BACHELOR OF PHARMACY HONOURS
FMU5403- PHARMACEUTICAL TECHNOLOGY I- LEVEL 5
FINAL EXAMINATION
DURATION: THREE HOURS

DATE: 06th MARCH 2019 TIME: 1.30 PM- 4.30 PM

Part – B (20 marks)

1.

1.1 Define the term 'relative humidity'

(02 marks)

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1.2. List **two (02)** main factors which affect relative humidity. (02 marks)

I. .....

II. .....

1.3 What are the changes that should be done to the above mentioned factors, in order to decrease relative humidity?

(02 marks)

I. .....

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II. .....

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1.4 Briefly explain how a refrigerant based dehumidifier decrease relative humidity.

(04 marks)

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Index No.....

2.

2.1 List **three (03)** differences between constructional features of rotary vacuum filter and drum drier.

(03 marks)

I. .....

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II. .....

.....

III. .....

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2.2 List **two (02)** methods of controlling drying rate of drum drier. (02 marks)

I. .....

II. .....

2.3 Briefly explain the term 'convective drying' (03 marks)

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2.4 List **four (04)** factors which need to be considered when choosing an equipment for drying. (02 marks)

I. .....

II. .....

III. .....

IV. .....

Index No.....

Part C – (60 marks)

Answer all questions.

1.

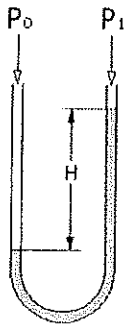
1.1 Write the main difference between the terms 'unit processes' and 'unit operations'

(02 marks)

1.2 What is the difference between absolute pressure and guage pressure of a liquid?

(04 marks)

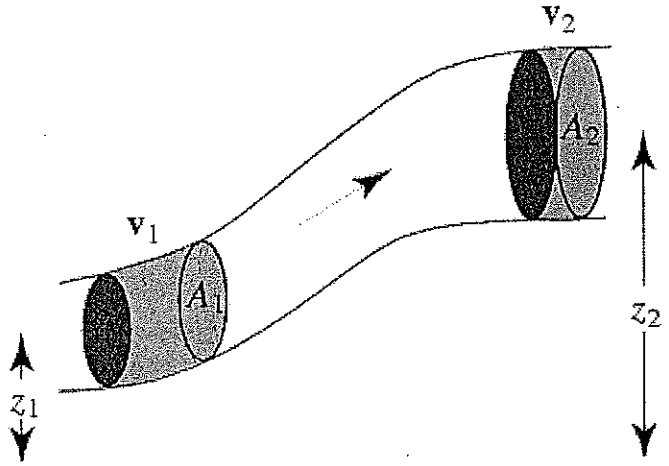
1.3 A simple U tube manometer filled with water (density- 1 g /cm^3) is shown below. The left end of the manometer (which exposed to a pressure of Po) is fitted to a venturimeter and right end is exposed to atmosphere which exert a pressure of P_1. The distance of movement of water (H) due to the pressure difference is 20 cm. Calculate the gauge pressure. (Consider the acceleration due to gravity (g) =10 ms^{-2})



(04 marks)

Index No.....

1.4 A section of a pipe through which a fluid flow is given below.



A_1= cross sectional area of the pipe at narrower end

V_1= velocity of fluid at narrower end

A_2= cross sectional area of the pipe at wider end

V_2= velocity of fluid at wider end

Z_1= height of narrower end related to a reference surface

Z_2= height of wider end related to a reference surface

1.4.1. If A_1= 30 m^2 and V_1= 4 ms^{-1}, calculate the rate of fluid flow through the pipe.

(03 marks)

1.4.2. If A_2 is 50 m^2, then calculate V_2 . (02 marks)

2.

2.1 List **three (03)** mechanisms of heat transfer. (03 marks)

2.2 Write a short note on heat exchangers. (05 marks)

2.3 Calculate the rate of heat transfer through a flat copper plate of 100 mm tall, 150 mm wide and 25 mm thick. The surface temperatures are 100 ^{0}C and 50 ^{0}C. Thermal Conductivity (k) of copper is 385 W/mK.

(07 marks)

Index No.....

3.

3.1 Briefly explain the term 'normal distribution of particle size'. (03 marks)

3.2 Briefly explain how particle size distribution changes over a milling process.

(06 marks)

3.3. Write the difference between size separation process of centrifugal sifter and vibratory sifter.

(06 marks)

4.

4.1 List **three (03)** uses of intermediate bulk containers in pharmaceutical industry.

(03 marks)

4.2 Mixtures can be categorized into three types depending on their behaviour. Mention the **three (03)** types of mixtures and state the characteristics of each type.

(06 marks)

4.3 Briefly explain the difference between mixing processes of planetary mixer and ribbon mixer.

(06 marks)