# 11.4 Cardiovascular and renal drugs

Name: _____ Class: _____ Date: _____ **Total: 24 marks**

**KEY WORDS** diuretic • anticoagulant

## Objective

Mechanisms to pressures; sites to electrolytes; monitors to anticoagulants.

## 1 Key knowledge and worked examples

### ■ Steps and sites

Antihypertensives: volume (diuretics), ACE inhibitors (bradykinin cough), ARBs, CCBs, $\beta$1 blockers ✓. Diuretic sites: loop ($Na^+$-$K^+$-$2Cl^-$, ~25 % $Na^+$), thiazide (distal), K-sparing (collecting duct) ✓.

### ■ Worked example: monitors

Heparin immediate → aPTT; warfarin blocks NEW factor carboxylation → INR after days of factor decay ✓; DOACs: one factor, predictable.

## 2 Practice

**2.1** Which antihypertensive class causes a dry bradykinin cough? [3]

**2.2** Which nephron segment does the thiazide act on? [3]

**2.3** Which test monitors warfarin? [3]

## 3 Exam-style questions

**3.1** Three illustrative diuretics at their sites: loop, thiazide, K-sparing.

For each, state the transport target and rank the $Na^+$ effect (loop ~25 % > thiazide > K-sparing) ✓. Predict the electrolyte fingerprint of the loop agent ($K^+$ loss, $Ca^{2+}$ loss via downstream flow) versus the K-sparing agent ($K^+$ retained) ✓. [8]

**3.2** A fictional patient on warfarin starts an illustrative course of an enzyme-inhibiting antibiotic; a second starts an enzyme inducer.

Predict each INR direction (inhibitor → INR rises; inducer → INR falls) with the kinetic reason (substrate cleared slower vs faster) ✓. Explain why warfarin's onset lags days regardless (stored factors must decay; it blocks carboxylation of NEW factors) ✓. [7]