

QUESTION BANK
ON
SWITCH GEAR AND PROTECTIVE DEVICES
(SGPD)



NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY
SERGARH-756060, BALASORE (ODISHA)
(Approved by AICTE & affiliated to SCTE&VT, Odisha)

SWITCH GEAR AND PROTECTIVE DEVICES

BRANCH –ELECTRICAL ENGINEERING

SEMESTER -6th

SL.NO	TOPICS NAME	PAGE.NO
01	INTRODUCTION TO SWITCHGEAR	3-3
02	FAULT CALCULATION	4-4
03	FUSES	5-5
04	CIRCUIT BREAKERS	6-6
05	PROTECTIVE RELAYS	7-7
06	PROTECTION OF ELECTRICAL POWER EQUIPMENT AND LINES	8-9
07	PROTECTION AGAINST OVER VOLTAGE AND LIGHTNING	9-10
08	STATIC RELAY	10-10

PREPARED BY :

ER. BISWAJIT PARIDA

(CHAPTER-1)

INTRODUCTION TO SWITCHGEAR

1 Answer the following questions . (2 marks each)

- A) What is switch gear ?
- B) Define bus bar ?
- C) What do you mean by breaking capacity of CB?
- D) What is short ckt ?
- E) What is the fault in a power system ?
- F) What is symmetrical fault ?
- G) Why a.c circuit is more easily interrupted than d.c circuit ?
- H) What is AB switch ?
 - I) What is unsymmetrical fault ?
 - J) What is circuit breaker ?
 - I) What is fuse ?

2. Answer the following questions . (5 marks each)

- A) Explain about symmetrical fault .
- B) Describe the single bus bar & bus bar with sectionalized system.
- C) Explain un-symmetrical fault .
- D) Explain about ring main & mesh arrangement.

3. Answer the following questions. (10 marks each)

- A) Briefly explain about bus-bar arrangement with proper diagram .
- B) Explain about the short- ckt fault .
- C) Describe switch gear equipment .

(CHAPTER-2)

FAULT CALCULATION

1 Answer the following questions . (2 marks each)

- A) What is pick-up current ?
- B) What is fusing current ?
- C) What is percentage reactance ?
- D) What is symmetrical fault in 3-phase power system ?
- E) Write short-circuit KVA in terms of base KVA and percentage ?
- F) Define limitation of fault current ?
- G) What is fault in a power system ?

2. Answer the following questions . (5 marks each)

- A) What is reactor ?
- B) Explain restriking voltage and recovery voltage ?

3. Answer the following questions . (10 marks each)

- A) Explain the symmetrical fault in 3-phase power system .
- B) Describe percentage of reactance in a power system .

(CHAPTER-3)

FUSES

1. Answer the following question . (2 marks each)

- A) What is fusing factor ?
- B) What is fuse ?
- C) What is the full form H.R.C fuse ?
- D) What is fusing current ?
- E) Write two advantages fuse ?
- F) Why do you require fuse ?

2. Answer the following question . (5 marks each)

- A) Explain the characteristics of fuse ?
- B) Write the difference between fuse and circuit breaker ?
- C) Explain the rewirable fuse ?

3. Answer the following questions. (10 marks each)

- A) Explain the working principle of fuse .
- B) Define prospective current and cut-off current .
- C) Briefly discuss about types of fuse .
- D) Explain the H.R.C fuse.

(CHAPTER-4)

CIRCUIT BREAKERS

1 Answer the following question . (2 marks each)

- A) What is circuit breaker ?
- B) Define arc voltage ?
- C) What do you mean by breaking capacity of CB ?
- D) What is current chopping ?
- E) What is O.C.B ?
- F) Write the advantages of sf6 circuit breaker ?
- G) What is restriking voltage ?
- I) What is recovery voltage ?

2. Answer the following questions. (5 marks each)

- A) Explain oil circuit breaker with neat & sketch diagram.
- B) Explain plain break oil circuit-breaker with neat & sketch diagram.
- C) Describe the principle of minimum oil circuit .
- D) Explain air blast circuit breaker.

3. Answer the following questions. (10marks each)

- A) Explain the principle & construction of sf6 circuit breaker .
- B) Explain about radial & axial blast circuit breaker.
- C) Describe the bulk oil circuit breaker with neat and sketch diagram .
- D) Explain about the vaccum circuit breaker.

(CHAPTER-5)

PROTECTIVE RELAYS

1. Answer the following questions . (2 marks each)

- A) Defination of protective relay ?
- B) What is selectivity ?
- C) What is sensitivity ?
- D) Define reliability ?
- E) Define relay ?
- F) What is P.S.M ?
- G) What is T.S.M ?

2. Answer the following questions . (5 marks each)

- A) Explain about induction relay.
- B) Explain electromagnetic attraction type relay .
- C) Define and explain P.S.M and T.S.M.
- D) Explain about current differential relay.

3. Answer the following questions . (10marks each)

- A) Explain the construction and principle of relay.
- B) Describe the induction type directional relay .
- C) Explain about types of protection.
- D) Describe about differential relay .

(CHAPTER-6)

PROTECTION OF ELECTRICAL POWER EQUIPMENT AND LINES

1. Answer the following questions . (2 marks each)

- A) Defination of buchholz relay ?
- B) What is radial feeder ?
- C) What is earth fault protection ?
- D) What is the protection of transmission line?
- E) What is parallel feeder ?
- F) What is ring main system ?
- G) What is merz –price voltage balance system ?
- H) Write the advantages of merz-price voltage balanced ?
- I) What are the various protection for power transformer ?

2. Answer the following questions . (5 marks each)

- A) Explain different types of bus-bar protection .
- B) Explain differential protection of alternator with circuit diagram .
- C) Explain merz-price protection of feeder.
- D) With neat sketch explain about feeder reactor .
- E) Explain merz-price protection of transformer.

3. Answer the following questions . (10marks each)

- A) Explain earth fault protection of transformer.
- B) Explain protection of feeder by over current and earth fault relay .
- C) Explain with neat diagram the working of a Buchholz relay .

(CHAPTER-7)

PROTECTION AGAINST OVER VOLTAGE AND LIGHTNING

1. Answer the following question . (2 marks each)

- A) State harmful effect of lightning ?
- B) Define arcing ground ?
- C) What is resonance ?
- D) What is lightning stroke ?
- E) What is lightning arrester ?
- F) Write horn gap arrester .
- G) What is rod gap arrester ?
- H) Define insulation failure.

2. Answer the following questions. (5 marks each)

- A) Explain Horn-gap lightning arrester with diagram
- B) Explain valve type arrester.
- C) Explain metal oxide lightning arrester.
- D) Describe sphere gap type lightning arrester with proper diagram.

3. Answer the following questions. (10marks each)

- A) Explain lightning stroke with proper diagram .

- B) What are the protection against lightning taken in electrical power system .
- C) What are the harmful effects of lightning ,explain the working of horn gap lightning arrester .
- D) Explain about expulsion type lighting arrester with neat and sketch diagram .

(CHAPTER-8)

STATIC RELAY

1. Answer the following question . (2 marks each)

- A) What is static relay ?
- B) What is the working of relay ?
- C) Write two advantages of static relay ?
- D) What is instantaneous over current relay ?
- E) What arcing ground ?

2. Answer the following questions. (5 marks each)

- A) Explain surge absorber.
- B) State advantages of static relay .

3. Answer the following questions. (10marks each)

- A) Explain the principle & construction of IDMT relay.
- B) Explain about instantaneous over current relay.