JHARKHAND Rai University
RANCHI

**End Semester/Reappear (Semester I) Examination December, 2024**

**Programme:BMLT**
**Course:Laboratory Mathematics** **Full Marks: 70**
**Course Code: 42ABMT107** **Time: 3 Hrs.**
**Enrolment no. _____**

| Q.No. | Questions | CO | Bloom Taxonomy Category | Marks |
|---|---|---|---|---|
| | **Section I** | | | |
| 1 | **Short Answer type questions.** | | | **4 x 5 = 20** |
| a | Explain rational number and irrational number. | CO1 | Understand | |
| | or | | | |
| | Discuss Arabic number. | CO1 | Understand | |
| b | If a pint of certain liquid weight is 601 g. Calculate the weight of specific gravity. | CO2 | Apply | |
| | or | | | |
| | Solve the weight in grams of 3620 mL of alcohol with a specific gravity of 0.820. | CO2 | Apply | |
| c | Calculate how many grams of dextrose are required to prepare 4000 mL of a 5% w/v solution? | CO3 | Apply | |
| | or | | | |
| | Express 0.02% as a ratio strength. | CO3 | Understand | |
| d | If 500 mL of a 20% v/v solution are diluted to 2000 mL, calculate the percentage strength (v/v)? | CO4 | Apply | |
| | or | | | |
| | Calculate how much water should be mixed with 500 mL of 85% v/v alcohol to make 50% v/v alcohol. | CO4 | Apply | |
| | **Section II** | | | |
| **Long Answer type questions.** | | | | 3 x 10 = 30 |
| 2 | If a three tablets contains 975 mg of Aspirin. Calculate how many milligram should be contained in 12 tablets? | CO1 | Apply | |
| | or | | | |
| | Define and classify common fraction. | CO1 | Remember | |
| 3 | If the dose of a drug is 50 μg, calculate how many doses are contained in 0.02 g. | CO3 | Apply | |
| | or | | | |
| | Calculate how many grams of potassium permanganate should be used in compounding the following prescription? Potassium permanganate 0.02% w/v Purified water ad 250 mL | CO3 | Apply | |
| 4 | Create the cumulative frequency distribution ( less than and more than) from the following data:<br>Height (cms): 130-134 135-139 140-144 145-149 150-154 155-159<br>No. of girls: 5 12 30 45 18 10 | CO5 | Create | |
| | or | | | |
| | Calculate the mean and median value of the 11 patients having erythrocyte sedimentation rate are as following: 8, 10, 14, 16, 9, 6, 4, 2, 7, 10, 12 | CO5 | Apply | |
| | **Section III** | | | |
| | **Application based questions** | | | **1 x 20 = 20** |
| 5 | Calculate:-<br>a). If 250 mL of alcohol weigh 203 g, what is its density?<br>b). If 150 mL of a sorbitol solution weigh 170 g, what is its specific gravity? | CO2 | Apply | |
| | or | | | |
| | a. Differentiate between density and specific gravity. | CO2 | Analyze | |
| | b. Calculate the weight in grams of 100 mL of the following: i. Acetone ii. Liquid petroleum. | CO2 | Apply | |

At the end of the course candidate will able to
CO1 Students will get proficient in technical details regarding calculations necessary for Laboratory Technology.

CO2 Students will get aware of the International System of Units and required computations used for weighing and measuring in different Laboratory settings.
CO3 Computations of Concentrations and Calculation of Doses have direct applications in medical laboratory technology, so the required skill will be developed with this module.

CO4 Mathematical skill required to compute the Dilution, Concentration, and Allegation in pharmaceutical compounding is of utmost importance in medical laboratory settings, thus, the course will develop competence in the topic.

CO5 Students will develop necessary skills in graphical and statistical techniques used in Laboratory technology.