

Ref. No. : Ex/PG/PHAR/T/127D/2017

Name of the Examinations: M. PHARMACY FIRST YEAR SECOND SEMESTER - 2017

Subject : INDUSTRIAL PHARMACY - II Time : 3 hours Full Marks : 100

Answer any five questions from 3 groups and answer at least one question from each group
Group A

Q1.State different objectives of preformulation studies. How is a drug moiety with potential pharmacological activity screened out from synthetic compounds? Discuss briefly on preformulation parameters to be studied. What are its significances in designing of dosage forms , give examples?
Marks (3+4+10+ 3)

Q2.(a) Factors affecting the values of Volumetric oxygen transfer coefficient K_{La} .

(b) Discuss on gassing out technique 'Static method' and 'Dynamic method' for the determination of K_{La} .
Marks (10+10)

Q. 3(a) What is the significance of power law exponent 'n' in scale up technique? Give physical interpretation for different values of 'n'?

(b) Apply scale-up method for a batch of injectable solution from a 378 liter pilot batch to a 3780 liter production-size batch to determine shaft speed. The injectable solution is Newtonian fluid with density of 1.018 g / cm^3 and a viscosity of $0.0588 \text{ g/(cm/sec)}$ (5.88 cps). The tank used in the manufacturing of the pilot batch had the following parameters:T ,diameter of the tank (D) 74.6 cm, a cross-sectional area 4371 cm^2 .The agitation was accomplished with a turbine-type mixer (diameter 40.64 cm) .The pilot batch was mixed at 90 rpm .

Apply, $N_Q=1.1283 - 1.07118D/T$, considering Reynolds number greater than 2000.The tank used for production batches has a capacity of 3780 L. It is equipped with a turbine-type agitator, which has a shaft speed range of 20–58 rpm.The diameter of this tank is 167 cm. The diameter of the largest axial impeller is 87 cm. Determine the appropriate shaft speed to be used in a 3780-L batch.
Marks (5+15)

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Group-B

Answer at least one question from this group

- Q.4.a) How the stability studies of a dosage form is carried out as per ICH guidelines in India?
- b) What is the importance of forced degradation studies for API and dosage forms? How it is carried out as per ICH guidelines?
- c) What is the normal storage condition for thermolabile API and viral vaccine? Explain the accelerated condition of storage for above products with kinetic rationale. (8+4+4+2+2)
- Q.5.a) Explain the stabilization approaches for a multivitamin liquid formulation.
- b) What are the factors affecting rate of degradation in liquid system? Use mathematical equation and graphical interpretation. (10+10)
- Q.6. Define and explain the following terms with mathematical equations:
- a) Compression and consolidation b) Reason and remedy of Lamination of tablets c) Optimisation of tablet hardness based on crushing strength. d) Decompression and related visco-elastic behavior of granules (8+4+4+4)

M. PHARMACY FIRST YEAR SECOND SEMESTER -2017

INDUSTRIAL PHARMACY-II

TIME: 3 h

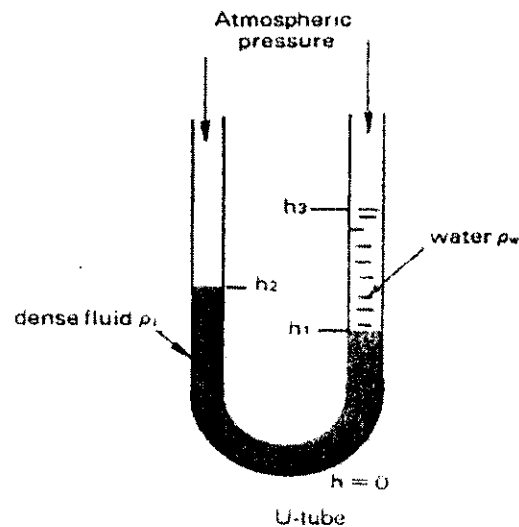
FULL MARKS: 100

ANSWER ANY FIVE QUESTIONS TAKING ATLEAST ONE FROM EACH GROUP

GROUP-C

7.

- a. A simple U-tube can be used to determine the specific gravity "s" of liquids which are denser than water by the arrangement shown below. Derive an expression for "s" in terms of h_1 , h_2 and h_3 .



- b. The flowrate of water in a 150-mm pipeline is measured by a venturimeter with a 50-mm throat. When the pressure drop over the converging section is 120 mm of water, the flow rate is 3 kg/s. Calculate the coefficient of discharge for the converging cone.
- c. Write a short note of rotameter.
- d. Write a short note on major pharmaceutical agents
- e. What are the environmental pollution prevention must be taken in the manufacturing of pharmaceutical products. [4+4+4+4+4=20 marks]

8.

- a. What are the application of Infra-Red Spectroscopy. Write short note on Interpretation of Spectra.
- b. Draw the flowsheet for the electroanalytical methods. Write a short note on pH electrode.
- c. Write the working, inferences and analytical applications of DTA.
- d. What is Bragg's Law of derivation and Duane-Hunt Law. What are the essential parts of X-Ray Diffractometer. What are the limitations of XRD.
- e. Write a short note on separation techniques. Write a short note on Detectors for the gas chromatography process. [4+4+4+4+4=20 marks]

9.

- a. Draw the flowsheet for the optimization parameters.
- b. What are the types of experimental design.

- c. Write a short note on Plackett Burman theory.
- d. Write a short note on Artificial Neural Network and optimization of pharmaceutical formulations.
- e. If 5 factors (Temperature [T], dissolved oxygen [D], agitation rate [A], pH [P] and substrate type [A or B]) are provided, then at 10 days, it would take 1 year to complete the whole experiment. Is it possible to complete the whole experiment in 3 months, if so explain with valid reason? [2+2+4+4+8=20 marks]

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