

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 :

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|---|-----|
| (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 :

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|--|-----|
| (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 :

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|--|-----|
| (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 |

Please Turn Over

- (b) (i) Mention the location of chemoreceptors in our body.
- (ii) Discuss how excess CO₂ and lack of O₂ 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 CO₂ loading.
- (ii) What is positive cooperativity?
- (iii) What is voluntary hyperpnoea? Mention its effect. 5+2+(1+2)
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