2020

PHYSIOLOGY — HONOURS

Paper : CC-7

Full Marks : 50

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Group - A

1. Answer ***any five*** questions :

(a) What is dead space? What is its normal value? 1+1

(b) What is infant respiratory distress syndrome? 2

(c) What is J-reflex? 2

(d) What is maximum voluntary ventilation test? 2

(e) What is Cyanosis? 2

(f) What is reverse chloride shift? 2

(g) What is cystic fibrosis? 2

(h) What is vital capacity? What is its significance? 1+1

(i) State the composition and partial pressure of inspired air, expired air and alveolar air. 2

(j) What is Cheyne-Stoke breathing? 2

Group - B

2. Answer ***any two*** questions :

(a) What are lung function tests? Mention its significance. 3+2

(b) Describe the pressure-volume relationship during inspiration and expiration. 5

(c) State the composition and functions of pulmonary surfactant. 3+2

(d) What is airway resistance? Discuss the factors affecting airway resistance. 2+3

(e) Write a short note on — CO_2 dissociation curve. What is interdependence? 3+2

Group - C

3. Answer ***any three*** questions :

(a) (i) What are Hering-Breuer inflation and deflation reflex?

(ii) Discuss the role of respiratory centres and nerves in the control of breathing. 4+6

(b) (i) Mention the location of chemoreceptors in our body.

(ii) Discuss how excess CO_2 and lack of O_2 in blood regulate respiration. 2+4+4

(c) (i) A person's lung volumes were measured and the following results were obtained–

Inspiratory reserve volume = 3.5 lit

Tidal volume = 0.5 lit

Expiratory reserve volume = 1.5 lit

Residual volume = 1 lit.

Calculate Vital Capacity (VC) and Total Lung Capacity (TLC) of the person.

(ii) What is compliance? How compliance curve is altered in emphysema and fibrosis? Explain with reason.

(iii) What is hysteresis? 2+(2+2+2)+2

(d) (i) Draw a labelled diagram of Type II cells of alveolar epithelium and discuss the mechanism of surfactant synthesis by these cells.

(ii) Write a note on work of breathing. (2+3)+5

(e) (i) Discuss the role of chloride shift in CO_2 loading.

(ii) What is positive cooperativity?

(iii) What is voluntary hyperpnoea? Mention its effect. 5+2+(1+2)
