

Electrical quiz 9

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54. What is the rating of Surge Arrester?

Voltage (of course, phase to neutral) of the circuit on which it is to be used.

55. What is the continuous current rating of the fuse wires?

110 % of their rated current

and they will blow off at about 166 % of their rated current.

56. What is meant by incandescent?

It means temperature radiation.

57. What may be the cold resistance of a 60 W incandescent bulb?

16 .5 ohms.

58. What is the formula for heavy water and where it is used?

D₃O. Heavy water is used as moderator in nuclear reactor.

59. What is the speed of hydro turbines?

Generally, about 330 rpm, Vertical Kaplan.

60. What is the speed of thermal turbines?

3000 rpm, Francis turbines.

61. Why the positive terminals of station battery is more corroded than its negative terminal?

To have corrosion, there has to be a current flow in one direction that removes electrons from material (which corrodes away) and deposits the electrons on a different material. That is why, the positive terminals are more corroded and hence negative is permanently connected to one end of the trip coils and positive is always extended as + Return through any actuating relay.

62. What are the options for Earth Fault connections?

a. Holmgren connection (Residual current), widely used.

b. Toroid CT connection (combining of all 3 phases). More sensitive, even 1

% of E/F setting could be achieved.

63. Define Restricted Earth Fault Protection.

a. Zone type ,differential protection.

b. Used on generators and transformers.

c. Very fast for internal earth faults.

d. Sometimes used as voltage operated if used as High Impedance differential protection.

64. What is the back emf?

The voltage induced in an inductive machine due to the flow of current through it is called as back emf because of its polarity opposite to the applied voltage.

65. What will happen to an induction motor with its rotor blocked condition?

Its coil will burn.If the motor freely rotates ,the back emf will counter acts the applied voltage preventing higher current in the stator's coil which burn the same.

66. When Zero sequence current flows?

Only during ground fault. As they are all in phase with each other and have no sequence at all , occurs only during ground fault and the magnitude is $3I_{r0}$.

67. Why a delta tertiary winding is employed in a star/star auto transformer?

a. Act as a Zero sequence filter so that ground fault current will not pass on to the source.

b. Reduces the unbalancing in the primary windings during any unbalance in load.

c. Redistributes the flow of fault current and limits L - G fault current.

d. The circulating current in the delta winding balances the zero sequence component of unbalance load preventing zero sequence flux and also in the transformer core and also reduces the zero sequence impedance of transformer.

68. What will be the capacity of the tertiary winding?

The Delta tertiary is customarily sized at 1/3 of the main winding rating (33.3 MVA in a 100 MVA Auto transformer) to handle a completely unbalanced secondary zero-sequence current and to allow the odd

harmonics to circulate.

69. Upto which voltage level Vacuum breakers are used? Why?

Upto distribution class,i.e.33 kV level Vacuum breakers are used as it is very difficult to create vacuum and maintain beyond certain capacity.

For transmission class,SF6 breakers are used.

70. How to test the vacuum interrupter bottles?

By applying an ac voltage of 2 times V rated + 1 kV in between the top and bottom of the interrupter bottles.Anabond can be applied in the flange joints of the interrupter housing to prevent moisture inside the housing. The concerned colour enamel paint may also be applied on the flange joints.

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