Reg. No.										

MANIPAL UNIVERSITY

SECOND YEAR B.Sc. R.T. DEGREE EXAMINATION – JUNE 2007

SUBJECT: PATHOLOGY AND MICROBIOLOGY

Thursday, June 07, 2007

Time: 3 Hrs. Max. Marks: 80

✍ **Answer SECTION – A and SECTION – B in TWO separate answer books.**

SECTION – 'A' : PATHOLOGY : 40 MARKS

1. Define necrosis. What are the different types of necrosis? Discuss the morphology of any one type with examples.

(1+3+4 = 8 marks)

2. Define neoplasia. Discuss the differences between benign and malignant tumours

(2+5 = 7 marks)

3. Write short notes on:

3A. Fate of a thrombus

3B. Ghon complex

3C. Morphology of lepromatous leprosy

3D. Bronchiectasis

3E. Classification of acute leukemia.

(5×5 = 25 marks)

SECTION – 'B' : MICROBIOLOGY : 40 MARKS

4. Define and classify Hypersensitivity. Explain in detail Delayed type Hypersensitivity.

(1+2+5 = 8 marks)

5. Describe pathogenesis and laboratory diagnosis of pulmonary tuberculosis.

(3+4 = 7 marks)

6. Write short notes on any **FIVE**:

6A. Bacterial flagella

6B. Louis Pasteur

6C. Vaccines

6D. Carriers of infection

6E. Bacterial meningitis

6F. Prophylaxis of Rabies

(5×5 = 25 marks)

Reg. No.										

MANIPAL UNIVERSITY

SECOND YEAR B. Sc. R.T. DEGREE EXAMINATION – JUNE 2007

SUBJECT: RESPIRATORY DISEASE PROCESSES

Friday, June 08, 2007

Time: 3 Hrs. Max. Marks: 80

Answer all questions. Draw diagrams wherever necessary.

1. Enumerate risk factors and common cell types of pulmonary carcinoma. Add a note on staging and management of small cell carcinoma.

(16 marks)

2. Enumerate complications of COPD and describe pathophysiology, diagnosis and management of corpulmonale.

(16 marks)

3. Write short notes on:

3A. Enumerate the problems in drowning victims. How will you manage a patient of drowning brought to casualty unconscious?

(4+4 = 8 marks)

3B. Non invasive ventilation.

(8 marks)

3C. Pathogenesis of pneumonia.

(8 marks)

3D. Polysomnography.

(8 marks)

3E. Tuberculous empyema.

(8 marks)

3F. Montelukast.

(8 marks)

Reg. No.										

MANIPAL UNIVERSITY

SECOND YEAR B. Sc. R.T. DEGREE EXAMINATION – JUNE 2007

SUBJECT: DIAGNOSTIC TECHNIQUES

Saturday, June 09, 2007

Time: 3 Hrs. Max. Marks: 80

Answer ALL the questions. Draw diagrams wherever necessary.

1A. Indices for evaluating status of ventilation and oxygenation from an arterial blood gas report.

1B. Study the following case scenarios and comment on the status of oxygenation, status of ventilation, acid-base status, V_D/V_T ratio and what change in ventilatory parameters need to be effected to correct the abnormal blood gases.

A 20- year old victim of head injury has been on ventilatory support for 2 weeks (SIMV rate of 20 breaths per minute, a tidal volume of 600 mL and an FIO_2 of 0.25). His arterial blood gas analysis reveals Pao_2 110 mmHg, $PaCO_2$ 22 mmHg, pH 7.45 and HCO_3 14 mmol/L. (Presume VCO_2 of 200mL/min).

((3+3)+(5×2) = 16 marks)

2. Define ECG electrode and lead. Enumerate the 12-leads that are recorded in a conventional 12-lead electrocardiogram. Identify the location of the surface electrodes for each 12 leads. Describe two methods by which you can calculate the heart rate from an electrocardiogram.

(4+6+6 = 16 marks)

3. Write briefly on:

3A. Describe the steps of collecting an arterial blood sample and discuss how inappropriate collection and transport of the blood sample can give wrong results.

(5+3 = 8 marks)

3B. What is pulmonary capillary wedge pressure (PCWP). Describe how a pressure trace obtained from a pulmonary artery catheter helps in obtaining correct placement of the catheter?

(2+6 = 8 marks)

3C. Radiological features of hydropneumothorax and consolidation.

(8 marks)

3D. Indications, contraindications, hazards and assessment of outcome/test quality of *Methacholine challenge testing*.

(2+2+2+2 = 8 marks)

3E. ECG changes in inferior wall infarction, anterior lateral ischemia, lateral wall myocardial ischemia and supraventricular tachycardia.

(2+2+2+2 = 8 marks)

3F. What is central venous pressure? Describe how it can be measured. What is the significance of central venous pressure?

(1+2+5 = 8 marks)

Reg. No.										

MANIPAL UNIVERSITY

SECOND YEAR B.Sc. R.T. DEGREE EXAMINATION – JUNE 2007

SUBJECT: APPLIED CARDIOPULMONARY ANATOMY AND PHYSIOLOGY

Monday, June 11, 2007

Time: 1½ Hrs. Max. Marks: 40

- **Answer ALL questions.**
- **Draw diagrams wherever necessary.**

1A. Explain the terms "Shunt". What is the normal shunt fraction and what is the cause of this shunt? Enumerate two clinical conditions resulting in a large shunt fraction.

(2+1+3+2 = 8 marks)

1B. Compute and interpret the P(A-a) O_2 and a/A ratio for a 45 year old patient breathing 70% oxygen at sea level with the following blood gases: PaO_2 50 mmHg and $PaCO_2$ 50 mmHg.

(4+4 = 8 marks)

2. Write short notes on:

2A. Terminal respiratory unit.

2B. Metabolic acidosis.

2C. Factors affecting cardiac output.

(8×3 = 24 marks)

Reg. No.										

MANIPAL UNIVERSITY

SECOND YEAR B.Sc. R.T. DEGREE EXAMINATION – JUNE 2007

SUBJECT: RESPIRATORY THERAPY SCEINCE II

Tuesday, June 12, 2007

Time: 3 Hrs. Max. Marks: 80

Answer ALL questions. Draw diagram wherever necessary.

1. Explain the meaning of the term *ventilator* and *ventilatory mode*. Discuss the breathing pattern, control type, control strategy, phase variables for mandatory breaths, phase variables for spontaneous breaths and operational logic for the below mentioned modes of *Hamilton Medical – Galileo ventilator:*

1A. Volume controlled - *SIMV with pressure support.*

1B. Volume controlled – *synchronized CMV.*

1C. Pressure controlled – *SIMV.*

1D. Adaptive support ventilation.

(2+2+3+3+3+3 =16 marks)

2. Explain the meaning of the term *refractory hypoxaemia*. Describe how you will adjust/titrate positive end – expiratory pressure (PEEP) to the optimal level in a patient who has refractory hypoxaemia (The patient has an arterial oxygen tension of 64 mm Hg while on positive pressure ventilation with 80% oxygen and without PEEP in the intensive care unit; he does *not* have a pulmonary artery catheter).

(4+12 = 16 marks)

3. Write briefly on:

3A. Setting the trigger sensitivity level.

3B. CROP index.

3C. Initial setting of ventilatory alarms.

3D. Procedure for decannulation of the trachea (removal of a tracheostomy tube) in a patient who has been successfully weaned from the ventilator after long-term mechanical ventilation.

3E. Spontaneous Breathing Trials (SBT).

3F. Observation of respiratory muscle activity in the patient admitted to an ICU.

(8×6 = 48 marks)