



Final Term Examination January 2009

الامتحان من جزأين: من فضلك أجب كل جزء من الامتحان في اتجاه مختلف من ورقة الإجابة.

Answer All Questions.

**FIRST QUESTION:**

- 1-a) Compare between distribution and power transformer? **5 Marks**
- 2-a) Deduce the condition of the load power-factor at (minimum and maximum) transformer voltage regulation? **5 Marks**
- 1-c) The corrected instrument readings obtained from open and short-circuit tests on 10 KVA, 450/120 V, 50 Hz transformer are:  
O.C. test:  $V_{oc} = 120$  V,  $I_{oc} = 4.2$  A,  $P_{oc} = 80$  W.  
S.C. test:  $V_{sc} = 9.65$  V,  $I_{sc} = 22.2$  A,  $P_{sc} = 120$  W.  
Compute: **15 Marks**
- The equivalent circuit parameter referred to primary side.
  - Efficiency and voltage regulation at:
    - Full load and 0.8 p.f. lagging.
    - 0.75 of full load and 0.7 p.f. leading.
    - 0.8 of full load and unity power factor.

**SECOND QUESTION:**

- 3-a) Draw the speed-torque characteristics of d.c. motors in one figure and compare them as characteristics and applications from point of view? مقارنة من حيث الخواص والإستخدامات **5 Marks**
- 2-b) A 230 V shunt motor takes 5 A at no-load. The resistances of the armature and field circuit windings are  $0.25 \Omega$  and  $115 \Omega$  respectively. If the motor is loaded so as to carry 40 A, and runs at 800 r.p.m.  
Determine: **7 Marks**
- Total armature torque.
  - Shaft torque.
  - Efficiency.
- 2-c) A short-shunt compound generator supplies a current of 100 A at 220 V. The resistances of shunt, series and armature windings are  $50 \Omega$ ,  $0.025 \Omega$ , and  $0.05 \Omega$  respectively. If the rotational losses (iron and friction losses) are amount to 1 KW. Find: **8 Marks**
- The e.m.f. generated  $E_g$ .
  - Input mechanical power.
  - Efficiency.

With my best wishes  
Dr, Mohamed Eid.