БАНК ЗАДАНИЙ

для проведения рубежного контроля по дисциплине Профессиональная подготовка на английском языке

Модуль Трансформаторы.

Prepare long turn speech for the following topic (Подготовить выступление на следующую тему)

1. Draw the equivalent circuit of the referred transformer for open circuit mode and name all parameters.
2. Draw and explain the dependence between power factor of a transformer under open circuit mode and value of supplied voltage. Write down the preparation conditions for this characteristic.
3. The principle of operation of a power transformer.
4. The construction of a transformer, the purpose for its main elements.
5. Draw and explain the dependence between consumed power of a transformer under open circuit mode and value of supplied voltage. Write down the preparation conditions for this characteristic.
6. Draw and explain the dependence between current of the transformer under open circuit mode and value of supplied voltage. Write down the preparation conditions for this characteristic.
7. List and describe the types of losses that occur in a transformer.
8. What losses does essentially show open circuit test of a transformer, explain why.
9. Draw and explain the dependence between power factor of a transformer under short circuit mode and value of supplied voltage. Write down the preparation conditions for this characteristic.
10. Draw and explain the dependence between consumed power of a transformer under short circuit mode and value of supplied voltage. Write down the preparation conditions for this characteristic.
11. Draw and explain the dependence between current of the transformer under open circuit mode and value of supplied voltage. Write down the preparation conditions for this characteristic.
12. Draw the equivalent circuit of the referred transformer for short circuit mode and name all parameters.
13. Write down the voltage and current equations of the transformer under short-circuit mode and name all components of these equations.
14. Write down the voltage and current equations of the transformer under open-circuit mode and name all components of these equations.
15. What losses does essentially show short circuit test of a transformer, explain why.
16. Write down the voltage and current equations of the transformer under load mode and name all components of these equations.
17. Draw the equivalent circuit of the referred transformer for load mode and name all parameters.
18. Parallel operation of the transformers. List conditions for parallel operations of power transformers.
19. Parallel operation of the transformers. The consequence of nonobservance turns ratio condition. Tolerance range.
20. Parallel operation of the transformers. The consequence of nonobservance rated value of short circuit voltage condition. Tolerance range.
21. Why is not allowed parallel operation of transformers with different vector group?
22. Turns ratio of the transformer. Write down equation and explain all parameters.
23. Rated value of short circuit voltage. Write down equation and explain all parameters.
24. Voltage regulation of a transformer. How power factor of the load affect the voltage regulation. Draw characteristics and explain all parameters.
25. The efficiency of the transformer. How power factor of the load affect the efficiency. Draw characteristics and explain all parameters.
26. List and describe the types of a transformer constriction according core design.
27. List and describe the types of a transformer constriction according cooling system.

Модуль Асинхронные машины.

Prepare long turn speech for the following topic (Подготовить выступление на следующую тему)

1. Draw the equivalent circuit of the referred induction motor for load mode and name all parameters.
2. List and describe the types of losses that occur in an induction motor with squirrel-cage rotor.
3. List and describe the types of losses that occur in an induction motor with wound rotor.
4. What losses does essentially show open circuit test of an induction motor, explain why. The value of slip at open-circuit mode.
5. The principle of operation of an induction motor.
6. The construction of an induction motor with squirrel-cage rotor, the purpose for its main elements.
7. The construction of an induction motor with wound rotor, the purpose for its main elements.
8. Advantages and disadvantages of induction motor with squirrel-cage rotor in comparison with wound rotor.
9. Draw and explain the dependence between power factor of an induction motor under load mode and value of power output (a performance characteristic). Write down the preparation conditions for this characteristic.
10. Draw and explain the dependence between efficiency of an induction motor under load mode and value of power output (a performance characteristic). Write down the preparation conditions for this characteristic.
11. Draw and explain the dependence between current in stator winding of an induction motor under load mode and value of power output (a performance characteristic). Write down the preparation conditions for this characteristic.
12. Draw and explain the dependence between power input of an induction motor under load mode and value of power output (a performance characteristic). Write down the preparation conditions for this characteristic.
13. Draw and explain the dependence between speed of rotation of an induction motor under load mode and value of power output (a performance characteristic). Write down the preparation conditions for this characteristic.
14. Write down the voltage equations of the induction motor under load mode and name all components of these equations.
15. What losses does essentially show short circuit test of an induction motor, explain why. The value of slip at short-circuit mode.
16. Torque characteristic of an induction motor. Slip range at motor, generator, generative braking modes. Name all components.
17. Torque characteristic of an induction motor. Slip range at motor mode. Name all components.
18. Torque and current characteristics of an induction motor. Point starting, stalling, idle running and rated points. Name all components.
19. List starting methods of an induction motor. Explain direct-on-line motor start. Give main features.
20. List starting methods of an induction motor. Explain soft-starter motor start. Give main features.
21. List starting methods of an induction motor. Explain star-delta motor start. Give main features.
22. List speed change methods of an induction motor. Explain changing the number of poles, provide answer with torque characteristics, and give all necessary explanations.
23. List speed change methods of an induction motor. Explain changing of stator voltage, provide answer with torque characteristics, and give all necessary explanations.
24. List speed change methods of an induction motor. Explain changing rotor resistance, provide answer with torque characteristics, and give all necessary explanations.
25. List speed change methods of an induction motor. Explain frequency regulation, provide answer with torque characteristics, and give all necessary explanations.
26. What is the relationship between electrical frequency and magnetic field for an AC machine.
27. What are slip and slip speed in an induction motor.

Модуль Синхронные машины.

Prepare long turn speech for the following topic (Подготовить выступление на следующую тему)

1. Armature reaction in salient pole synchronous generator (the angle between armature current and induced EMF $\phi=0^0$), provide answer with simplified figure of cross-section of armature and salient pole rotor, show the magnetic field lines of the armature winding, make all necessary explanations.
2. The principle of operation of a synchronous generator.
3. The principle of operation of a synchronous motor.
4. The construction of a synchronous generator with salient pole rotor, the purpose for its main elements, fields of application.
5. The construction of a synchronous generator with non-salient pole rotor, the purpose for its main elements, fields of application.
6. The construction of a synchronous motor, the purpose for its main elements, fields of application.
7. Advantages and disadvantages of synchronous motor in comparison with induction motor.
8. Armature reaction in salient pole synchronous generator (the angle between armature current and induced EMF $\phi=90^0$), provide answer with simplified figure of cross-section of armature and salient pole rotor, show the magnetic field lines of the armature winding, make all necessary explanations.
9. Armature reaction in salient pole synchronous generator (the angle between armature current and induced EMF $\phi=-90^0$), provide answer with simplified figure of cross-section of armature and salient pole rotor, show the magnetic field lines of the armature winding, make all necessary explanations.
10. Excitation of synchronous generators. Approaches for excitation, advantages and disadvantages, field of application.
11. Write down the voltage equation of the synchronous generator with salient pole rotor under load mode and name all components.
12. Write down the voltage equation of the synchronous generator with non-salient pole rotor under load mode and name all components.
13. Draw and explain the open circuit characteristic of the synchronous generator. Write down the preparation conditions for this characteristic.
14. Draw and explain the external characteristics of the synchronous generator at various type of the load. Write down the preparation conditions for these characteristics.
15. Draw and explain the control characteristics of the synchronous generator at various type of the load. Write down the preparation conditions for these characteristics.
16. Draw and explain the load characteristic of the synchronous generator. Write down the preparation conditions for this characteristic.
17. Draw and explain the short circuit characteristic of the synchronous generator. Write down the preparation conditions for this characteristic.
18. Armature reaction in synchronous generator at resistive-inductive load, make all necessary explanations.
19. Armature reaction in synchronous generator at resistive-capacitive load, make all necessary explanations.
20. Parallel operation of the synchronous generators. List conditions for parallel operation of the synchronous generators.
21. Draw and explain the U-curves of the synchronous generator. Write down the preparation conditions for these characteristics.
22. List starting methods of a synchronous motor. Explain coupling start. Give main features.
23. List starting methods of a synchronous motor. Explain damper winding start. Give main features.
24. Draw and explain the dependence between current in stator winding of a synchronous motor under load mode and value of power output (a performance characteristic). Write down the preparation conditions for this characteristic.
25. Draw and explain the dependence between power input of a synchronous motor under load mode and value of power output (a performance characteristic). Write down the preparation conditions for this characteristic.

26. Draw and explain the dependence between speed of rotation of a synchronous motor under load mode and value of power output (a performance characteristic). Write down the preparation conditions for this characteristic.
27. Hunting in synchronous motors. List the causes and methods of reduction of hunting in synchronous motors.

Модуль Машины постоянного тока.

Prepare long turn speech for the following topic (Подготовить выступление на следующую тему)

1. The principle of operation of a direct current generator.
2. The principle of operation of a direct current motor.
3. The construction of a direct current motor, the purpose for its main elements, fields of application.
4. The construction of a direct current generator, the purpose for its main elements, fields of application.
5. Draw and explain the open circuit characteristic of the direct current generator with various types of excitation. Write down the preparation conditions for this characteristic.
6. Draw and explain the external characteristics of the direct current generator with various types of excitation. Write down the preparation conditions for these characteristics.
7. Draw and explain the control characteristics of the direct current generator with various types of excitation. Write down the preparation conditions for these characteristics.
8. Draw and explain the load characteristic of the direct current generator with various types of excitation. Write down the preparation conditions for this characteristic.
9. Draw and explain the short circuit characteristic of the direct current generator with various types of excitation. Write down the preparation conditions for this characteristic.
10. The commutation in direct current machines. List methods of improving commutation.
11. Armature reaction in direct current machines, make all necessary explanations.
12. The methods of excitation of direct current machines.
13. Losses and efficiency of direct current generator.
14. Losses and efficiency of direct current motor.
15. List starting methods of direct current motor. Explain direct-on-line motor start. Give main features.
16. List starting methods of direct current motor. Explain lower supply voltage motor start. Give main features.
17. List starting methods of direct current motor. Explain starter resistance motor start. Give main features.
18. Write down the voltage equation of the direct current generator and name all components.
19. Write down the voltage equation of the direct current motor and name all components.
20. List speed change methods of a direct current motor. Explain armature resistance control method of direct current series excitation motors, provide answer with torque characteristics, and give all necessary explanations.
21. List speed change methods of a direct current motor. Explain armature terminal voltage control method of direct current series excitation motors, provide answer with torque characteristics, and give all necessary explanations.
22. List speed change methods of a direct current motor. Explain field diverter control method of direct current series excitation motors, provide answer with torque characteristics, and give all necessary explanations.
23. List speed change methods of a direct current motor. Explain armature resistance control of direct current shunt and separately excited motors, provide answer with torque characteristics, and give all necessary explanations.
24. List speed change methods of a direct current motor. Explain armature terminal voltage control method of direct current shunt and separately excited motors, provide answer with torque characteristics, and give all necessary explanations.

25. List speed change methods of a direct current motor. Explain field rheostat control of direct current shunt and separately excited motors, provide answer with torque characteristics, and give all necessary explanations.
26. Torque characteristic of shunt excited direct current motor. Name all components.
27. Torque characteristic of series excited direct current motor. Name all components.

Схема оценивания. Рубежный контроль.

Количество баллов	Определение оценки
10	**Отлично** Ясно изложена основная цель выступления. Структура презентации и выступления ясна и логична. Отличное взаимодействие с аудиторией, ответы на вопросы. Техническое содержание выступления представлено логично, точно и ясно. Эффективное использование аудио- визуальных средств. Использование технически грамотного языка и профессиональной терминологии. Контролирование голоса, интонации, времени презентации. Подчеркнуты основные идеи выступления и указана взаимосвязь между ними.
8-9	**Хорошо** Ясно изложена основная цель выступления. Структура презентации и выступления не всегда логична. Хорошее взаимодействие с аудиторией, ответы на вопросы. Техническое содержание выступления представлено логично. Эффективное использование аудио- визуальных средств. Не всегда используется технически грамотный язык и профессиональная терминология. Контролирование голоса, интонации, времени презентации. Подчеркнуты основные идеи выступления и указана взаимосвязь между ними.
6-7	**Удовлетворительно** Ясно изложена основная цель выступления. Структура презентации и выступления не всегда логична. Хорошее взаимодействие с аудиторией, ответы на вопросы. Техническое содержание выступления представлено логично. Не всегда эффективное использование аудио- визуальных средств. Не всегда используется технически грамотный язык и профессиональная терминология. Контролирование голоса, интонации выражено слабо, времени презентации. Подчеркнуты основные идеи выступления и указана взаимосвязь между ними.
0-5	**Неудовлетворительно** Основная цель выступления не ясна. Структура презентации и выступления не логична и не отражает основную тематику. Взаимодействие с аудиторией, ответы на вопросы отсутствуют. Техническое содержание выступления представлено не ясно. Использование аудио- визуальных средств отсутствует, либо слабо выражено. Использование технически не грамотного языка и профессиональной терминологии. Не подчеркнуты основные идеи выступления и не указана взаимосвязь между ними.