QUESTION 17
A 66-year-old man with chronic obstructive pulmonary disease (COPD) has a forced expiratory volume one second (FEV₁) of 0.5 L (27% of the predicted value). An overnight screening oximetry study with measurement of transcutaneous carbon dioxide (tcCO₂) is shown below for the period 23.00 hours to 04.00 hours.

Which one of the following is the most likely mechanism of sleep-related oxygen desaturation in this man?
A. Central sleep apnoea.
B. Obstructive sleep apnoea.
C. Bronchospasm.
D. Hypoventilation.
E. Ventilation-perfusion mismatching.

The data provided in the question indicate:
1. Severe COPD – FEV₁ < 40%
2. Evidence of nocturnal hypoxaemia

In COAD there are two main mechanisms of sleep related hypoxaemia
1. Alveolar hypoventilation which is the most common – can occur in healthy people and is occurs especially in REM sleep
2. Ventilation – perfusion mismatching – not as much evidence

Central Sleep apnoea and obstructive sleep apnoea are diseases process that may occur in conjunction with COPD but not because of

Bronchospasm most common in asthma

The answer is D

Ref; editorial Is Chronic Obstructive Pulmonary Disease related to sleep apnea-hypopnea syndrome? Discusses results from The Sleep Heart Health Study
American Journal of Respiratory and critical care med vol 167 2003 pg3-4