Code: 15O-3306 **EEE**

THIAGARAJAR POLYTECHNIC COLLEGE, SALEM

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

October/November 2019 Examinations

DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING

Generation, Transmission and Switchgear

Year/Sem: III / V (ODD-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 cogeneration.
2 What is plant capacity factor?
3 State the different types of DC links used in HVDC system.
4 What is the purpose of insulator?
5 State the different methods of laying the cables.
6 Define current chopping.
7 Mention the two types of differential relays.
8 State Kelvin's law.

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 State the advantages of interconnected systems.
10 Explain Ferranti effect.
11 State the reasons for failure of insulators.
12 Explain how arc is formed in a circuit breaker?
13 What are the requirements of a fuse?
14 What is primary and back up protection?
15 State the advantages of neutral grounding.
16 What is the need for transposition in transmission lines?

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

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

17 A Explain the schematic diagram of a gas power plant with a neat sketch.

(OR)

B (i) Explain the load sharing between base load and peak load plants.
(ii) State the functions of Load Despatch Centre.

18 A Explain with a neat diagram the typical layout of AC power supply scheme.

(OR)

B (i) Draw the schematic diagram of HVDC convertor station.
(ii) State the advantages of DC transmission.

19 A Explain any three methods to improve string efficiency of suspension type insulator.

(OR)

B Explain Capacitance grading and inter sheath grading in underground cable.

20 A Explain the construction and working of Sulphur Hexa Fluoride circuit breaker.

(OR)

B Explain the construction and working of Expulsion type lightning arrestor.

21 A Explain with a neat sketch the construction and working of Induction type reverse power relay.

(OR)

B Explain with a neat diagram the working principle of grounding transformer.

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October/November 2019 Examinations

DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING

Electrical Estimation and Energy Auditing

Year/Sem: III / V (ODD-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 Draw the symbol for the following: a) Earth b) UG Cable.

2 What is the function of ELCB?

3 Convert 5HP in to watts.

4 What is energy audit?

5 What is bench marking?

6 Define CRI.

7 What is energy efficient motor?

8 What is service connection?

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 methods of improving earth resistance.

10 Differentiate neutral wire and earth wire.

11 Write short notes on selection of main switch on electrical installation.

12 State the benefits of power factor improvement.

13 Explain rewinding and motor rewinding issues.

14 What is the roll of electronic ballast?

15 What are the factors affecting the selection of a DG set?

16 What are the steps to be followed the preparation of electrical estimation?

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

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

17 A With neat sketch and explain the different types of service connection.

(OR)

B With neat sketch and explain any two types of earthing.

18 A A residential single bed room flat is to be electrified with PVC conduit concealed type of wiring. Estimate the quantity of materials required with specification. The details of the fitting are as follows.

Sl. No.	Name of the room	Size	No. of tube light points	No. of ceiling Fan	No. of ordinary light points	No. of plug points
01	Hall	5.0 m x 6.0 m	2	1	2	2
02	Bed Room	4.0 m x 4.0 m	1	1	1	1
03	Kitchen	4.0 m x 2.0 m	1	1	1	1
04	Bath Room	1.5 m x 1.5 m	-	-	1	1
05	Toilet	1.5 m x 1.5 m	-	-	1	-

Decide the number of circuits/sub-circuits to be used according to Indian Electricity Rules. Draw the necessary plan of the flat and show the position of the fittings and switchboards, single line-wiring diagram. Assume necessary data as per IE rules and mention them clearly.

(OR)

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B A small workshop 30 m x 15 m has to be equipped with the following machinery:-
(1) One Lathe driven by 3 H.P., 415 V, 3 Phase induction motor.
(2) One Shaper Machine driven by 5 H.P., 415 V, 3 Phase induction motor.
(3) One Grinding Machine driven by 1 H.P., 415 volts, 3 Phase induction motor.
(4) One Welding Set of 10 kVA, 415 V, 3 Phase.

Draw a suitable installation plan for the above installation. Estimate the quantity of materials required with specification, for power wiring only. Draw the single line-wiring diagram of electrical power distribution starting from main switch. The wiring is to be of surface conduit. Assume necessary data as per IE rules and mention them clearly.

19 A Explain the different types of energy audit report.

(OR)

B Explain in detail about various instruments used for energy audit.

20 A Explain about the energy saving opportunities with energy efficient motors.

(OR)

B Discuss in detail about the energy conservation avenues in lighting systems.

21 A Explain the principles of automatic power factor controllers.

(OR)

B Discuss about (i) Soft starters with energy savers (ii) Energy efficient transformer.

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THIAGARAJAR POLYTECHNIC COLLEGE, SALEM

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October/November 2019 Examinations

DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING

Control of Electrical Machines

Year/Sem: III / V (ODD-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 What is meant by Limit Switch?

2 What is the use of Interlocks in drives?

3 How will you reverse the direction of three phase induction motor?

4 Name the various motions available in overhead crane.

5 Name any two trouble spots in control circuits.

6 Name any two programming devices to communicate with PLC

7 What is retentive timer?

8 In which type of three phase induction motor, secondary frequency acceleration starter is used?

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 Write a short note on solid state relay.

10 State the difference between semi-automatic and automatic star-delta.

11 What is the basic principle of dynamic braking as applied in three phase induction motor?

12 Draw the control circuit of skip hoist control.

13 List the advantages of Automation.

14 Write a note on PLC SCAN

15 Explain down counter in PLC

16 What is single phasing and what are the effects of single phasing in motor?

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

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

17 A Explain with a neat sketch, the working of pneumatic timer.

(OR)

B Explain the constructional details of solenoid type contactor.

18 A Explain the working principal of auto transformer starter (open circuit transition) with the help of diagrams.

(OR)

B Explain with neat circuit diagram, the working of automatic rotor resistance starter.

19 A Explain the circuit operation of electric oven.

(OR)

B Write the general procedure for trouble shooting in control circuits.

20 A Draw the block diagram of a PLC system and explain the function of each block.

(OR)

B Draw the Schematic and wiring diagram for input module of PLC and explain.

21 A Explain any three methods of programming languages used in PLC.

(OR)

B Develop a ladder logic diagram for EB to generator change over system.

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