolol)

### Endocrinology and Nephrology

- Q8.** By glycated haemoglobin, diabetes mellitus is diagnosed when the HbA1c is greater than or equal to:
- (A) 6.5%
  - (B) 5.7%
  - (C) 7.0%
  - (D) 8.0%



**Q9.** In the feedback diagram, the hormone secreted by the pancreatic beta cells (marked **X**) is almost absent in type 1 diabetes, precipitating diabetic ketoacidosis. DKA is defined by the biochemical triad of:



- (A) Hyperglycaemia, metabolic alkalosis and ketonuria
- (B) Hyperglycaemia, high anion-gap metabolic acidosis and ketonaemia
- (C) Hypoglycaemia, metabolic acidosis and ketosis
- (D) Hyperglycaemia, normal blood pH and absent ketones

**Q10.** Diabetic retinopathy, nephropathy and peripheral neuropathy are together classified as which category of chronic diabetic complication?

- (A) Macrovascular complications
- (B) Acute metabolic complications
- (C) Microvascular complications
- (D) Infective complications

### Neurology

**Q11.** The first-line imaging in suspected acute stroke, performed to exclude haemorrhage before any thrombolysis, is:

- (A) Contrast-enhanced MRI of the brain
- (B) Non-contrast CT of the head
- (C) Carotid Doppler ultrasound
- (D) Lumbar puncture

**Q12.** Intravenous thrombolysis with alteplase for acute ischaemic stroke is generally given within how many hours of symptom onset?

- (A) 24 hours



- (B) 12 hours
- (C) 4.5 hours
- (D) 48 hours

**Infectious Diseases, Hematology and Rheumatology**

- Q13.** In an HIV-positive adult, AIDS is defined when the CD4 T-lymphocyte count falls below:
- (A) 500 cells per cubic millimetre
  - (B) 350 cells per cubic millimetre
  - (C) 200 cells per cubic millimetre
  - (D) 800 cells per cubic millimetre
- Q14.** Pneumocystis jirovecii pneumonia, an AIDS-defining infection appearing once the CD4 count is below 200, is treated and prevented with which first-line drug?
- (A) Azithromycin
  - (B) Co-trimoxazole (trimethoprim-sulfamethoxazole)
  - (C) Fluconazole
  - (D) Isoniazid
- Q15.** Current first-line antiretroviral therapy for HIV combines two nucleoside reverse transcriptase inhibitors (NRTIs) with which preferred third agent?
- (A) A protease inhibitor used alone
  - (B) A single additional NRTI
  - (C) Zidovudine as monotherapy
  - (D) An integrase strand transfer inhibitor (for example dolutegravir)



**Detailed Solutions**

Q1.

**Solution**

**Concept – classifying heart failure by ejection fraction:** Heart failure is grouped by the left ventricular ejection fraction (LVEF) measured on echocardiography.

**Step 1 – recall the cut-offs:** HFrEF (reduced) is LVEF less than or equal to 40%.

**Step 2 – the other bands:** LVEF 41 to 49% is mildly reduced (HFmrEF) and LVEF greater than or equal to 50% is preserved (HFpEF).

**Why the other options are wrong:**

- A, greater than or equal to 50%: this is HFpEF, not HFrEF.
- B, 50 to 59%: falls within the preserved range.
- C, 41 to 49%: this is the mildly reduced band (HFmrEF).

**Final Answer:** LVEF less than or equal to 40%  $\Rightarrow$  **D**

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

Q2.

**Solution**

**Concept – guideline-directed medical therapy (GDMT):** In HFrEF, certain drug classes prolong survival, while others only relieve symptoms.

**Step 1 – name the mortality-reducing pillar: Beta-blockers** (carvedilol, bisoprolol, metoprolol succinate) reduce mortality and are one of the four foundational pillars, along with ACE inhibitors/ARNI, mineralocorticoid receptor antagonists and SGLT2 inhibitors.

**Step 2 – mechanism:** They blunt harmful sympathetic overactivity and reduce arrhythmic death and adverse remodelling.

**Why the other options are wrong:**

- B, loop diuretics: relieve congestion and symptoms but do not lower mortality.
- C, dihydropyridine CCBs: no survival benefit in HFrEF.
- D, class I antiarrhythmics: are pro-arrhythmic and increase mortality in HFrEF, so they are avoided.

**Final Answer:** Beta-blockers  $\Rightarrow$  **A**



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

Q3.

### Solution

**Concept – broad QRS and cardiac resynchronization:** A wide QRS with left bundle branch block causes the two ventricles to contract out of step (dyssynchrony).

**Step 1 – read the strip:** The broad complex marked **X** shows a QRS duration greater than or equal to 150 ms, the LBBB pattern that predicts benefit.

**Step 2 – match the therapy: Cardiac resynchronization therapy** (biventricular pacing) re-coordinates ventricular contraction, improving symptoms and survival in selected HFrEF patients.

**Why the other options are wrong:**

- B, CABG: treats coronary disease, not electrical dyssynchrony.
- C, single-chamber ventricular pacing: for bradycardia and would not resynchronize the ventricles.
- D, AV node ablation: used for rate control in refractory atrial fibrillation, not for LBBB dyssynchrony.

**Final Answer:** Cardiac resynchronization therapy  $\Rightarrow$  **A**

Answer: (A) [Go Back to Q3](#)

Q4.

### Solution

**Concept – spirometric confirmation of COPD:** COPD requires objective proof of persistent airflow limitation.

**Step 1 – read the loop:** The scooped-out expiratory limb of the flow-volume loop marked **X** reflects obstruction; the confirming criterion is the FEV1/FVC ratio.

**Step 2 – apply the threshold:** A post-bronchodilator FEV1/FVC ratio **less than 0.70** confirms non-reversible airflow limitation and diagnoses COPD.

**Why the other options are wrong:**

- A and D, greater than 0.80 or greater than 0.90: these are normal or restrictive patterns, not obstruction.
- C, exactly 1.00: physiologically impossible, since FVC always exceeds FEV1.



**Final Answer:** FEV1/FVC less than 0.70  $\Rightarrow$  **B**

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

**Q5.**

### Solution

**Concept – GOLD grading of airflow limitation:** Once COPD is confirmed, severity is graded by the FEV1 percent predicted.

**Step 1 – recall grade 2:** GOLD 2 (moderate) corresponds to **FEV1 50 to 79% predicted**.

**Step 2 – the full scale:** GOLD 1 is greater than or equal to 80%, GOLD 3 is 30 to 49%, and GOLD 4 is less than 30%.

**Why the other options are wrong:**

- A, greater than or equal to 80%: this is GOLD 1 (mild).
- B, less than 30%: this is GOLD 4 (very severe).
- D, 30 to 49%: this is GOLD 3 (severe).

**Final Answer:** FEV1 50 to 79% predicted  $\Rightarrow$  **C**

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

**Q6.**

### Solution

**Concept – complications of portal hypertension:** Raised portal pressure opens porto-systemic collateral channels.

**Step 1 – name the dangerous collateral:** Dilated submucosal veins at the gastro-oesophageal junction form **oesophageal varices**, whose rupture causes torrential, life-threatening upper GI bleeding.

**Step 2 – why it dominates:** Variceal haemorrhage is the leading cause of death directly attributable to portal hypertension.

**Why the other options are wrong:**

- B, caput medusae: dilated periumbilical veins, a visible sign but rarely fatal.
- C, internal haemorrhoids: a collateral that seldom bleeds catastrophically.
- D, splenomegaly: a consequence of portal hypertension, not an acute lethal event.



**Final Answer:** Bleeding oesophageal varices  $\Rightarrow$  A

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

Q7.

### Solution

**Concept – pharmacological reduction of portal pressure:** Lowering portal inflow reduces variceal wall tension and rebleeding risk.

**Step 1 – name the drug class:** A **non-selective beta-blocker** such as propranolol (or carvedilol) is first-line for primary and secondary prophylaxis of variceal bleeding.

**Step 2 – mechanism:** Beta-1 blockade lowers cardiac output while unopposed beta-2 blockade allows splanchnic vasoconstriction, together cutting portal blood flow and pressure.

**Why the other options are wrong:**

- A, loop diuretic: treats ascites, not portal pressure directly.
- B, proton pump inhibitor: reduces acid-related ulcer bleeding, not variceal pressure.
- C, dihydropyridine CCB: can worsen splanchnic vasodilation and is not used.

**Final Answer:** Non-selective beta-blocker  $\Rightarrow$  D

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

Q8.

### Solution

**Concept – diagnosing diabetes by HbA1c:** Glycated haemoglobin reflects average glucose over the preceding 2 to 3 months.

**Step 1 – recall the threshold:** An HbA1c **greater than or equal to 6.5%** is diagnostic of diabetes mellitus (confirmed on a repeat test if the patient is asymptomatic).

**Step 2 – the pre-diabetes band:** HbA1c 5.7 to 6.4% indicates pre-diabetes (increased risk).

**Why the other options are wrong:**

- B, 5.7%: lower limit of pre-diabetes, not diabetes.



- C, 7.0%: a common treatment target, not the diagnostic cut-off.
- D, 8.0%: indicates poor control but is not the diagnostic threshold.

**Final Answer:** HbA1c greater than or equal to 6.5%  $\Rightarrow$  **A**

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

Q9.

### Solution

**Concept – pathophysiology of diabetic ketoacidosis:** The hormone marked X is insulin, which normally lowers blood glucose; its near-absolute deficiency drives DKA.

**Step 1 – list the triad:** DKA is defined by **hyperglycaemia, a high anion-gap metabolic acidosis and ketonaemia** (ketones in blood and urine).

**Step 2 – the mechanism:** Without insulin, unrestrained lipolysis floods the liver with free fatty acids that are converted to ketoacids, consuming bicarbonate and widening the anion gap.

**Why the other options are wrong:**

- A, metabolic alkalosis: DKA causes acidosis, not alkalosis.
- C, hypoglycaemia: DKA is a hyperglycaemic state.
- D, normal pH and absent ketones: contradicts the defining acidosis and ketosis.

**Final Answer:** Hyperglycaemia, high anion-gap acidosis and ketonaemia  $\Rightarrow$  **B**

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

Q10.

### Solution

**Concept – classifying chronic diabetic complications:** Long-term damage is split into microvascular and macrovascular disease.

**Step 1 – match the triad:** Retinopathy, nephropathy and peripheral neuropathy affect small vessels and are the classic **microvascular** complications.

**Step 2 – contrast:** Macrovascular disease involves large arteries (coronary, cerebral, peripheral).

**Why the other options are wrong:**



- A, macrovascular: refers to ischaemic heart disease, stroke and peripheral arterial disease.
- B, acute metabolic: describes DKA and hyperosmolar states, not these chronic organ changes.
- D, infective: diabetics are prone to infection, but retinopathy/nephropathy/neuropathy are vascular, not infective.

**Final Answer:** Microvascular complications ⇒ C

Answer: (C) [Go Back to Q10](#)

Q11.

### Solution

**Concept – first imaging in acute stroke:** Before any clot-busting treatment, haemorrhage must be excluded.

**Step 1 – name the test:** A **non-contrast CT of the head** is the immediate first-line scan; it is fast and reliably detects acute intracranial bleeding.

**Step 2 – why it matters:** Thrombolysis is absolutely contraindicated in haemorrhagic stroke, so bleeding must be ruled out first.

**Why the other options are wrong:**

- A, contrast MRI: more sensitive for early ischaemia but slower and less available as the first step.
- C, carotid Doppler: assesses carotid stenosis later, not the acute decision.
- D, lumbar puncture: reserved for suspected subarachnoid haemorrhage when CT is negative, not the first step in stroke.

**Final Answer:** Non-contrast CT of the head ⇒ B

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

Q12.

### Solution

**Concept – the thrombolysis time window:** Intravenous alteplase works only when given early, before irreversible infarction.

**Step 1 – recall the window:** IV thrombolysis is generally given within **4.5 hours** of symptom onset in eligible ischaemic stroke patients.

**Step 2 – beyond the window:** Later presentations may still be treated by me-



chanical thrombectomy in selected large-vessel occlusions, but not by routine IV thrombolysis.

**Why the other options are wrong:**

- A and B, 24 or 12 hours: far beyond the licensed thrombolysis window.
- D, 48 hours: well outside any thrombolysis window.

**Final Answer:** Within 4.5 hours  $\Rightarrow$

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

**Q13.**

### Solution

**Concept – the CD4 definition of AIDS:** HIV progressively destroys CD4 T-helper lymphocytes.

**Step 1 – recall the cut-off:** AIDS is defined in an HIV-positive adult when the CD4 count falls **below 200 cells per cubic millimetre** (or on the appearance of an AIDS-defining illness).

**Step 2 – clinical meaning:** Below 200, the risk of opportunistic infections such as Pneumocystis pneumonia rises sharply.

**Why the other options are wrong:**

- A, 500: still relatively preserved immunity.
- B, 350: a historic treatment-initiation threshold, not the AIDS cut-off.
- D, 800: within the normal CD4 range.

**Final Answer:** CD4 below 200 cells per cubic millimetre  $\Rightarrow$

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

**Q14.**

### Solution

**Concept – Pneumocystis jirovecii pneumonia (PCP):** PCP is a hallmark opportunistic infection once CD4 drops below 200.

**Step 1 – name the drug: Co-trimoxazole** (trimethoprim-sulfamethoxazole) is first-line both for treating active PCP and for prophylaxis.

**Step 2 – when to start prophylaxis:** Prophylaxis begins once CD4 falls below



200 and continues until immune recovery on antiretroviral therapy.

**Why the other options are wrong:**

- A, azithromycin: prophylaxis against *Mycobacterium avium* complex, not PCP.
- C, fluconazole: used for cryptococcal or candidal infection.
- D, isoniazid: for latent tuberculosis, not PCP.

**Final Answer:** Co-trimoxazole ⇒ B

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

**Q15.**

### Solution

**Concept – first-line antiretroviral therapy (ART):** Modern ART uses a three-drug regimen to fully suppress viral replication.

**Step 1 – name the preferred third agent:** The backbone of two NRTIs is combined with an **integrase strand transfer inhibitor** (for example dolutegravir), the preferred first-line third drug.

**Step 2 – why:** Integrase inhibitors offer rapid viral suppression, a high barrier to resistance and good tolerability.

**Why the other options are wrong:**

- A, a protease inhibitor alone: single-agent therapy invites resistance and is not used.
- B, a single additional NRTI: gives dual therapy, which is inadequate.
- C, zidovudine monotherapy: outdated and rapidly selects resistance.

**Final Answer:** An integrase strand transfer inhibitor ⇒ D

Answer: (D) [Go Back to Q15](#)



**Answer Key**

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

