**COST ESTIMATION**

Capacity of plant = 350 kg/hr  
 = 8400 kg/day

Current selling Price=$20/kg

We assume that operating percentage = 95%

Therefore, annual gross sales are the product of annual production rate and the selling price per unit of production.

Basic assumption is that all product made is sold.

Annual Gross sales= $20/kg X 365 days X 0.95 X 8400 kg/days  
 =$ 5.82 X 107

With the current economy, $1=Rs. 66.41

Therefore, Annual Gross Sales = Rs. 386.502 X 107

The Turnover Ratio = 0.65 (Assumed to be of polymeric material)

Fixed capital investment = Annual Gross Sales /Turnover ratio  
 = (386.502 X 107)/0.65  
 = Rs.594.618 X 107

**ESTIMATION OF TOTAL INVESTMENT COST** :

1. Direct cost:
2. Purchased equipment cost: (15 – 40% of FCI)

Assume 40% of FCI

=Rs. 237.84 X 107

1. Installation cost: (35 -45% of PEC)

Assume 45%

=Rs. 107.03 X 107

1. Instrumentation and control installed: (6-30% of PEC)

Assume 30% of PEC

=Rs. 71.35 X 107

1. Piping installation cost: (10-80% of PEC)

Assume 80%

=Rs. 190.27 X 107

1. Electrical installation cost: (10-40% of PEC)

Assume 40% of PEC

=Rs. 95.14 X 107

1. Building process and auxillary: (10-70% of PEC)

Assume 70% =Rs. 166.5 X 107

1. Service facilities: (30-80% of PEC)

Assume 80%

=Rs 190.272 X 107

1. Yard improvement: (10-15% ofPEC)

Assume 15%

=Rs. 35.67 X 107

1. Land: (4-8% of PEC)

Assume 8%

=Rs. 19.02 X 107

Therefore direct cost = Rs. 1113.092 X 107

**INDIRECT COST**:

Expenses which are not directly involved with material and labour of actual installation or complete facility

1. Engineering and supervision: (5-30% of DC)

Assume 30%

=Rs. 333.92 X 107

1. Construction expenses: (10% of DC)

=Rs. 111.31 X 107

1. Contractors fee: (2-7% of DC)

Assume 7%

=Rs. 77.91 X 107

1. Contingency: (8-20% of DC)

Assume 20%

=Rs. 222.61 X 107

Therefore total indirect cost =Rs. 745.75 x 107

**FIXED CAPITAL INVESTMENT:**

Fixed capital investment (FCI): = DC+IC

=Rs. 1858.842 X 107

**WORKING CAPITAL INVESTMENT:**

(10-20% of FCI)

Assume 15%

=Rs. 278.826 X 107

**TOTAL CAPITAL INVESTMENT**: =FCI+WC

=Rs. 2137.668 X 107

**ESTIMATION OF TOTAL PRODUCT COST (TPC):**

FIXED CHARGES:

1. Depreciation: (10% of FCI for machinery)

=Rs. 185.884 X 107

1. Local taxes: (3-4% of FCI)

Assume 3%

=Rs. 55.765 X 107

1. Insurances: (0.4-1% of FCI)

Assume 0.4%

=Rs. 7.435 X 107

1. Rent: (8-12% of FCI)

Assume 8%

=Rs. 148.707 X 107

Therefore total fixed charges = Rs. 397.791 X 107

But, fixed charges = (10-20% OF TPC)

Assume 20%

Therefore total product cost=Rs. 1988.95 X 107

**DIRECT PRODUCTION:**

1. Raw materials: (10-50% of TPC)

Assume 40%

=Rs. 795.58 X 107

1. Operating labour(OL): (10-20% of TPC)

Assume 15%

=Rs. 298.34 X 107

1. Direct supervisory and electric labour: (10-15% of OL)

Assume 13%

=Rs. 38.78 X 107

1. Utilities: (10-20% of TPC)

Assume 15%

=Rs. 298.342 X 107

1. Maintenance(M): (2 – 10% of FCI)

Assume 8%

=Rs. 148.707 X 107

1. Operating supplies(OS): (10-20% of maintenance)

Assume 15%

=Rs. 22.306 X 107

1. Laboratory charges: (10-20% of OL)

Assume 12%

=Rs. 35.80 X 107

1. Patent and royalties: (2-6% of TPC)

Assume 4%

=Rs. 79.558 X 107

**PLANT OVERHEAD COST:**

50-70% of (OL+OS+M)

Assume 65%

=Rs. 305.08 X 107

**GENERAL EXPENSES**

1. Administration cost: (40-60% of OL)

Assume 50%

=Rs. 149.17 X 107

1. Distribution and selling price: (2-30% of TPC)

Assume 20%

=Rs. 397.79 X 107

1. Research and development cost: (3% of TPC)

=Rs. 59.668 X 107

Therefore general expenses (GE) = Rs. 606.628 X 107

Therefore manufacturing cost (MC) = product cost + fixed charges + plant overhead expenses

=Rs 2691.821 X 107

TOTAL PRODUCTION COST= MC + GE

= Rs. 3298.45 X 107

GROSS EARNING AND RATE OF RETURN:

The plant is working for say 345 days a year

Selling price = 20 x 66.41 =Rs.1328.2/kg

Total income = 1328.2 X 345 X 8400  
 =384.91 X 107

Gross income = total income – total product cost  
 = (3849.1 X 107) – (1988.95 X 107)  
 =Rs. 1860.15 X 107

Assumption: Tax = 35%

Net profit =Rs. 651.052 X 107

Return on Investment (ROI) = Annual Net Profit (after taxes)/Total Capital Investment x 100  
 =930.075 X 107/(2173.668 X 107) x 100  
 =29.9518%