Printed Pages : 2 **Roll No.** | | | | | | | | | | | **NEE602**

B. TECH.

THEORY EXAMINATION (SEM–VI) 2016-17

SWITCH GEAR AND PROTECTION

Time : 3 Hours ***Max. Marks : 100***

Note : *Be precise in your answer. In case of numerical problem assume data wherever not provided.*

SECTION – A

1. Attempt all parts of the following questions: 10 x 2 = 20

(a) Define Switch gear.

(b) What is the Purpose of circuit breakers (switchgear)?

(c) What do you understand by primary and backup protection?

(d) Draw block diagram of static relay.

(e) Write advantages of static relay.

(f) Define arc extinction.

(g) How the air break circuit break works?

(h) Name different types of electromagnetic attraction relays.

(i) Classify the generator faults.

(j) Summarize the abnormal conditions in Induction Motor and protection circuit used for them.

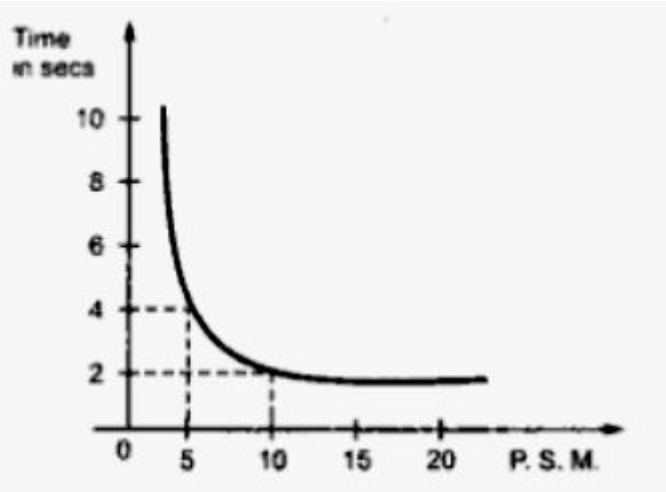
SECTION – B

2. Attempt any five parts of the following questions: 5 x 10 = 50

(a) Describe Basic principle of operation of a circuit breaker.

(b) Describe Phenomena of arc, properties of arc, initiation and maintenance of arc.

(c) An IDMT over current relay has a current setting of 150% and a time multiplier section of 0.6. The primary of the relay is connected to secondary of CT, having ratio 400/5. Calculate the time of operation if the circuit carries a fault current of 5000 A. Time-current characteristics of relay is shown.



(d) Explain the phenomenon of current chopping in a circuit breaker.

(e) Explain in detail the protection circuit for Induction Motor.

(f) What are the problems related to differential protection.

(g) Derive torque equation for Induction type relay.

(h) Explain phase comparison method of carrier current protection

(i) Calculate the RRRV of 132 kv circuit breaker with neutral earthed. SC data as follows: Broken current is symmetrical; restriking voltage has frequency 20 KHz, pf 0.15. Assume fault is also earthed.

SECTION – C

Attempt any two parts of the following questions: 2 x 15 = 30

3. Explain the working principle of electromagnetic relay. Give its advantages and disadvantages along with applications.

4. Explain different types of distance relays along with their operating characteristics.

5. Explain construction and working of air blast circuit breaker