

Vidya Vikas Mandal's

Shree Damodar College of Commerce & Economics, Margao-Goa

FYBBA/FYBBA(FS), Semester- I, Semester End Assessment NOVEMBER 2023

MDC-MAT-131 Mathematical Techniques in Competitive Exams (OA-38, NEP-2020)

Duration: 2 Hrs

Maximum Marks: 60

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

3) Use of scientific non programmable calculators is allowed.

Q1. Answer each of the following.**3x4=12Marks**

- i) Find the fourth proportion to 4, 16 and 7.
- ii) Define the following.
 - a) Simple partnership
 - b) Compound partnership
- iii) If A and B take 10 and 15 days to complete a piece of work respectively, then in how many days will the work be completed if they work together?
- iv) What is the angle between the hour hand and minute hand of a clock at 9.50am?

Q2. Answer any four of the following.**3x4=12Marks**

- i) What will be Bhakti's average speed if she goes from point A to B at 10km/hr and returns from B to A at 15km/hr?
- ii) An accurate clock shows 4 o'clock in the morning. Through how many degrees will the hour hand rotate when the clock shows 2 o'clock in the afternoon?
- iii) Riya, Saniya and Tina can complete a piece of work in 4, 5 and 6 days respectively. Write the ratio in which they will receive their wages.
- iv) State if the following statement is true or false. Justify your answer.
The relative speed of two trains moving in opposite direction with speeds 4 m/s and 8 m/s is 12 m/s.
- v) Write the duplicate and triplicate ratio of 2:5.
- vi) In what proportion must a grocer mix wheat at Rs.2.04 per kg and wheat at Rs.2.88 per kg so as to make a mixture of worth Rs. 2.52 per kg?

Q3. Answer any three of the following.**4x3=12Marks**

- i) Estimate the true discount for the present worth of Rs 600 for a period of 4 years at 4% per annum rate of interest.
- ii) The ratio between the present ages of Aditya and Vishal is 2:3. Vishal's age 16 years hence will be twice of Aditya's age four years hence. Show that the sum of their present ages is 40.

- iii) A starts a business with Rs 60000. After 3 months B joined the business with Rs. 45,000. At the end of the year, they earn a profit of Rs 42000. Discuss A's share in the profit.
- iv) A boat goes 48km downstream in 20hours. It takes 4hours more to cover the same distance against the stream, Predict the speed of the boat in steam water?

Q4. Answer any three of the following.**4x3=12Marks**

- i) Pipe A can fill a tank in 2hours while another pipe B can empty the tank in 5 hours, Estimate the time taken to completely fill the tank if both the pipes are opened simultaneously?
- ii) Estimate the Banker's discount at a bill of Rs. 12750 due 4 months hence when rate of interest is 6% per annum.
- iii) If 12 men can finish a work in 20 days, then predict the number of days required to complete the same work by 15 men.
- iv) 5 kg of rice costing Rs. 5 per kg is mixed with 3 kg of rice costing Rs. 4 per kg. Discuss the average cost of the mixture.

Q5. Attempt each of the following.**6x2=12 marks**

- i) If 18th October 2023 was a Wednesday, then determine the day on
 - a) 2nd October 2028
 - b) 30th November 2030
- ii) A train moving with uniform speed crosses a pole in 2 seconds and a 250m long bridge in 7seconds. Calculate the length of the train.