Code: 15O-3312 & 11O-3310 EEE

THIAGARAJAR POLYTECHNIC COLLEGE, SALEM

(Autonomous) **Reg. No.** | |

April 2019 Examinations

DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING

Distribution and Utilization

Year/Sem: III / VI (EVEN-III) Max. Marks : 75 Time : 3 hr.

PART-A (5 x 2 = 10 Marks)

Note: (i) Answer any FIVE questions out of which question No.8 is compulsory.
(ii) All questions carry equal marks.

1 Define Substation.
2 Name the types of bus-bar arrangement.
3 State two types of standard ratings of motor.
4 Define schedule speed and average speed.
5 Define space –height ratio.
6 Mention any four types of lighting schemes.
7 State any two commonly used heating element material.
8 Define tractive effort.

PART-B (5 x 3 = 15 Marks)

Note: (i) Answer any FIVE questions out of which question No. 16 is compulsory.
(ii) All questions carry equal marks.

9 Explain the distribution system based on scheme of connection.
10 Explain the various types of transmission of power.
11 Define plugging.
12 State the purpose of booster transformer.
13 State the advantage of pantograph collector of OHE system.
14 Compare lumen output for LED, CFL and incandescent lamp.
15 State the applications of infra red heating.
16 Compare resistance and arc welding.

PART-C (5 x 10 = 50 Marks)

Note: (i) Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.
(ii) All divisions carry equal marks.

17 A With a neat single line diagram, explain 11kV/400V substation. 10

(OR)

B Explain the consequences of disconnection in neutral in a three phase four wire system, with an example. 10

18 A With neat diagrams, explain the dynamic braking applied to dc shunt motor and induction motor. 10

(OR)

B Choose a suitable motor stating the specific reasons for the following applications. 10
i. Paper mills ii. Textile mills iii. Hoists

19 A Derive an expression for crest speed using trapezoidal speed-time curve. State the assumptions with relevant units. 10

(OR)

B With a neat diagram, explain multiple unit control. 10

20 A State and prove laws of illumination. 10

(OR)

B With a neat diagram, explain the working of sodium vapour lamp. 10

21 A Explain the classification of electric heating. 10

(OR)

B Draw a neat diagram and explain electron beam welding. 10

****

Code: 15O-3313 **EEE**

THIAGARAJAR POLYTECHNIC COLLEGE, SALEM

(Autonomous) **Reg. No.** |_____|

April 2019 Examinations

DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING

Operation and Maintenance of Electrical Equipment

Year/Sem: III / VI (EVEN-III) Max. Marks : 75 Time : 3 hr.

PART-A **(5 x 2 = 10 Marks)**

Note: (i) Answer any FIVE questions out of which question No.8 is compulsory.
(ii) All questions carry equal marks.

1 On what factors earth resistance depends upon.
2 List the categories of authorized person.
3 Define inrush current in a transformer.
4 What is the role of AVR in the generators?
5 What is rupturing capacity of a circuit breaker?
6 How to change the direction of rotation of single phase and three phase induction motors?
7 Name the device used for measuring the air gap in a motor.
8 What is stroboscopic effect?

PART-B **(5 x 3 = 15 Marks)**

Note: (i) Answer any FIVE questions out of which question No. 16 is compulsory.
(ii) All questions carry equal marks.

9 What are the main points to be checked during annual maintenance of electrical installation?
10 State the conditions for parallel operation of transformers.
11 What action to be taken while transformer oil temperature rises unduly?
12 What are the causes for alternator fails to build up voltage?
13 State the difference between isolator and circuit breaker.
14 Explain the classifications of insulation used for winding.
15 What are the causes for lowering of illumination level?
16 Explain the safety devices used for over head transmission line.

PART-C **(5 x 10 = 50 Marks)**

Note: (i) Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.
(ii) All divisions carry equal marks.

17 A Describe the two types of earth leakage protection. 10

(OR)

B Explain in detail the insulation resistance measurement procedure by using megger. 10

18 A i) Explain in detail the force generated in transformer during short circuit. 5
ii) Explain the reason for temperature rise in transformer. 5

(OR)

B Explain in detail about transformer maintenance schedule. 10

19 A i) Explain reverse current protection and why it is necessary? 5
ii) Explain the operation of auto reclose circuit breaker. 5

(OR)

B What are the maintenance required for oil circuit breaker and SF_6 circuit breaker? 10

20 A i) Explain the working of single phasing preventer. 5
ii) Explain the various types of enclosures used in electric motors. 5

(OR)

B Explain in detail vacuum impregnation applied in motors. 10

21 A Explain the basic steps in designing lighting installation. 10

(OR)

B Explain how to locate earth fault and short circuit fault in UG cable by using Murray loop test method. 10

****

Code: 15O-3403A & 11O-3403A

EEE

THIAGARAJAR POLYTECHNIC COLLEGE, SALEM

(Autonomous) **Reg. No.** [ ]

April 2019 Examinations

DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING

Power Electronics

Year/Sem: III / VI (EVEN-III) Max. Marks : 75 Time : 3 hr.

PART-A (5 x 2 = 10 Marks)

Note: (i) Answer any FIVE questions out of which question No.8 is compulsory.
(ii) All questions carry equal marks.

1 Define latching current and holding current.
2 What is class B commutation?
3 Define cyclo converters. Give the applications.
4 Mention the applications of three phase inverters.
5 Draw the block diagram of AC circuit breaker.
6 What is the need of UPS? Mention the types of UPS.
7 Mention the major areas of applications of AC drives
8 What is the need for soft start in induction motor?

PART-B (5 x 3 = 15 Marks)

Note: (i) Answer any FIVE questions out of which question No. 16 is compulsory.
(ii) All questions carry equal marks.

9 What is intelligent module?
10 List the application of single phase dual converters.
11 What is the average DC output voltage of Three phase full wave controlled rectifier with resistance load?
12 Draw the circuit diagram of CUK converter.
13 List the methods of voltage control of three phase inverters.
14 Write notes on induction motor capability below and above the rated speed.
15 What is slip power recovery?
16 Write the application of Thyristor switched capacitors.

PART-C (5 x 10 = 50 Marks)

Note: (i) Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.
(ii) All divisions carry equal marks.

17 A Explain V-I characteristics of SCR. 10

(OR)

B Explain in detail, the operation of GTO with its characteristics. 10

18 A Draw and explain the operation and characteristics of single phase full converter. 10

(OR)

B Draw and explain the operation and characteristics of three phase full converter. 10

19 A With diagram explain the continuous conduction mode of buck-boost converter. 10

(OR)

B With diagram explain multiple pulse width modulation. 10

20 A With diagram explain the operation of AC solid state relay. 10

(OR)

B With diagram explain the operation of thyristor controlled inductors. 10

21 A Explain the effect of discontinuous armature current. 10

(OR)

B Explain with neat diagram variable frequency PWM –VSI drives. 10

****