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***** EXAMINATION *****

**THERMAL MODELING OF PORTABLE POWER CABLES**

1. **Hazardous combinations of current and time can thermally**

    a) degrade the power circuit of a machine
    b) degrade the cable insulation and jacket
    c) degrade the power regulator
    d) degrade the current transformer

2. **Load current can be measured with a**

    a) voltage regulator
    b) thermistors
    c) current transformer
    d) thermocouples

3. **Thermocouples and thermistors are considered as**

    a) load current meters
    b) load current regulators
    c) power conductors
    d) temperature sensors

4. **Cable temperatures can be inferred from the output signal**

    a) of the current transformer secondary
    b) of the trailing cables
    c) of the insulated conductors
    d) of the temperature sensors

5. **Ethylene-propylene-rubber or neoprene are considered**

    a) diametric materials
    b) dielectric materials
    c) electronic materials
    d) All of the above

6. **Embedded in a solid cable jacket material are**

    a) insulated conductors
    b) temperature sensors
    c) voltage regulators
    d) current transformers

7. **Heat transport equations appropriate for the insulation and**

a) cable jacket differs in the thermal conduction
b) cable jacket differ in the thermal power capacity
c) cable jacket differ only in the thermal value of materials
d) cable jacket differ only in the thermal diffusion

8. **Represents a ratio of system heat capacity to the rate of heat**

a) transfer from the system is the thermal temperature
b) transfer from the system is the thermal conduction
c) transfer from the system is the thermal diffusion
d) transfer from the system is the thermal time constant

9. **Originally, temperature monitoring was favored as it provides**

a) a direct measure of cable's thermal durability
b) a direct measure of cable's thermal history
c) a direct measure of cable's thermal flexibility
d) a direct measure of cable's thermal value

10. **The proper description of heat generation and heat dissipation**

a) results in a thermal temperature equation
b) results in a thermal transport equation
c) results in a thermal conductor equation
d) results in a thermal diffusion equation

11. **Effective cable overload protection keeps the conductor**

a) insulation temperatures below the EPR damage threshold
b) insulation temperatures above the EPR damage threshold
c) insulation temperatures low and ignore the EPR
d) insulation temperatures high and ignore the EPR

12. **Thermal time constants are influenced by**

a) the volume-to-surface area ratio or cable geometry
b) the product of the density and specific heat of the cable
c) the convective heat transfer coefficient
d) All of the above

13. **The load center from which the trailing cable originates**

a) can provide the necessary chemical protection
b) can provide the necessary physical protection
c) can provide the necessary mechanical protection
d) can provide the necessary temperature protection

14. **The main drawback in having the sensor in open air**

a) is its susceptibility to physical damage
b) is its susceptibility to mechanical damage
c) is its susceptibility to chemical damage
d) is its susceptibility to functional damage

15. **Combustion of the cable insulation can create**

a) smoke and exhaust fumes
b) smoke and noxious fumes
c) smoke and diesel fumes
d) smoke and industrial fumes

16. **Phase-to-phase and ultimate cable failure is cause by**

a) abrasive forces
b) tensile forces
c) crushing forces
d) All of the above

17. **The trip settings specified by Federal regulations are based**

a) upon available fault currents and cable capacity
b) upon available fault currents and cable location
c) upon available fault currents and cable size
d) upon available fault currents and cable temperature

18. **A cable is thermally damaged if it is within the EPR**

a) range of 90 degrees Celsius to 130 degrees Celsius
b) range of 130 degrees Celsius to 170 degrees Celsius
c) range of 170 degrees Celsius to 210 degrees Celsius
d) range of 210 degrees Celsius to 250 degrees Celsius

19. **A 32-channel datalogger is programmed to read and**

a) transmit data to a personal computer
b) transmit data to a temperature sensor
c) transmit data to a current transformer
d) transmit data to a thermistor

20. **A protection which involves the activation of a dual**

a) element fuse is the flameproof protection
b) element fuse is the short circuit protection
c) element fuse is the intrinsic safety protection
d) element fuse is the battery room protection

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