TED (21) 5033C
(Revision-2021)

2109230067

Reg.No.....
Signature.....

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, NOVEMBER - 2025

SWITCH GEAR AND PROTECTION

[Maximum marks: 75] [Time: 3 Hours]

PART A

I. Answer all the following questions in one word or one sentence. Each question carries 1 mark

(9 x 1 = 9 Marks)

		Module outcome	Cognitive level
1	Define fuse.	M1.02	R
2	An isolator is designed to open a circuit under ……..condition.	M1.04	U
3	The relay must select correctly only the…….section of the power system and isolate the same without disturbing the rest of the system.	M2.01	R
4	Define the term pick-up current of relay.	M2.01	R
5	Back-up protection functions when…….	M2.04	U
6	Merz-Price Protection Scheme is used to provide protection against……..	M3.03	R
7	List any one fault that occurs in alternators.	M3.01	R
8	Define voltage surge.	M4.03	R
9	State any one commonly used scheme for busbar protection.	M4.01	R

PART B

II. Answer any eight questions from the following. Each question carries 3 marks.

(8 x 3 = 24 Marks)

		Module outcome	Cognitive level
1	List any three essential features of switch gear.	M1.01	U
2	List any three advantages of vacuum circuit breaker.	M1.03	U
3	Compare between static relay and electromagnetic relay. List three points.	M2.04	U
4	List three basic requirements of protective relays.	M2.01	R
5	Explain the principle of Time-distance relay.	M2.03	U
6	List any three protection schemes for protection of motors.	M3.04	R
7	State any three common transformer faults.	M3.01	R
8	Draw the block diagram of a Microprocessor based over current relay.	M4.05	U
9	List any three requirements of line protection system.	M4.02	U
10	Name three devices used for the protection against lightning.	M4.04	R

PART C
Answer all questions. Each question carries seven marks

(6 x 7 = 42 Marks)

		Module outcome	Cognitive level
III	Define the following terms: a) Arc voltage b) recovery voltage c) restriking voltage d) braking capacity e) making capacity f) short time rating g) normal current rating.	M1.03	R
	OR		
IV	Define the following terms: a) fusing current b) fusing factor c) prospective current d) cut-off current e) pre-arcing time f) arcing time g) total operating time	M1.02	R
V	With the help of a diagram describe the working of Indication Type Directional Overcurrent Relay.	M2.03	U
	OR		
VI	Explain the protection schemes: a) primary protection b) back-up protection	M2.04	U
VII	With the help of a diagram explain the operation of a single phase preventer for the protection of motors.	M3.04	U
	OR		
VIII	Describe the construction of buchholz relay with the help of a diagram for the protection of transformers.	M3.03	U
IX	Describe the working of Merz-Price voltage balance system for the protection of a transmission line with the help of a diagram.	M4.02	U
	OR		
X	With the help of a diagram explain the working of horn gap arresters	M4.03	U
XI	State any three advantages and disadvantages of SF_6 circuit breaker.	M1.03	U
	OR		
XII	With the help of a diagram explain the working of HRC cartridge fuse.	M1.02	U
XIII	Describe the operation of a short circuit protection for the protection of motors with the help of a diagram.	M3.04	U
	OR		
XIV	Explain the operation of a differential protection for the protection of alternator with the help of a diagram.	M3.02	U

****