1stSemester Regular / Back Examination: 2019-20
BASICS OF MECHANICAL ENGINEERING
Branch : AEIE, AERO, AG, AUTO, BIOMED, BIOTECH, CHEM, CIVIL, CSE, CST, ECE, EEE, EIE, ELECTRICAL, ELECTRICAL & C.E, ELECTRONICS & C.E, ENV, ETC, FASHION, FAT, IEE, IT, ITE, MANUFAC, MANUTECH, MARINE, MECH, METTA, METTAMIN, MINERAL, MINING, MME, PE, PLASTIC, PT, TEXTILE
Max Marks: 100
Time: 3 Hours
Q Code: HRB779
Answer Question No.1 (Part-1) which is compulsory, any eight from Part-II and any two from Part-III.
The figures in the right hand margin indicate marks.

Part- I

Q1 Only Short Answer Type Questions (Answer All-10)   (02x10))
a)   Listthe limitations of first law of thermodynamics.
b)   Define triple point.
c)   Define enthalpy.
d)   What are human comfort conditions?
e)   State two functions of air compressor.
f)   Write two measure advantages of steam power plant.
g)   State the uses of coupling device.
h)   Name two instruments for torque measurements.
i)   Define robot.
j)   Which sensor is used to identify the distance between the obstacle and robot?

Part- II

Q2 Only Focused-Short Answer Type Questions- (Answer Any Eight out of   (06x08)
     Twelve)
a)   Entropy of the universe is increasing. Explain.
b)   Differentiate between DBT and WBT.
c)   Explain the significance of Clausius inequality.
d)   Write short note on internal energy.
e)   Discuss any one velocity measurement instrument with neat sketch.
f)   Distinguish between a heat engine and a refrigerator.
g)   Explain any common type robot configuration with neat sketch.
h)   Explain the working of a thermocouple.
i)   What are different types of gears used in power transmission.
j)   Distinguish between open and closed belt drives.
k)   Explain the different types of brakes.
l)   How the torque is measured using Prony brake dynamometer? Explain.

Only Long Answer Type Questions (Answer Any Two out of Four)

Q3 Write short note on the following:
    a) Use of steam table (8)
    b) Thermodynamic properties of steam (8)

Q4 Describe the working of any one type of boiler with neat sketch. (16)
Q5 Sketch different types of gear trains and explain. (16)

Q6 What are the methods of strain measurement? Explain the working principle of electrical resistance strain gauge. (16)