Code No: **R41023**   **R10**   Set No. 1

IV B.Tech I Semester Supplementary Examinations, October/November - 2017
SWITCH GEAR & PROTECTION
(Electrical and Electronics Engineering)

Time: 3 hours   Max. Marks: 75

Answer any FIVE Questions
All Questions carry equal marks
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1	a)	Derive an expression for the restriking voltage, and also derive RRRV expression.	[8]
	b)	Explain the importance of ratings and specifications of circuit breaker.	[7]
2	a)	Explain current chopping in vacuum circuit breaker. Write the disadvantages of vacuum circuit breakers.	[8]
	b)	Discuss about the properties of SF6 gas and relate the properties to the circuit breaker operation.	[7]
3	a)	With the help of neat sketch explain the principle of operation of percentage Differential relays.	[8]
	b)	Explain the function of an IDMT relay? Discuss in detail about its advantages and disadvantages.	[7]
4	a)	What are the abnormal conditions in a synchronous generator? Explain which protection is necessary for each abnormal condition.	[8]
	b)	A 3 phase, 10 MVA, 6.6 kV generator is delivering a load of 8 MW at 0.8 p.f. Find the value of neutral resistance R, If 10% of the winding is unprotected. The relay setting is 20%. The per phase reactance is 10%.	[7]
5	a)	Discuss the working principle of the alarm based relay to protect a transformer.	[10]
	b)	Explain the differential protection of a $Y - \Delta$ transformer and draw its circuit diagram with CT connections.	[5]
6	a)	Explain the bus bar protection using differential principle.	[8]
	b)	Explain over-current protection schemes of the feeder protection.	[7]
7	a)	What are the main components constituting static relays? Explain with neat block diagram.	[8]
	b)	Explain the working of static over current relay with neat schematic diagram.	[7]
8	a)	Write short notes on Protection against arcing grounds.	[8]
	b)	A 33kV, 50 Hz network has a capacitance to neutral of $1.0\mu F$ per phase. Calculate the reactance of an arc suppression coil suitable for the system to avoid adverse effect of arcing ground.	[7]