Mansoura University.
Faculty of Engineering.
Electrical Engineering Dept.

2nd Semester.
Exam Date: - - 2019.
Allowable Time: One Hour.

Mid-Term Exam of (Electrical Power Systems – FCR-141)
For Biomedical Engineering students. Full Mark: 12

Name: ..... Group: .....

Question (1): [*4 marks*]

Explain briefly the main parts of the electric power system. You can support your answer by neat sketch.

Question (2): [*4marks*]

A synchronous motor improves the power factor of a load of 200 kW from 0.8 lagging to 0.9 lagging. Simultaneously the motor carries a load of 80 kW. Find (i) the leading kVAr taken by the motor (ii) kVA rating of the motor and (iii) power factor at which the motor operates.

Question (3): [*4 marks*]

A proposed station has the following daily load curve,

hours	6-8	8-11	11-16	16-19	19-22	22-24	24-6
MW	20	40	50	35	70	40	20

i) draw the load curve; ii) find the load factor; iii) select suitable generator units from the 10, 20, 25, 30 MVA; iv) prepare the operation schedule for the selected generators.

Best wishes
Dr. Mohammad Rizk

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uestion (1): [*4 marks*]

Draw speed –torque-current characteristics for shunt and series motors and compare between them.

Question (2): [*4marks*]

A series-connected dc motor has an armature resistance of 0.5 Ω and field winding resistance of 1.5 Ω. In driving a certain load, where the output shaft power and output shaft torque are 3450 W and 27 Nm respectively, from a voltage source V = 220V. The efficiency of this motor is 78%. Find (i) the motor current, (ii) the speed, (iii) power developed and (iv) rotational loss.

Question (3): [*4 marks*]

A stepper motor has a resolution of 1000 steps/rev in the half step mode operation. If it is operated in full step mode, determine (i) resolution, and (ii) number of steps required to turn the rotor through 72°.

Best wishes

Assoc. Prof. Eid Abdel-Baki