**NRU HSE-2020, Microeconomics Class-07**

# Production

**1.** Production function of firm A is given by . The wage of labor is $2 per hour and the rental price of capital is $8 per hour.

**(a)** Assume that in the short run the capital is fixed at . Derive the short run total costs, ATC, AVC and MC.

**(b)** Illustrate AVC, AC and MC. Explain the shapes of AVC, AC and MC.

**(c)** Derive the LR cost function and calculate AC. Explain the shape of AC.

**(d)** Illustrate MCLR, ACLR and ACSR, MCSR for two different levels of capital. Explain the relationships between the LR and the SR curves.

**2.** Suppose that the cost function of the firm is given by .

**(а)** Find the shut down prices.

**(b)** Derive and illustrate the firm’s supply curve.

**3.** Suppose a firm has two plants producing the same product but with different production functions. Plant 1’s production function is  and plant 2’s production function is . The price of a unit of labor is $w.

**(a)** Suppose that currently this firm produces 10 units in each plant. If it can reallocate the production of output between the two plants, should the firm close down plant 1 and produce all 20 units of output in plant 2?

**(b)** Derive the cost function.