

# C.U.SHAH UNIVERSITY

## Summer Examination-2018

**Subject Name: Switchgear and Protection**

**Subject Code: 4TE06SGP1**

**Branch: B.Tech (Electrical)**

**Semester: 6**

**Date: 25/04/2018**

**Time: 02:30 To 05:30**

**Marks: 70**

**Instructions:**

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
- (2) Instructions written on main answer book are strictly to be obeyed.
- (3) Draw neat diagrams and figures (if necessary) at right places.
- (4) Assume suitable data if needed.

| <b>Q-1</b> | <b>Attempt the following questions:</b>   | <b>(14)</b> |
|------------|---|-------------|
| 1)         | State the name of any two types of circuit breaker used in substation.  | 1           |
| 2)         | State the name of any two types of relay used for transformer protection.   | 1           |
| 3)         | _____ (Air Break/Oil Type) circuit breaker is used in household application.  | 1           |
| 4)         | OCB means _____. ( Oil Circuit Breaker/ Operative Circuit Breaker / Overhead Circuit Breaker)   | 1           |
| 5)         | The circuit breaker makes and breaks the contacts in_____ condition.<br>(Normal Condition/Abnormal Condition/ Both Normal and Abnormal Condition) | 1           |
| 6)         | Arc is considered as .....load.<br>a) Capacitive b) Inductive c) Resistive d) All of this   | 1           |
| 7)         | Circuit Breaker can be operated in which mode ?<br>a) Automatic b) Manually c) Both d) None of this   | 1           |
| 8)         | What is the value of dielectric strength of Air ?<br>a) 21 KV/cm rms b) 3 KV/mm max c) 3 KV/CM max d) none of this                                | 1           |
| 9)         | For induction cup relay which supply is used?<br>a) AC b) DC c) AC & DC Both d) None of these   | 1           |
| 10)        | On Which formula fuse operates?<br>a) $H=IR^2t$ b) $H=IR^2t$ c) $H=(IRt)^2$ d) $H=I^2Rt$  | 1           |
| 11)        | The full form of HRC fuse is _____.   | 1           |
| 12)        | What is trip coil? State its function.  | 1           |
| 13)        | Isolator must operate on.....condition.   | 1           |



- a) On Load    b) No Load    c) a & b both    d) None of these

14) What is the function of earth switch? 1

**Attempt any four questions from Q-2 to Q-8**

- Q-2                      Attempt all questions                      (14)**
- (a) Explain briefly about Minimum Oil Content Circuit Breaker. 07
- (b) Enlist the property of SF<sub>6</sub> gas. 07
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- Q-3                      Attempt all questions                      (14)**
- (a) Explain air blast circuit breaker briefly. 07
- (b) Make the comparison between (1) circuit breaker and fuse (2) isolator and circuit breaker. 07
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- Q-4                      Attempt all questions                      (14)**
- (a) What you mean by differential protection? Explain with example. 07
- (b) Explain the working principle of Electromagnetic attraction type relay briefly. 07
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- Q-5                      Attempt all questions                      (14)**
- (a) Explain briefly SF<sub>6</sub> circuit breaker. 07
- (b) Explain induction cup type relay. 07
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- Q-6                      Attempt all questions                      (14)**
- (a) Explain the basic operating principle of relay with trip coil mechanism. 07
- (b) Explain briefly the static relay. 07
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- Q-7                      Attempt all questions                      (14)**
- (a) Explain briefly vacuum circuit breaker. 07
- (b) Explain Gas Operated Relay for transformer. 07
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- Q-8                      Attempt all questions                      (14)**
- (a) Write the advantages and limitations of static relay. 07
- (b) What are applications of CT & PT ? Enlist the factors affecting it. 07



