VISHWAKARMA INSTITUTE OF TECHNOLOGY

Department of Engineering, Sciences and Humanities

FY – 2022-2023 -SEM 1

ES1035: Robot Mechanics and Electronics

HOME ASSIGNMENT NO 5

DC Motors

1) A 4 pole generator with wave wound armature has 51 slots each having 24 conductors. The flux per pole is 10 mWb. At what speed must the armature rotate to give an induced emf of 0.24 kV. What will be the voltage developed, if the winding is lap connected and the armature rotates at the same speed?

2) An 8 pole, wave wounded armature has 600 conductors and is driven at 625 rpm. If the flux per pole is 20 mWb, determine the generated emf.

3) The armature of a four pole DC machine has 100 turns at 600 rpm. The EMF generated is 220V. Find the useful flux per pole when armature is connected in i) Lap connected ii) Wave connected

4) A DC motor is connected to 410 V supply takes current of 130 A. The Armature resistance Ra = 0.15Ω, Field winding resistance Rf = 140 Ω. Calculate the value of back emf at this load.

Important Note: Last date of assignment submission is 15th Feb 2023.