

**M.E.S. VASANT JOSHI COLLEGE OF ARTS AND COMMERCE, ZUARINAGAR – GOA**  
**B.Com. (NEP) I Semester End (Regular & Repeat) Examination, November, 2024**  
**MC –MATHEMATICAL TECHNIQUES IN COMPETITIVE EXAMS (MAT-131)**

Instructions: i) *All questions are compulsory.*

ii) *Figures to the right indicate full marks.*

iii) *Use of simple (non-scientific) calculator is allowed.*

**Time: 02 Hours**

**Total Marks: 60**

**Q 1. Answer each of the following:**

**(03 × 04 = 12 Marks)**

- i. State compound ratio of 1:5, 4:3 and 5:12
- ii. Define work and state the formula which illustrates that wages are directly proportional to work done.
- iii. If A, B, C and D are quantities of some kind such that A:B=3:4, B:C=5:7 and C:D=8:9 Find A:C and B:D
- iv. State whether the following statement is true or false. Also justify your answer.
  - a. If 18<sup>th</sup> December 2012 is Wednesday then it was Monday on 18<sup>th</sup> December 2011.

**Q 2. Answer any four of the following:**

**(03 × 04 = 12 Marks)**

- i. State Simple Partnership.
- ii. Define Mean Price, Also in what ratio must Tea at Rs 62/kg be mixed with tea at Rs 72/kg so that the mixture must be worth of Rs 64.50 per kg?
- iii. If Rohan can finish off a work 3 times faster than Sujeet and it takes 40 days less than Sujeet. Find the time in which both Rohan and Sujeet can complete the work individually.
- iv. At what time between 7 O'clock and 8 O'clock in the morning will the both hands of the clock will be at right angle?
- v. Amit can row upstream at 15km/hr. and downstream at 20km/hr. find the man's speed in still water and speed of the stream.
- vi. Which of the following is the formula for Banker's discount
  - a.  $\frac{P \times R \times T}{100}$
  - b.  $\frac{T \cdot D \times R \times T}{100}$
  - c.  $\frac{A \times R \times T}{100}$
  - d.  $P(1 + \frac{R}{100})^T$

**Q 3. Answer any three of the following:**

**(04 × 03 = 12 Marks)**

- i. Two containers have milk and water in the ratio 2:1 and 3:1 respectively. If both the containers are emptied into the third container then show the ratio in the third container is 17:7
- ii. Two pipes A and B can fill a tank in 16 hours and 20 hours respectively. If both pipes are opened simultaneously how much time will be taken to fill the tank completely.
- iii. Person A can finish a piece of work in 25 days, B can finish the same piece of work in 35 days and C in 40 days. All these workers work together and earn a profit of Rs 5000. Find the share of A, B and C.

- iv. A Person covers a certain distance with a speed of 30kms/hr in 60 mins. If he changes its speed to 75kms/hr how much time in minutes will he take to cover the same distance?

**Q 4. Answer any three of the following:**

**(04 × 03 = 12 Marks)**

- i. Two friends Sumit and Amit invested Rs 12000 and Rs 6000 respectively for a period of 5 years. After 5 Years they earned a profit of Rs 9000. Show that the share earned by Amit is Rs 3000.
- ii. A person covers 40kms at the speed of 10kms/hr by motorcycle, 25kms at 5km/hr on cycle and another 100kms at 50km/hr by car then find the average speed of the person throughout the journey.
- iii. At present Meena is 8 times her daughter's age. 8 years from now the ratio of their ages i.e. of Meena and daughter will be 10:3. What are Meena and her daughters present ages?
- iv. Two trains of length 75 m and 85 m are moving at the speed of 10m/s and 6m/s respectively then estimate the time taken by the trains to cross each other when
  - a. The trains are moving in the same direction.
  - b. The trains are moving in opposite direction.

**Q 5. Answer each of the following:**

**(06 × 02 = 12 Marks)**

- i. Find the angle between the hour hand and the minute hand when the time is 6.50A.M
- ii. If 20 men can make 40 toys in 60 days by working 20 hours a day in how many days can 40 men can make 80 toys by working 60 hours day?