INI CET Medicine

Sample Paper – 8

Duration: 14 Minutes **Maximum Marks: 15**

Instructions

- This paper contains **15** Multiple Choice Questions (Single Best Response), modelled on the Medicine (Internal 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. A young athlete has exertional syncope, a harsh systolic murmur that increases on standing, and asymmetric septal hypertrophy on echocardiography. The most likely diagnosis is:

(A) Dilated cardiomyopathy

(B) Hypertrophic obstructive cardiomyopathy

(C) Restrictive cardiomyopathy

(D) Arrhythmogenic right ventricular cardiomyopathy

Q2. Which cardiomyopathy is characterised by dilation of all four chambers with a markedly reduced ejection fraction and eccentric (systolic) heart failure?

(A) Dilated cardiomyopathy

(B) Hypertrophic obstructive cardiomyopathy

(C) Restrictive cardiomyopathy

(D) Peripartum cardiomyopathy resolving fully in every case

Q3. A patient with amyloidosis has a stiff, non-compliant ventricle, preserved ejection fraction, and predominant right heart failure with a normal-sized cavity. This pattern is typical of:

(A) Dilated cardiomyopathy

(B) Restrictive cardiomyopathy

(C) Hypertrophic obstructive cardiomyopathy

(D) Ischaemic cardiomyopathy

Respiratory Medicine

Q4. A patient with an acute severe asthma attack has an arterial blood gas showing PaO_2 55 mmHg and $PaCO_2$ 30 mmHg. This picture represents:

(A) Type II respiratory failure

(B) Normal arterial blood gas

(C) Metabolic alkalosis

(D) Type I respiratory failure

Q5. An obese man with loud snoring, witnessed apnoeas, and daytime somnolence is diagnosed with obstructive sleep apnoea. The single most effective long-term treatment is:

(A) Long-term oral theophylline

(B) Nocturnal benzodiazepine

(C) Continuous positive airway pressure (CPAP)

(D) Domiciliary long-term oxygen alone

Gastroenterology and Hepatology

Q6. The recommended first-line population screening test for colorectal cancer in average-risk adults, offered before colonoscopy in most programmes, is:

(A) Faecal immunochemical (occult blood) test

(B) Serum carcinoembryonic antigen (CEA)

(C) Barium enema

(D) Abdominal ultrasound

Q7. Which chronic infection is the strongest recognised risk factor for distal (non-cardia) gastric adenocarcinoma?

(A) Hepatitis C virus

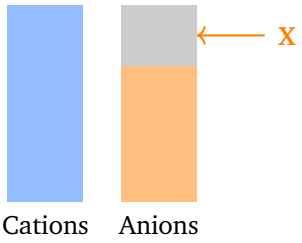
(B) Epstein-Barr virus alone

(C) Helicobacter pylori

(D) Giardia lamblia

Endocrinology and Nephrology

Q8. The acid-base bar diagram shows measured cations and anions. The unmeasured gap marked **X** (calculated as Na^+ minus [Cl^- + HCO_3^-]) is the:



(A) Anion gap

(B) Osmolar gap

(C) Base excess

(D) Bicarbonate deficit

Q9. A patient in diabetic ketoacidosis has pH 7.20, HCO_3^- 8 mmol/L, and Na^+ 140, Cl^- 100 mmol/L. The acid-base disturbance is:

(A) Normal anion gap metabolic acidosis

(B) Metabolic alkalosis

(C) High anion gap metabolic acidosis

(D) Respiratory acidosis

Q10. In a pure metabolic acidosis, the expected respiratory compensation is:

(A) A rise in $PaCO_2$ (hypoventilation)

(B) No change in $PaCO_2$

(C) A fall in $PaCO_2$ (hyperventilation)

(D) A rise in serum bicarbonate

Neurology

Q11. A 72-year-old woman has an insidious, progressive loss of short-term memory over three years, with early hippocampal atrophy on MRI and amyloid plaques with neurofibrillary tangles pathologically. The most likely diagnosis is:

(A) Vascular dementia

(B) Alzheimer disease

(C) Frontotemporal dementia

(D) Normal ageing

Q12. An elderly man has subacute cognitive decline with a peripheral neuropathy and macrocytic anaemia. Which readily reversible cause of dementia must be excluded?

(A) Alzheimer disease

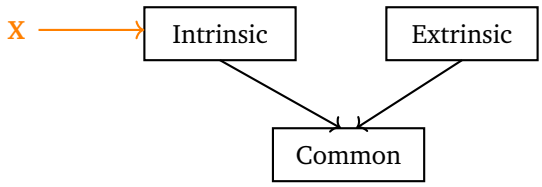
(B) Lewy body dementia

(C) Huntington disease

(D) Vitamin B12 deficiency

Infectious Diseases, Hematology and Rheumatology

Q13. The coagulation-cascade diagram shows two arms converging on a common pathway. The intrinsic arm (marked **X**) is assessed by which laboratory test?



(A) Activated partial thromboplastin time (aPTT)

(B) Prothrombin time (PT)

(C) Bleeding time

(D) Platelet count

Q14. A boy has recurrent haemarthroses, a prolonged aPTT with a normal PT and platelet count, and reduced factor VIII activity. The diagnosis is:

(A) Immune thrombocytopenia

(B) Haemophilia A

(C) von Willebrand disease with normal factor VIII

(D) Vitamin K deficiency

Q15. A septic patient develops bleeding from venepuncture sites with a low platelet count, prolonged PT and aPTT, low fibrinogen, and raised D-dimer. The most likely diagnosis is:

(A) Immune thrombocytopenia

(B) Haemophilia B

(C) Isolated vitamin K deficiency

(D) Disseminated intravascular coagulation (DIC)

Detailed Solutions

Q1.

Solution

Concept – hypertrophic obstructive cardiomyopathy: Dynamic outflow obstruction in a young athlete.

Step 1 – read the clues: Exertional syncope, asymmetric septal hypertrophy, and a murmur that gets louder on standing point to **HOCM**.

Step 2 – explain the murmur: Standing reduces venous return (preload), which worsens the dynamic left ventricular outflow obstruction and makes the murmur louder.

Why the other options are wrong:

- A, dilated: a dilated, thin-walled ventricle, not septal hypertrophy.
- C, restrictive: stiff ventricle with normal wall thickness, not asymmetric hypertrophy.
- D, ARVC: fibrofatty right ventricle causing arrhythmias, no septal hypertrophy.

Final Answer: Hypertrophic obstructive cardiomyopathy $\Rightarrow$ $\boxed{\text{B}}$

Answer: (B) Go Back to Q1

Q2.

Solution

Concept – dilated cardiomyopathy: A big, weak, poorly contracting heart.

Step 1 – match the description: Four-chamber dilation with a low ejection fraction and systolic (eccentric) heart failure defines **dilated cardiomyopathy**.

Step 2 – mechanism: The ventricle enlarges and contractility falls, so stroke volume and ejection fraction drop.

Why the other options are wrong:

- B, HOCM: thick, hypercontractile ventricle with preserved ejection fraction.
- C, restrictive: normal cavity size with impaired filling.
- D, peripartum: a form of dilated cardiomyopathy, but it does not resolve fully in every case, so the statement is false.

Final Answer: Dilated cardiomyopathy $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q2

Q3.

Solution

Concept – restrictive cardiomyopathy: Stiff walls impair filling, not emptying.

Step 1 – match amyloidosis: A stiff, non-compliant ventricle with a normal cavity, preserved ejection fraction, and right heart failure is **restrictive cardiomyopathy**.

Step 2 – mechanism: Infiltration (here amyloid) raises diastolic stiffness, so filling is impaired while systolic function is initially preserved.

Why the other options are wrong:

- A, dilated: enlarged cavity with poor systolic function.
- C, HOCM: asymmetric hypertrophy with outflow obstruction.
- D, ischaemic: regional wall-motion defects from coronary disease.

Final Answer: Restrictive cardiomyopathy $\Rightarrow$ B

Answer: (B) Go Back to Q3

Q4.

Solution

Concept – classifying respiratory failure: Look at PaO_2 and $PaCO_2$ together.

Step 1 – read the gas: PaO_2 55 mmHg (low) with $PaCO_2$ 30 mmHg (low, from tachypnoea) is **Type I respiratory failure** (hypoxaemia without hypercapnia).

Step 2 – interpret the CO_2: In early acute asthma the patient hyperventilates and blows off CO_2; a rising or normal CO_2 later would signal tiring and impending Type II failure.

Why the other options are wrong:

- A, Type II: needs a high $PaCO_2$ (>45 mmHg), absent here.
- B, normal: PaO_2 55 mmHg is clearly hypoxaemic.
- C, metabolic alkalosis: a low CO_2 here is respiratory, not a primary metabolic process.

Final Answer: Type I respiratory failure $\Rightarrow$ D

Answer: (D) Go Back to Q4

Q5.

Solution

Concept – obstructive sleep apnoea: Repeated upper-airway collapse in sleep.

Step 1 – name the treatment: Continuous positive airway pressure (CPAP) splints the airway open and is the most effective long-term therapy.

Step 2 – add-ons: Weight loss and avoiding alcohol and sedatives help, but CPAP is the mainstay for moderate to severe disease.

Why the other options are wrong:

- A, theophylline: not a treatment for obstructive sleep apnoea.
- B, benzodiazepine: worsens apnoea by relaxing airway muscles.
- D, oxygen alone: does not prevent the mechanical airway collapse.

Final Answer: Continuous positive airway pressure (CPAP) $\Rightarrow$ $\boxed{C}$

Answer: (C) Go Back to Q5

Q6.

Solution

Concept – colorectal cancer screening: A simple stool test comes first.

Step 1 – name the test: The **faecal immunochemical test (FIT)** detects occult blood and is the first-line screening test in average-risk adults.

Step 2 – follow-up: A positive FIT prompts colonoscopy for direct visualisation and biopsy.

Why the other options are wrong:

- B, CEA: used for monitoring known cancer, not screening.
- C, barium enema: largely replaced by colonoscopy.
- D, ultrasound: not a colorectal screening tool.

Final Answer: Faecal immunochemical (occult blood) test $\Rightarrow$ $\boxed{A}$

Answer: (A) Go Back to Q6

Q7.

Solution

Concept – gastric cancer risk: A treatable infection drives most cases.

Step 1 – name it: Helicobacter pylori is the strongest risk factor for distal gastric adenocarcinoma and is a WHO class I carcinogen.

Step 2 – mechanism: Chronic gastritis leads to intestinal metaplasia, dysplasia, and cancer.

Why the other options are wrong:

- A, hepatitis C: linked to liver cancer, not gastric.
- B, EBV alone: associated with a minority of gastric cancers, not the strongest overall risk.
- D, Giardia: causes malabsorption, not gastric cancer.

Final Answer: Helicobacter pylori $\Rightarrow$ $\boxed{\text{C}}$

Answer: (C) Go Back to Q7

Q8.

Solution

Concept – the anion gap: Unmeasured anions balance the charge.

Step 1 – identify X: The gap between measured cations and measured anions, calculated as Na^+ minus $[Cl^- + HCO_3^-]$, is the **anion gap**.

Step 2 – normal value: Roughly 8 to 12 mmol/L; a raised gap signals extra unmeasured acids.

Why the other options are wrong:

- B, osmolar gap: difference between measured and calculated osmolality.
- C, base excess: a measure of metabolic acid-base status, not this bar difference.
- D, bicarbonate deficit: an amount used for replacement, not the diagram.

Final Answer: Anion gap $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q8

Q9.

Solution

Concept – acid-base in DKA: Ketoacids add unmeasured anions.

Step 1 – calculate the gap: Anion gap = Na^+ minus [Cl^- + HCO_3^-] = 140 - (100 + 8) = 32 mmol/L, which is high.

Step 2 – interpret: A low pH with a low bicarbonate and a raised gap is a **high anion gap metabolic acidosis**, driven here by ketoacids.

Why the other options are wrong:

- A, normal gap acidosis: gap would be normal (e.g. diarrhoea), not 32.
- B, alkalosis: pH is low, not high.
- D, respiratory acidosis: driven by a high CO_2, not a low bicarbonate.

Final Answer: High anion gap metabolic acidosis $\Rightarrow$ C

Answer: (C) Go Back to Q9

Q10.

Solution

Concept – respiratory compensation: The lungs offset a metabolic acid load.

Step 1 – name the response: In metabolic acidosis the patient hyperventilates, so $PaCO_2$ **falls** (Kussmaul breathing).

Step 2 – quantify: Winter's formula predicts the expected CO_2: expected $PaCO_2$ = 1.5 $\times$ HCO_3^- + 8 ($\pm$2).

Why the other options are wrong:

- A, rising CO_2: this is compensation for a metabolic alkalosis, the opposite.
- B, no change: compensation always shifts CO_2.
- D, rising bicarbonate: bicarbonate is already low and does not rise as compensation.

Final Answer: A fall in $PaCO_2$ (hyperventilation) $\Rightarrow$ C

Answer: (C) Go Back to Q10

Q11.

Solution

Concept – Alzheimer disease: The commonest neurodegenerative dementia.

Step 1 – read the clues: Insidious, progressive short-term memory loss with hippocampal atrophy and amyloid plaques plus neurofibrillary tangles defines **Alzheimer disease**.

Step 2 – pathology: Extracellular beta-amyloid plaques and intracellular tau tangles drive neuronal loss.

Why the other options are wrong:

- A, vascular dementia: stepwise decline with infarcts, not this pathology.
- C, frontotemporal: early personality and behaviour change, frontal atrophy.
- D, normal ageing: does not cause progressive functional decline or hippocampal atrophy.

Final Answer: Alzheimer disease $\Rightarrow$ B

Answer: (B) Go Back to Q11

Q12.

Solution

Concept – reversible dementia: Some causes are correctable if found.

Step 1 – match the clues: Cognitive decline with peripheral neuropathy and macrocytic anaemia points to **vitamin B12 deficiency**, a reversible cause.

Step 2 – act: B12 replacement can halt or reverse the decline, so it must be excluded in every dementia work-up.

Why the other options are wrong:

- A, Alzheimer disease: irreversible and lacks neuropathy or macrocytosis.
- B, Lewy body dementia: fluctuating cognition, visual hallucinations, parkinsonism.
- C, Huntington disease: inherited chorea, not a reversible cause.

Final Answer: Vitamin B12 deficiency $\Rightarrow$ D

Answer: (D) Go Back to Q12

Q13.

Solution

Concept – testing the coagulation pathways: Each arm has its own screening test.

Step 1 – identify X: The intrinsic pathway is assessed by the **activated partial thromboplastin time (aPTT)**.

Step 2 – pair the tests: The extrinsic pathway is measured by the prothrombin time (PT); both converge on the common pathway.

Why the other options are wrong:

- B, PT: tests the extrinsic pathway (factor VII), not the intrinsic arm.
- C, bleeding time: assesses platelet and vessel function.
- D, platelet count: a number of platelets, not a coagulation-factor test.

Final Answer: Activated partial thromboplastin time (aPTT) $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q13

Q14.

Solution

Concept – haemophilia A: An X-linked factor VIII deficiency.

Step 1 – read the panel: Recurrent haemarthroses with a prolonged aPTT, normal PT and platelets, and low factor VIII activity define **haemophilia A**.

Step 2 – explain the tests: Factor VIII is intrinsic-pathway, so only the aPTT is prolonged; PT (extrinsic) and platelet count stay normal.

Why the other options are wrong:

- A, immune thrombocytopenia: low platelets with bleeding, not a factor deficiency.
- C, von Willebrand disease: factor VIII would be low too, but the classic exam vignette of isolated low factor VIII with haemarthroses is haemophilia A.
- D, vitamin K deficiency: prolongs PT and aPTT (multiple factors), not isolated factor VIII.

Final Answer: Haemophilia A $\Rightarrow$ $\boxed{\text{B}}$

Answer: (B) Go Back to Q14

Q15.

Solution

Concept – disseminated intravascular coagulation: Consumption of platelets and clotting factors.

Step 1 – read the panel: Sepsis with diffuse bleeding, low platelets, prolonged PT and aPTT, low fibrinogen, and raised D-dimer defines **DIC**.

Step 2 – mechanism: Widespread activation of coagulation consumes platelets and factors and drives fibrinolysis, so D-dimer rises.

Why the other options are wrong:

- A, immune thrombocytopenia: isolated low platelets with normal PT, aPTT, and fibrinogen.
- B, haemophilia B: isolated prolonged aPTT, not this global consumptive picture.
- C, vitamin K deficiency: prolongs PT and aPTT but does not lower platelets or fibrinogen or raise D-dimer.

Final Answer: Disseminated intravascular coagulation (DIC) $\Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q15

Answer Key

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