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II SEMESTER UG EXAMINATION, JULY/AUGUST 2023

SCHEME: SEMESTER (NEP)

013

OPEN ELECTIVE: MATHEMATICS

TITLE: MATHEMATICS APTITUDE-II

Time: 2 ½ Hours

Max Marks: 60

- Instructions:** 1. Answer all questions.
2. First question carries 12 marks and remaining questions carry 16 marks.

1. Answer any SIX questions. Each question carries two marks 6x2=12
- a) Find the average of all primes numbers between 30 and 50. CO1 LL2
- b) Divide Rs.1162 among A, B, C in the ratio 35:28:20. CO1 LL2
- c) A, B and C started a business by investing Rs.1,20,000 , Rs.1,35,000 and Rs.1,50,000 respectively. Find the share of each, out of an annual profit of Rs.56,700. CO1 LL2
- d) A vendor bought bananas at 6 for Rs.10 and sold them at 4 for Rs.6 . Find his gain or loss percent. CO2 LL2
- e) In what time will Rs.1000 become Rs.1331 at 10% per annum compounded annually? CO2 LL2
- f) A man buys Rs.25 shares in a company which pays 9% dividend. The money invested is such that it gives 10% on investment. At what price did he buy the shares? CO2 LL2
- g) In how many ways can a cricket eleven be chosen out of a batch of 15 players? CO3 LL2
- h) Two unbiased coins are tossed. What is the probability of getting at most one head? CO3 LL2
- i) If the true discount on a certain sum due 6 months hence at 15% is Rs.120, what is the bankers discount on the same sum for the same time and at the same rate? CO3 LL2

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2. Answer any FOUR questions. Each question carries four marks 4x4=16
- a) The population of a town is 1,76,400. If it increases at the rate of 5% per annum, what will be its population 2 years hence? What was it 2 years ago? CO1 LL2
- b) The average weight of A, B, C is 45kg. If the average weight of A & B be 40kg and that of B and C be 43kg, find the weight of B. CO1 LL2
- c) Abhay's age after six years will be three seventh of his father's age. Ten years ago, the ratio of their ages was 1:5. What is Abhay's father's age at present? CO1 LL2
- d) Find: CO1 LL2
- i) The fourth proportional to 4, 9, 12.
- ii) The third proportional to 16 and 36.
- iii) The mean proportional between 0.08 and 0.18
- e) A, B and C start a business each investing Rs.20,000. After 5 months A withdrew Rs.5000, B withdrew Rs.4000 and C invests Rs.6000 more. At the end of the year, a total profit of Rs.69,900 was recorded. Find the share of each. CO1 LL2
- f) In what ratio must water be mixed with milk to gain 20% by selling the mixture at cost price? CO1 LL2
3. Answer any FOUR questions. Each question carries four marks 4x4=12
- a) The price of a jewel, passing through three hands, rises on the whole by 65%. If the first and the second sellers earned 20% and 25% profit respectively, find the percentage profit earned by the third seller. CO2 LL2
- b) After getting two successive discounts, a shirt with a list price of Rs.150 is available at Rs.105. If the second discount is 12.5%, find the first discount. CO2 LL2
- c) A sum of Rs.800 amounts to Rs.920 in 3 years at simple interest. If the interest rate is increased by 3%, it would amount to how much? CO2 LL2
- d) If the simple interest on a sum of money at 5% per annum for 3 years is Rs.1200, find the compound interest on the same sum for the same period at the same rate. CO2 LL2

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e) The difference between the compound interest and the simple interest CO2 LL2
accrued on an amount of Rs.18,000 in 2 years was Rs.405. What was the rate of
interest p.c.p.a?

f) Find the income derived from 88 shares of Rs.25 each at 5 premium, CO2 LL2
brokerage being $\frac{1}{4}$ per share and the rate of dividend being $7\frac{1}{2}$ % per annum.

Also, find the rate of interest on the investment.

4. Answer any FOUR questions. Each question carries four marks 4x4=12

a) How many words can be formed from the letters of the word CO3 LL2
'EXTRA', so that the vowels are never together.

b) i) How many words can be formed by using all letters of the word CO3 LL2
'BIHAR'?

ii) In how many ways, a committee of 5 members can be selected CO3 LL2
from 6 men and 5 ladies, consisting of 3 men and 2 ladies?

c) A bag consists 6 white and 4 black balls. Two balls are drawn at CO3 LL2
random. Find the probability that they are of the same colour.

d) The true discount on a bill due 9 months hence at 12% per annum CO3 LL2
is Rs.540. Find the amount of the bill and its present worth.

e) The banker's discount and the true discount on a sum of money CO3 LL2
due 8 months hence are Rs.120 and Rs.110 respectively. Find the sum and the
rate percent.

f) The present worth of a bill due sometime hence is Rs.1100 and the CO3 LL2
true discount on the bill is Rs.110. Find the banker's discount and the banker's
gain.

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