

**ARUNACHAL PRADESH PUBLIC SERVICE COMMISSION**

**SUBJECT: Commercial Mathematics**

Time: 3 (three) hours

Full Marks: 100

**Q.1) Answer any one of the following: (10)**

- a) A bill was drawn on March 8, at 7 months date and was discounted on May 18, at 5%. If the banker's gain is Rs. 3, find (i) the true discount (ii) the banker's discount and (iii) the sum of the bill.
- b) The difference between simple interest and compound interest on a sum for 2 years at 8%, when the interest is compounded annually is Rs. 16. If the interest were compounded half-yearly, what would be the difference in 2 years?

**Q.2) Answer the following questions: (5 X 4= 20)**

- a) In an examination, 52% of the candidates failed in Mathematics, 42% failed in Science and 17% in both. Find the number of those who passed in both the subjects.
- b) A cycle dealer marks his goods 25% above his cost price and allows a discount of 8% on it. Find his gain percent.
- c) The difference between simple interest and the compound interest on a certain sum of money for 3 years at 10% per annum is Rs. 15.50. Find the sum.
- d) In a class, the number of boys is more than the number of girls by 12% of the total strength. Find the ratio of boys to girls.

**Q.3) Answer the following questions: (2X5=10)**

- a) At what rate per cent per annum will a sum of money double in 8 years?
- b) A sum of money becomes  $\frac{8}{5}$  of itself in 5 years at a certain rate of interest. Find the rate percent per annum.
- c) By selling an article for Rs. 110, a man loses 12%. For how much should he sell it to gain 8%?
- d) 25% of a number is less than 18% of 650 by 19. Find the number.

- e) A game consists of tossing a one rupee coin 3 times and noting its outcome each time. Asha wins if all the tosses give the same result i.e., three heads or three tails, and loses otherwise. Calculate the probability that Asha will lose the game.

**Q.4) Answer any one of the following:**

**(10)**

- a) A owes B, Rs. 1120 payable 2 years hence and B owes A, Rs. 1081.50 payable 6 months hence. If they decide to settle their accounts forthwith by payment of ready money and the rate of interest be 6% per annum, then find out who should pay and how much money to pay.
- b) X's salary is half that of Y. If X got a 50% rise in his salary and Y got a 25% rise in his salary, then find the percentage increase in combined salaries of both.

**Q.5) Answer the following questions:**

**(5X4=20)**

- a) Find the amount of Rs. 1400 invested at 14% during the period from 5<sup>th</sup> Feb. 1994 to 19<sup>th</sup> April. 1994.
- b) A shopkeeper borrowed Rs. 20000 from two money lenders. For one loan he paid 12% and for the other 14% per annum. After one year, he paid Rs. 2560 as interest. How much did he borrow at each rate?
- c) On decreasing the price of fans by 30%, the sale is increased by 20%. What is the effect on money receipt by the shopkeeper?
- d) By selling 45 oranges for Rs. 80, a man loses 20%. How much should he sell for Rs. 48 so as to gain 20% in the transaction?

**Q.6) Answer the following questions:**

**(2X5=10)**

- a) Profit after selling an article for Rs. 425 is the same as loss after selling it for Rs. 355. Find the cost of the article.
- b) Two numbers are less than a third number by 30% and 37% respectively. How much percent is the second number less than the first?
- c) Find the difference between compound interest and the simple interest on a sum of money lent for 2 years at 8%.
- d) The simple interest on a sum of money will be Rs. 600 after 10 years. If the principle is trebled after 5 years, what will be the total interest at the end of 10<sup>th</sup> year?
- e) A piggy bank contains hundred 50p coins, fifty Rs.1 coins, twenty Rs.2 coins and ten Rs.5 coins. If it is equally likely that one of the coins will fall out when the bank is turned upside down, what is the probability that the coin (i) will be a 50 p coin ? (ii) will not be a Rs.5 coin?

**Q.7)** Answer any five of the following:

**(4X5=20)**

- a) A man gains 10% by selling an article for a certain price. If he sells it at double the price, find the profit made by him.
- b) A sum of money trebles itself in 15 years 6 months. In how many years would it double itself?
- c) Out of a sum of Rs. 625, a part was lent at 5% and the other at 10% simple interest. If the interest on the first part after 2 years is equal to the interest on the second part after 4 years, find the second sum.
- d) If 11% of a number exceeds 7% of the same by 18, find the number.
- e) A mixture of 40 liters of milk and water contains 10% water. How much water should be added to it so that water may be 20% in the new mixture?
- f) Find compound interest on Rs. 8000 at 20% per annum for 9 months, compounded quarterly.