Allama Iqbal Open University Matric Solved Assignment Autumn 2024

Code 247 Mathematics-I

Q.1 (a) The Price of 80 shirts is Rs.22000. What would be the price of 30 such shirts? (10)

(b) The gas meter shows that gas was used during a month period. Workout the payable amount inclusive of GST @16%.

Ans:

(a) Price of 30 shirts

1. **Given:**
   - Price of 80 shirts = Rs. 22,000

2. **Calculate the price of one shirt:**
   - Price of 1 shirt = Total Price / Number of shirts = 22,000 / 80 = 275 Rs.

3. **Calculate the price of 30 shirts:**
   - Price of 30 shirts = 30 * Price of 1 shirt = 30 * 275 = 8,250 Rs.

Final Answer for (a): The price of 30 shirts is **Rs. 8,250**.

(b) Payable amount for gas usage including GST

1. **Assumption:** Let the amount of gas used during the month be X Rs.

2. **Given GST rate:**

   - GST = 16%

3. **Calculate the total GST amount:**

   - GST amount = 16% of X = 0.16 * X

4. **Calculate the total payable amount including GST:**

   - Total Payable Amount = Gas Amount + GST Amount = X + 0.16X = 1.16X

Final Answer for (b): The total payable amount for gas usage, including GST, is **1.16X Rs.**, where X is the amount for the gas used.

Q.2 (a) A shop keeper bought 100 hockey balls for Rs.40 each. He sells 20 of them at a profit of 5%. At what profit percent must be sell the remaining so as to get profit 20% on the whole?(10)

(b) A man wants to purchase a car of 1000cc. He has to pay 150% excise duty on price of car. If the price of the car is Rs.5,00,000. How much amount he has to pay to purchase the car?

Ans:

(a) Sale of Hockey Balls

1. **Given:**

   - A shopkeeper bought 100 hockey balls at Rs. 40 each.

   - Total cost = 100 * 40 = Rs. 4,000.

2. **Sale of the first 20 balls:**

   - Selling price per ball = Cost price + 5% profit.

   - 5% profit = 5/100 * 40 = Rs. 2.

   - Selling price per ball = 40 + 2 = Rs. 42.

   - Total selling price for 20 balls = 20 * 42 = Rs. 840.

3. **Total profit target:**

   - Desired profit = 20% of total cost = 20% * 4,000 = Rs. 800.

   - Total required amount = 4,000 + 800 = Rs. 4,800.

4. **Profit from remaining balls:**

   - Remaining balls = 100 - 20 = 80 balls.

   - Amount needed from remaining balls = 4,800 - 840 = Rs. 3,960.

5. **Selling price per remaining ball:**

   - Selling price per remaining ball = 3,960 / 80 = Rs. 49.5.

   - Cost price = Rs. 40.

   - Profit per ball = 49.5 - 40 = Rs. 9.5.

   - Profit percentage = (9.5 / 40) * 100 = 23.75%.

Final Answer for (a): The remaining balls must be sold at a profit percentage of **23.75%** to achieve a total profit of 20%.

(b) Car Purchase and Excise Duty

1. **Given:**

   o Price of the car = Rs. 5,00,000.

   o Excise duty = 150%.

2. **Calculate the total excise duty:**

   o Excise duty = 150% of 5,00,000 = Rs. 7,50,000.

3. **Total amount to be paid:**

   o Total payment = Price of the car + Excise duty.

   o Total payment = 5,00,000 + 7,50,000 = Rs. 13,50,000.

Final Answer for (b): The total amount to pay to purchase the car is **Rs. 13,50,000**.

Q.3(a) Find the compound profit on Rs.1500 for 2 years of 6% payable half yearly. (10)

(b) An article is sold for Rs.1000 after allowing a discount of 7% on the marked price. Find its marked price.

(a) Compound Profit Calculation

1. **Given:**

   o Principal (P) = Rs. 1500

   o Rate (R) = 6% per annum

   o Time (T) = 2 years

- Compounding frequency = half-yearly

2. **Half-yearly rate:**

- Rate per half-year = 6% / 2 = 3%

3. **Number of compounding periods:**

- Total periods = 2 years * 2 = 4 half-years

4. **Compound Interest Formula:**

- $A = P (1 + r/100)^n$

- $A = 1500 (1 + 3/100)^4$

- $A = 1500 (1.03)^4$

5. **Calculate $(1.03)^4$:**

- $(1.03)^4 \approx 1.1255$

- $A \approx 1500 * 1.1255 \approx 1688.25$

6. **Compound Profit:**

- Profit = A - P = 1688.25 - 1500 = 188.25

Final Answer (a): Compound profit is **Rs. 188.25**.

(b) Finding the Marked Price

1. **Given:**

- Selling Price (SP) = Rs. 1000

- Discount = 7%

2. **Let marked price be xxx:**

- SP = MP - Discount

- Discount = 7% of xxx = 0.07x

3. **Set up the equation:**

- o 1000 = x - 0.07x

- o 1000 = 0.93x

4. **Solve for xxx:**

   - o x = 1000 / 0.93 ≈ 1074.73

Final Answer (b): Marked price is approximately **Rs. 1074.73**.

Q.4 (a) An army formation of 900 men has food stock for 30 days. Later on 150 army men leave the formation. For how many days the same food will be sufficient for remaining men? (10)

(b) The total annual income of a person is Rs.6,28,500 and the exempented amount is Rs.1800,000. Calculate the net income tax payable at the rat of 3.5%. If tax deducted at source is Rs.15,000. (10)

Ans:

(a) Food Stock Calculation

1. **Given:**

   - o Total army men = 900

   - o Food stock duration = 30 days

2. **Total food stock:**

   - o Total food stock = 900 men × 30 days = 27,000 man-days.

3. **After 150 men leave:**

   ○ Remaining men = 900 - 150 = 750 men.

4. **Calculate new duration of food stock:**

   ○ New duration = Total food stock / Remaining men

   ○ New duration = 27,000 man-days / 750 men = 36 days.

Final Answer (a): The food will be sufficient for **36 days** for the remaining men.

(b) Net Income Tax Calculation

1. **Given:**

   ○ Total annual income = Rs. 6,28,500

   ○ Exempted amount = Rs. 1,80,000

2. **Calculate taxable income:**

   ○ Taxable income = Total income - Exempted amount

   ○ Taxable income = 6,28,500 - 1,80,000 = Rs. 4,48,500.

3. **Calculate income tax:**

   ○ Tax rate = 3.5%

   ○ Income tax = 3.5% of taxable income = 0.035 × 4,48,500

   ○ Income tax = Rs. 15,695.

4. **Tax deducted at source (TDS):**

   ○ TDS = Rs. 15,000.

5. **Net income tax payable:**

   ○ Net tax payable = Income tax - TDS

   ○ Net tax payable = 15,695 - 15,000 = Rs. 695.

Final Answer (b): The net income tax payable is **Rs. 695**.

Q.5 (a) Aslam, Anwar and Akram earned a profit of Rs.2,50,000 from a business. If their business are in ration 4:7:14 respectively. Find the profit of each.   (10)

(b) Calculate the first, quarterly and monthly premium if age of the insured is 30 year policy amount is Rs.3,00,000, maturity time 25 years, rate of premium

3.5% fixed with policy fee @0.25%.

Ans:

(a) Profit Distribution among Aslam, Anwar, and Aakram

1. **Given:**
   - Total profit = Rs. 2,50,000
   - Profit sharing ratio = 4:7:14

2. **Calculate total parts in the ratio:**
   - Total parts = 4 + 7 + 14 = 25 parts.

3. **Calculate the value of each part:**
   - Value of each part = Total profit / Total parts
   - Value of each part = 2,50,000 / 25 = Rs. 10,000.

4. **Calculate individual profits:**
   - Aslam's profit = 4 parts = 4 × 10,000 = Rs. 40,000.

- ○ Anwar's profit = 7 parts = 7 × 10,000 = Rs. 70,000.
  - ○ Aakram's profit = 14 parts = 14 × 10,000 = Rs. 1,40,000.

Final Answer (a):

- Aslam's profit = **Rs. 40,000**
- Anwar's profit = **Rs. 70,000**
- Aakram's profit = **Rs. 1,40,000**

(b) Calculation of Premiums

1. **Given:**
   - ○ Age of insured = 30 years
   - ○ Policy amount = Rs. 3,00,000
   - ○ Maturity time = 25 years
   - ○ Rate of premium = 3.5%
   - ○ Policy fee = 0.25%

2. **Calculate annual premium:**
   - ○ Annual premium = Rate of premium × Policy amount
   - ○ Annual premium = 3.5% of 3,00,000
   - ○ Annual premium = 0.035 × 3,00,000 = Rs. 10,500.

3. **Calculate policy fee:**
   - ○ Policy fee = 0.25% of Policy amount
   - ○ Policy fee = 0.0025 × 3,00,000 = Rs. 750.

4. **Total annual premium including policy fee:**
   - ○ Total annual premium = Annual premium + Policy fee
   - ○ Total annual premium = 10,500 + 750 = Rs. 11,250.

5. **Calculate quarterly and monthly premiums:**

   o Quarterly premium = Total annual premium / 4

   o Quarterly premium = 11,250 / 4 = Rs. 2,812.50.

   o Monthly premium = Total annual premium / 12

   o Monthly premium = 11,250 / 12 = Rs. 937.50.

Final Answer (b):

- First annual premium = **Rs. 11,250**

- Quarterly premium = **Rs. 2,812.50**

- Monthly premium = **Rs. 937.50**