RGPV BASED ASSIGNMET QUESTION.

SUBJECT- ELECTRICAL MACHINE: II (EX-503)

BRANCH- EX 5th SEM

INTRUCTIONS. 1. All questions with their solution are submitted till 27 October 2014.

1. A 3-phase, 8-pole, 750 r.p.m. star-connected alternator has 72 slots on the armature. Each slot has 12 conductors and winding is short chorded by 2 slots. Find the induced emf between lines, given the flux per pole is 0.06 Wb.
2. The coil span for the stator winding of an alternator is 120 degree. Find the chording factor of the winding.
3. Calculate the distribution factor for a 36-slots, 4-pole, single layer 3- phase winding.
4. The armature of an 8 pole generator has 220 slots, each slot carry 20 conductors. The armature winding is wave wound and flux developed by each pole is 0.04 Wb. The generator is driven at 2000 rpm. Calculate emf induced in the generator.
5. A four-pole, 220 V, lap-connected DC series motor has 200 slots with six conductors per slot. The current is 40 A and flux/pole is 16 mWb. The armature and field resistances are 0.46? and 0.26 ?, respectively. The iron and friction losses are 700 W. Calculate the useful torque.
6. A 230 V, 10 hp d.c. shunt motor delivers power to a load at 1200 r/min. The armature current drawn by the motor is 200 A. The armature circuit resistance of the motor is 0.2 and the field resistance is 115 &. If the rotational losses are 500W, what is the value of the load torque?
7. A series-connected DC motor has an armature resistance of 0.5ohm and field winding resistance of 1.5ohm. In driving a certain load at 1200 rpm, the current drawn by the motor is 20A from a voltage source of VT = 220V. The rotational loss is 150W. Find the output power and efficiency.
8. A lap wound D. C. Generator having 80 slots with 10 conductors per slot generates at no load on emf of 400V when running at 1000 rpm. At what speed should it be rotated to generate a voltage of 220 V on open circuit.
9. A 220 kv dc shunt motor at no-load takes a current of 3 Amp. The resistance of the armaturer and shunt field is 0.9 ohm and 260 ohm respectively. Estimate the efficiency of the motor when the motor input current is 18 Amp. Write the assumption if any.
10. A lap wound dc shunt generator having 80 slots with 10 conductor per slots generates at no load emf of 100V when running at 1000 rpm.At what speed should it be rotated to generate a voltage of 220V on open circuit ?
11. A 220 volt shunt motor develops an output of 17.158 KW when taking 20.2 KW. The field resistance is 50 ohm and an armature resistance 0.06 ohm. What is the efficiency and power input when the output is 7.46KW?
12. Two similar alternator operating in parallel have following data:
    Alternator 1: capacity 7000 KW, frequency drop from 50 Hz at no load to 48.5 Hz at full load.

RGPV BASED ASSIGNMET QUESTION.

SUBJECT- ELECTRICAL MACHINE: II (EX-503)

BRANCH- EX 5th SEM

INTRUCTIONS. 1. All questions with their solution are submitted till 27 October 2014.

Alternator 2: capacity 7000 KW, frequency drop from 50.5 Hz at no load to 48 Hz at full load.

Calculate how a total load 1200KW is shared by each alternator. Also find its bus bar frequency.

13. 3 phase 50 Hz, 2 pole, star connected turbo alternator has 54 slots with 4 conductors per slot. The pitch of the coil is 2 slots less than the pole pitch. If the machine gives 3300V between lines on open circuit with sinusoidal flux distribution. Determine the useful flux per pole.
14. A 2 MVA, 3- phase 8- pole, alternator runs at 750 rpm in parallel with other machines on 6000V bus bar. Find the synchronizing power on full load at power factor 0.8 lagging per mechanical degree of displacement and corresponding synchronizing torque. The synchronizing reactance of machine is 6 ohm per phase.
15. A 4 pole A. C. machine has a 3- phase winding wound in 60 slots. The coil are short pitched in such a way that if one coil side lies in slot number 1, the other side of the same coil lies in slot number 13.Calculate the winding factor for:
    (a) Fundamental and ,(b) Third order harmonic
16. A 3 phase, 11KV star connected synchronous motor taken 50A current. The effective resistance, reactance per phase is 1 ohm 30 ohm respectively. Calculate induced emf for: (a) power factor of 0.8 leading and (b) Power supply by the motor.
17. A 3 phase synchronous motor of 8000 W at 1100 V synchronous reactance of 8 ohm per phase. Find minimum current and corresponding induced emf for full load condition. The efficiency of machine 0.8.Neglect armature resistance.
18. A 250 V D.C motor runs at 1000 rpm while taking a current of 25 A. Calculate the speed when the load current is 50 A. If armature reactions weakens the field by 3 %.Determine torque in both cases.
19. A 220 V shunt motor has a armature resistance of 0.2 ohm and field resistance of 110 ohm. The motor draw 5 A at 1500 rpm at no load. Calculate the speed and shaft torque if the motor draw 52 A at rated voltage.
20. 250 V shunt motor on no load runs at 1000 rpm and takes 5 A. Armature and shunt field circuit resistances 0.2 ohm and 250 ohms respectively. Calculate the speed when loaded taking a current of 50A.The armature reaction weakens the field by 3 %.
21. A 250 V, D.C. shunt motor has armature resistance 0.25 ohm, on load it takes a armature current of 50 A and runs at 750 rpm. If the flux of motor is reduced by 10% without changing the load torque, find the new speed of the motor.

RGPV BASED ASSIGNMET QUESTION.

SUBJECT- ELECTRICAL MACHINE: II (EX-503)

BRANCH- EX 5th SEM

INTRUCTIONS. 1. All questions with their solution are submitted till 27 October 2014.

RGPV BASED ASSIGNMET QUESTION.

SUBJECT- ELECTRICAL MACHINE: II (EX-503)

BRANCH- EX 5th SEM

INTRUCTIONS. 1. All questions with their solution are submitted till 27 October 2014.