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 10^7

With the current economy, $1=Rs. 66.41

Therefore, Annual Gross Sales = Rs. 386.502 X 10^7

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

Fixed capital investment = Annual Gross Sales /Turnover ratio
= (386.502 X 10^7)/0.65
= Rs.594.618 X 10^7

ESTIMATION OF TOTAL INVESTMENT COST :

1. Direct cost:

a. Purchased equipment cost: (15 – 40% of FCI)
Assume 40% of FCI
=Rs. 237.84 X 10^7

b. Installation cost: (35 -45% of PEC)
Assume 45%
=Rs. 107.03 X 10^7

c. Instrumentation and control installed: (6-30% of PEC)
Assume 30% of PEC
=Rs. 71.35 X 10^7

d. Piping installation cost: (10-80% of PEC)
Assume 80%
=Rs. 190.27 X 10^7

e. Electrical installation cost: (10-40% of PEC)
Assume 40% of PEC
=Rs. 95.14 X 10^7

f. Building process and auxillary: (10-70% of PEC)
   Assume 70% =Rs. 166.5 X 10^7
g. Service facilities: (30-80% of PEC)
   Assume 80%
   =Rs 190.272 X 10^7
h. Yard improvement: (10-15% ofPEC)
   Assume 15%
   =Rs. 35.67 X 10^7
i. Land: (4-8% of PEC)
   Assume 8%
   =Rs. 19.02 X 10^7

Therefore direct cost = Rs. 1113.092 X 10^7

INDIRECT COST:

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

a. Engineering and supervision: (5-30% of DC)
   Assume 30%
   =Rs. 333.92 X 10^7

b. Construction expenses: (10% of DC)
   =Rs. 111.31 X 10^7

c. Contractors fee: (2-7% of DC)
   Assume 7%
   =Rs. 77.91 X 10^7

d. Contingency: (8-20% of DC)
   Assume 20%
   =Rs. 222.61 X 10^7

Therefore total indirect cost =Rs. 745.75 x 10^7

FIXED CAPITAL INVESTMENT:

Fixed capital investment (FCI): = DC+IC

=Rs. 1858.842 X 10^7

WORKING CAPITAL INVESTMENT:

(10-20% of FCI)

Assume 15%
=Rs. 278.826 X 10^7

TOTAL CAPITAL INVESTMENT: =FCI+WC

=Rs. 2137.668 X 10^7

ESTIMATION OF TOTAL PRODUCT COST (TPC):

FIXED CHARGES:

a. Depreciation: (10% of FCI for machinery)
   =Rs. 185.884 X 10^7

b. Local taxes: (3-4% of FCI)
   Assume 3%
   =Rs. 55.765 X 10^7

c. Insurances: (0.4-1% of FCI)
   Assume 0.4%
   =Rs. 7.435 X 10^7

d. Rent: (8-12% of FCI)
   Assume 8%
   =Rs. 148.707 X 10^7

Therefore total fixed charges = Rs. 397.791 X 10^7

But, fixed charges = (10-20% OF TPC)
Assume 20%
Therefore total product cost=Rs. 1988.95 X 10^7

DIRECT PRODUCTION:

a. Raw materials: (10-50% of TPC)
   Assume 40%
   =Rs. 795.58 X 10^7

b. Operating labour(OL): (10-20% of TPC)
   Assume 15%
   =Rs. 298.34 X 10^7

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

Assume 13%
=Rs. 38.78 X 10^7

d. Utilities: (10-20% of TPC)
Assume 15%
=Rs. 298.342 X 10^7

e. Maintenance(M): (2 – 10% of FCI)
Assume 8%
=Rs. 148.707 X 10^7

f. Operating supplies(OS): (10-20% of maintenance)
Assume 15%
=Rs. 22.306 X 10^7

g. Laboratory charges: (10-20% of OL)
Assume 12%
=Rs. 35.80 X 10^7

h. Patent and royalties: (2-6% of TPC)
Assume 4%
=Rs. 79.558 X 10^7

PLANT OVERHEAD COST:

50-70% of (OL+OS+M)
Assume 65%
=Rs. 305.08 X 10^7

GENERAL EXPENSES

a. Administration cost: (40-60% of OL)
Assume 50%
=Rs. 149.17 X 10^7

b. Distribution and selling price: (2-30% of TPC)
Assume 20%
=Rs. 397.79 X 10^7

c. Research and development cost: (3% of TPC)
=Rs. 59.668 X 10^7
Therefore general expenses (GE) = Rs. 606.628 X 10^7

Therefore manufacturing cost (MC) = product cost + fixed charges + plant overhead expenses
=Rs 2691.821 X 10^7

TOTAL PRODUCTION COST= MC + GE
= Rs. 3298.45 X 10^7

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 10^7

Gross income = total income – total product cost
= (3849.1 X 10^7) – (1988.95 X 10^7)
=Rs. 1860.15 X 10^7

Assumption: Tax = 35%

Net profit =Rs. 651.052 X 10^7
Return on Investment (ROI) = Annual Net Profit (after taxes)/Total Capital Investment x 100
=930.075 X 10^7/(2173.668 X 10^7) x 100
=29.9518%