Answer any two – All questions carry equal marks – 2 x 10 = 20 Marks

1. David Austin recently purchased a chain of dry cleaners in northern Wisconsin. Although the business is making a modest profit now, David suspects that if he invests in a new press, he could recognize a substantial increase in profits. The new press costs $15,400 to purchase and install and can press 40 shirts an hour (or 320 per day). David estimates that with the new press, it will cost $0.25 to launder and press each shirt. Customers are charged $1.10 per shirt.
   1. How many shirts will David have to press to break even?
   2. So far, David’s workload has varied from 50 to 200 shirts a day. How long would it take to break even on the new press at the low-demand estimate? at the high- demand estimate?
   3. If David cuts his price to $0.99 a shirt, he expects to be able to stabilize his customer base at 250 shirts per day. How long would it take to break even at the reduced price of $0.99? Should David cut his price and buy the new press?
2. An assembly line with 17 tasks is to be balanced. The longest task is 2.4 minutes, and the total time for all tasks is 18 minutes. The line will operate for 450 minutes per day.
   1. What are the minimum and maximum cycle times?
   2. What range of output is theoretically possible for the line?
   3. What is the minimum number of workstations needed if the maximum output rate is to be sought?
   4. What cycle time will provide an output rate of 125 units per day?
   5. What output potential will result if the cycle time is (1) 9 minutes? (2) 15 minutes?
3. Which are factors you consider for setting up 1 million capacity of EV Car manufacturing facility and why? Suppose three states are competing for such EV Mfg facility such as Karnataka, TN and AP and explain at least 2 methods used to assess these three locations.