|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | | 1.Relay gets its operating energy from-   a.Transformer  b.Alternator  c.Overhead line  d. CT,PT |  |  |   ANSWER:D  2. Which of the following circuit breakers is used for the railway electrification?  a. Air blast circuit breaker b. SF6 circuit breaker c. Bulk oil circuit breaker d. Minimum oil circuit breaker   |  | | --- | |  | | ANSWER: Air blast circuit breaker  3.Back up protection is needed for –  a.Over voltage  b.Short circuits  c.Over current  d.All of these  ANSWER:B | | | | |
| 4. Which circuit breaker is preferred to be installed in extra high voltage AC system?  a. Bulk oil type circuit breaker b. Air blast circuit breaker c. SF6 circuit breaker d. Vacuum circuit breaker   |  | | --- | |  | | ANSWER: SF6 circuit breaker  5.Induction cup relays responds to –  a.Current  b.Power  c.Voltage  d.Impedance |   ANSWER:D | | | |
| 6)   Which among these circuit breakers produce the least arc energy?  a. Plain oil b. Minimum oil c. Air blast d. Air break   |  | | --- | |  | | ANSWER: C Air blast | | | | |
| 7)Rating of circuit breaker depends upon-  Breaking capacity  Making capacity  Short time capacity  All of these  ANSWER:D  8)   The rating of the circuit breaker is usually determined on the basis of \_\_\_\_\_\_\_\_\_\_\_\_ fault.  a. Symmetrical b. Line to line c. Single line to ground d. Double line to ground   |  | | --- | |  | | ANSWER: Symmetrical | | | | |
| 9)   Which of the following circuit breaker is highly reliable and has a least maintenance?  a. Oil circuit breakers b. Air blast c. Vacuum circuit breakers d. SF6 circuit breakers   |  | | --- | |  | | ANSWER: SF6 circuit breakers  10)Phenomenon of arc interruption takes place at-  Zero voltage  Zero current  High Voltage  High Current  ANSWER:B  11)Effect of Arc Resistance and swing are perform by-  MHO  Impedance  reactance relay  none  ANSWER :B  12)In which relay having no effect on arc fault-  Impedance  reactance  MHO  Thermal overlod  ANSWER : B  13) Symmetrical breaking current is-  Symmetrical breaking  Average value of a.c. component  R.m.s. value of a.c. component  All of these  ANSWER:C  14) Non directional over current relay scheme is not suitable for-  Ring main and interconnected  Tie Scheme  Sectionlise  None of these  ANSWER :A | | | | |
| 15)   Circuit breakers usually operate under  a. Steady short circuit current b. Sub transient state of short circuit current c. Transient state of short circuit current d. None of these   |  | | --- | |  | | ANSWER: B Sub transient state of short circuit current | | | | |
| 16)   What is the making capacity of the circuit breaker?  a. Less than the asymmetrical breaking capacity of the breaker b. Greater than the asymmetrical breaking capacity of the breaker c. Equal to the asymmetrical breaking capacity of the breaker d. Equal to the symmetrical breaking capacity of the breaker   |  | | --- | |  | | ANSWER: B Greater than the asymmetrical breaking capacity of the breaker  17) The impedance of transmission line is proportion to  Distance  Length  Rated current  Rated Voltage  ANSWER : B  18) In oil circuit breakers, dielectric strength of oil should be-  High  Low  Medium  None  ANSWER:A | | | | |
| 19)   A three phase circuit breaker is rated 2000 MVA, 33 kV. What will be its making current?  a. 35 kA b. 49 kA c. 70 kA d. 89 kA   |  | | --- | |  | | ANSWER: 89 kA  20) Plain circuit breaker can’t be used for voltage above-  400kv  3.3kv  66kv  11kv  ANSWER:D 11KV | | | | |
| 21)   The breaking capacity of a three phase circuit breaker is given by  a. Service line voltage \* rated symmetrical current in amperes \* 10-6 MVA b. √3 \* Service line voltage \* rated symmetrical current in amperes \* 10-6 MVA c. 1.1\* Service line voltage \* rated symmetrical current in amperes \* 10-6 MVA d. √2 \* Service line voltage \* rated symmetrical current in amperes \* 10-6 MVA   |  | | --- | |  | | ANSWER: √3 \* Service line voltage \* rated symmetrical current in amperes \* 10-6 MVA  22) The earth fault protection of short and medium lines is used-  Quadrilateral relay  Electro magnetic  Electro mechanical  none  ANSWER : A  23) Part of circuit breaker helpful in breaking the current is-  Trip Coil  Contact  Handle  Medium  ANSWER:B | | | | |
| 24)   Assertion (A): In comparison to making capacity of a circuit breaker its breaking capacity is normally higher. Reason (R): The breaking capacity of a CB is expressed as √3 \* VI \* 10-6 MVA  a. Both A and R are true and R is the correct explanation of A b. Both A and R are true and R is not the explanation of A c. A is true but R is false d. A is false but R is true.   |  | | --- | |  | | ANSWER: A is false but R is true.  25) It is a technology to improve situation and visibility within power system grids is  WAM  PMU  PLCC  None  ANSWER : A |   26) Arcing time is the time between-  Separation of circuit breaker and extinction of arc  Separation of circuit breaker and rise of recovery voltage  None of these  ANSWER:A | | | |
| 27)   What is the making to breaking current ratio for an extra high voltage circuit breaker?  a. More than 1 b. Equal to 1 c. Less than 1 d. A negative value   |  | | --- | |  | | ANSWER: More than 1  28) For single frequency transients, ratio of peak restriking voltage to time between voltage zero and peak voltage is called-  Restriking voltage  Recovery voltage  RRRV  Active Recovery voltage  ANSWER:C RRRV  29) Arc resistance is given by-  2.9\*10^4L/(If)^1.4  2.9\*10^4L/(If)^1.6  2.5\*10^4L/(If)^1.4  None  ANSWER: A | | | | |
| 30)   Why is an isolator installed?  a. To isolate one portion of the circuit from another b. As an substitute for the circuit breaker c. It used on either sides of the circuit breaker d. Both (a) and (c) e. None of these   |  | | --- | |  | | ANSWER:A To isolate one portion of the circuit from another  31) Time graded principle is applicable where impedance between-  Feeder length is less  Feeder length is high  Feeder length is same  none  ANSWER :A | | | | |
| 32)   For which among the following the current ratings are not required?  a. Circuit breakers b. Relays c. Isolators d. Load break switch   |  | | --- | |  | | ANSWER: C- Isolators | | | | |
| 33)   The isolators used in the transmission lines are capable of breaking  a. Fault current b. No current c. Charging current d. Load current   |  | | --- | |  | | ANSWER:C- Charging current | | | | |
| 34)   Why are the isolators used?  a. Break abnormal current b. Making under fault conditions c. Breaking the circuit under no load condition d. None of the above   |  | | --- | |  | | ANSWER:C- Breaking the circuit under no load condition | | | | |
| 35)   What is the major cause of the failure of the circuit breaker?  a. Trip circuit open b. Trip latch defective c. Spring defective d. All of these   |  | | --- | |  | | ANSWER: D-All of these  36) SF6 gas is-  Is yellow in color  Is lighter than air  is nontoxic  Has pungent small  ANSWER:C | | | | |
| 37)   What is the purpose of back up protection?  a. To increase the speed b. To increase the reach c. To leave no blind spot d. To guard against failure of primary   |  | | --- | | ANSWER: To guard against failure of primary |   38) Rate of rise restriking voltage depends upon-  Active recovery voltage  Natural frequency of oscillations  Both (a) and (b)  Rating of circuit breaker   |  | | --- | | ANSWER: C |  |  | | --- | |  | |  | | | | |
| 39 )   What is the actuating quantity for the relays?  a. Magnitude b. Frequency c. Phase angle d. All of these   |  | | --- | |  | | ANSWER: D-All of these | | | | |
| 40)   Protective relays can be designed to respond to \_\_\_\_\_\_\_\_\_\_\_.  a. Light intensity, impedance b. Temperature, resistance, reactance c. Voltage and current d. All of these   |  | | --- | |  | | ANSWER: D-All of these | | | | |
| 41)   On what factor does the operating speed of the relay depend?  a. Rate of flux built up b. Armature core air gap c. Spring tension d. All of these   |  | | --- | |  | | ANSWER: D-All of these   |  | | --- | | 42) Breaking capacity of a circuit breaker is usually expressed in terms of | | Volt | | Ampere | | MVA | | MW |   ANSWER:C -MVA | | | | |
| 43) In impedance relay, current element torque should be-  Equal to voltage element torque   |  | | --- | | Greater than voltage element torque  Less than voltage element torque  None of these  ANSWER:B | |  | | | | |
| |  | | --- | |  | | 44) Plug setting of a relay can be changed by changing  Air gap  Back up stop  Number of ampere turns  All of these  ANSWER:C |   Instantaneous relay should operate within  0.0001 sec  0.001 sec  0.01 sec  0.1 sec  ANSWER :C | | | |
| 45)   In the following figure, which component ensures the safety of the line from damage?  a. Relay b. Circuit breaker c. Bus bar d. Current transformer   |  | | --- | |  | | ANSWER: A-Relay  46) MHO relay is inherently a  Directional type  non Directional type  Unidirectional type  None of these  ANSWER :A | | | | |
| A three phase circuit breaker is rated 2000 MVA, 33 kV. What will be its making current?  35KA  49KA  65KA  89KA  ANSWER:D 89KA  47) For long tramsmission line,communication is possible two channels by-  PLC  PLCC  WAM  PMU  ANSWER : B | | | |
| 48) Protective relays can be designed to respond to \_\_\_\_\_\_\_\_\_\_\_.  a. Light intensity, impedance b. Temperature, resistance, reactance c. Voltage and current d. All of these   |  | | --- | |  | | ANSWER: D- All of these  49) The bus-bar zone .the purpose of protection includes …….&…..  Bus bar,isolating s/w,C.B  Transfomer,relay,CB  Relay,conductor,Transfomer  All of these  ANSWER : A |   50)The measurement of electrical quantity is done by-  Stationary network  Moving N/W  Zig Zag  All of Above  ANSWER : A  51) Z=V/I in case of-  Distance or imdance relay  Diff.relay  Thermal overload  All of these  ANSWER : A | | | |
| 52)   On what factor does the operating speed of the relay depend?  a. Rate of flux built up b. Armature core air gap c. Spring tension d. All of these   |  | | --- | |  | | ANSWER: D-All of these | | | | |
| 53) which relay is called computer base relay-  Static relay  Numerical relay  Impedence relay  Diff.relay  ANSWER : B  54) The low pass filter which filter out undesired frequency component is  Alliasing Filter  Aniti-aliasing Filter  PMU  Samplig  ANSWER : B | | | |
| |  | | --- | | .  55) Proper sampling phenomenon represent in-  Wsm>/2Wsg  Wsm< 2Wsg  Wsm= 2Wsg  none of these  ANSWER : A  56) Loss of Excitation protectd by which device-  Offset MHO Relay  Admitance relay  Thermal overload  All of these  ANSWER : A  57) For protection of I.M from single phasing called-  DOL Starter  Revese phse sequence  1 phase preventor  None of these  ANSWER : C | | | | |
| |  | | --- | | 58) Which device measure data up to 10 phasor and line frequency  WAM  PLC  PMU  PLCC  ANSWER : C  59) The diff.protection is based in current circlation principle is known as-  Bias Protection  % of diff.protection  overload  Merz prize  ANSWER : D  60) Incipient fault oil level resulting and decomposition oil protected by-  Buchholz relay  Thermal overload  Induction type  All of these  ANSWER : A | | | | |
| 61)   In the following figure, the tripping circuit is\_\_\_\_\_\_\_\_\_\_.  a. AC b. DC c. Either AC or DC d. None of these   |  | | --- | |  | | ANSWER: Either AC or DC  62) For 10MVA ,33KV/3.3kv power transformer wit delta star connecton obtain CT ratio fo diff.protection scheme to circulated current of 400/ 5Ain pilot wires.determine CT ratio of HT side  13.85  15.85  17.08  20  ANSWER : A  63) Harmonic restraint protected for-  Buchholz relay  Earth fault  icipient fault  Inrush current  ANSWER : D | | | | |
| 64)   Plug setting of a electromagnetic relay can be altered by varying  a. Number of ampere turns b. Air gap of magnetic path c. Adjustable back stop d. None of these   |  | | --- | |  | | ANSWER: A - Number of ampere turns  65) For mesured of overheat ,tempreture sensor embeded with whatstones bridge principle are use-  Thermal Overload realy  RTD  Induction type  Impedance type  ANSWER : B  Which relay use for reverse phase squence indicate-  Electro magnetic attraction  Induction type  MHO  none of these  ANSWER : B | | | | |
| 66)   The most efficient torque producing actuating structure for the induction type relays is  a. Shaded pole structure b. Watt hour meter structure c. Induction cup structure d. Single induction loop structure   |  | | --- | |  | | ANSWER:C- Induction cup structure | | | | |
|  |  |  |  | | All of Above | 1 | A |

67) Saturation flux density of transformers about-

1.7 Tesla

2 Tesla

3Tesla

2.5 Tesla

ANSWER : B

68) Type of Rotor wdg.fault are-

Interturn fault & GND Fault

balance &Unbalance condition

Under voltage & over voltage fault

Over load & over current fault

ANSWER : A

69) An alternator is provided with restricted earth fault protection.the alternator is rated 5000KVA,11000 volt,20% of wdg is to be kept unprotected and relay setting 25%.Find resistance to be added in neutral to GND connection

20.30

19.36

16.5

18

ANSWER : B

70) In an alternator, the armature reaction will be completely magnetizing in case the load power factor is-

A.Zero lagging

B.Zero leading

C.0.866

D.Unity

ANSWER : B

71)When the speed of an alternator increases

A.The frequency decrease

B.The frequency increases

C.The frequency remains same

D.The frequency change

ANSWER : B

In huge alternators, the moving part is

A.Brushes

B.Poles

C.Armature

D.None of the above

ANSWER : B

74)The frequency of voltage generated in large alternators is

A.50 Hz

B.60 Hz

C.In kilo cycles

D.In mega cycles

ANSWER : A

75)An alternator coupled to which primemover will usually have the highest rotating speed

A.Steam engine

B.Reciprocating diesel engine

C.Francis turbine

D.Steam turbine

ANSWER : D

76) In an alternator the voltage generated per phase is proportional to

A.Number of turns in coil

B.Flux per pole

C.Frequency of waveform

D.All of the above

ANSWER : D

77)A relatively light loads,transformer efficiency is low because........

A.Second output is lowα

B.Transformer losses are highα

C.Fixed loss is high in proportion to the outputα

D.Cu loss is small

ANSWER : C

78) The no-load current drawn by transformer is usually........

A.0.2% to 0.5%

B.2% to 5%

C.12% to 15%

D.20% to 30%

ANSWER : B

80)Star/star transformers work satisfactorily when........

A.Load is unbalanced onlyα

B.Load is balanced onlyα

C.On balanced as well as unbalanced loadsα

D.None of the above

ANSWER : B

81)Harmonics in transformer result in........

A.Increased core losses

A.Increased I2R losses

C.Magnetic interference with communication circuits

D.All of the above

ANSWER : D

82)Which of the following inductor will have the least eddy current losses?

A. Air core

B. Laminated iron core

C. Iron core

D. Powdered iron core

ANSWER : A

83) The direction of rotation of universal motor can be reversed the by reversing the flow of current through

A.Armature winding

B.Field winding

C.Either armature winding or field winding

D.None of the above

ANSWER : C

84) The leakage current in the transmission lines is referred to as the

A Resistance

B Radiation

C Conductance

D Polarisation

ANSWER : C

85) Find the receiving impedance of a transmission line having a voltage of 24V and a conduction current of 1.2A is

A 25.2

B 22.8

C 28.8

D 20

ANSWER : D

86) Find the characteristic impedance expression in terms of the inductance and capacitance parameters.

A Zo = √(LC)

B Zo = LC

C Zo = √(L/C)

D Zo = L/C

ANSWER : A

87) In long transmission lines Resistance and Capacitance parameters of lines are connected in \_\_\_\_\_\_\_\_\_\_

A Series, shunt

B Series, series

C Shunt, shunt

D Shunt, parallel

ANSWER : D

88) The voltage rating of long transmission line is \_\_\_\_\_\_\_\_\_

A 20 KV to 100 KV

B Upto 20 KV

C Above 100 KV

D 60 KV to 80 K

ANSWER : C

89) The characteristic impedance of a transmission line depends upon

A shape of the conductor

B surface treatment of the conductors

C conductivity of the material

D geometrical configuration. of the conductors

ANSWER : D

90) When the power is to be transmitted over a distance of 500 km, the transmission voltage should be in the range

A 150kV - 220Kv

B 110 kV - 150 kV

C 66 kV - 100 kV

D 33 kV - 66 kV

ANSWER : A

91) Neglecting losses in a transmission system, if the voltage is doubled, for the same power transmission, the weight of conductor material required will be-

A four times

B double

C half

D one fourth

ANSWER : D

92) By which phenomenon does the energy transmission take place between the walls of the tube in waveguides?

a. Reflection

b. Refraction

c. Dispersion

d. Absorption

ANSWER : A

93) At what pressure is the SF6 gas filled in the whole installation of GIS substations?

a. 3 kg / cm2

b. 5 kg / cm2

c. 3 kg / m2

d. 5 kg / m2

ANSWER : A

94)Three step time distance characteristic of distance relay can be had by

A.Changing taps on voltage transformer

B. Separate measuring elements for zones 2 and 3

C. Switching resistance in relay restrain circuit at pre-set time interval by means of a timer element

D. Any of the above

ANSWER : D

95) Distance protection scheme is preferred over graded lime-lag over-current protection in HV and EHV lines because

A. It is faster in operation

B. It is simple

C. It is cheaper in cost

D. All of the above

ANSWER : A

96) A three-step distance protection the reach of the three zones of the relay at the beginning of the first line typically extends into

   A. 100% of the first line, 50% of the second line and 20% of the third line

   B. 80% of the first line, of 50% of the second line and 20% of the third line

   C. 80% of the first line, 50% of the second line and 10% of the third line

   D. 50% of the first line, 50% of the second line and 20% of the third line

ANSWER : B

97) Which of the following relay is/are overload relays?

A. Thermal

B. Electromagnetic

C. Induction

D. All of the above

ANSWER : D

98) Impedance relay may use

A. Balance beam structure

B. Induction cup structure

C. Shaded pole structure

D. Either A or B

ANSWER : D

99) On transient fault OC and impedance relay-

A. Under reaches

B. Over reaches

C. Reach unaffected

D. None of the above

ANSWER : A

100) Threshold characteristics of a plain impedance relay in a complex Z plane is a-

A. Circle passing through origin

B. Circle with the centre at the origin

C. Straight line passing through origin

D. Straight line offset from the origin

ANSWER : B

101)Where severe synchronising swing occur, the relay employed is

A. Impedance relay

B. Mho relay

C. Reactance relay

D. Induction relay

ANSWER : B

102) For the protection of lines against faults involving variable fault resistance, the preferred relaying scheme is a

   A. Plain impedance relay

   B. Directional over-current relay

   C. Mho relay

   D. Reactance relay

ANSWER : D

104) Admittance relay

A. Nondirectional relay

B. Directional relay

C. Differential relay

D. None of the above

ANSWER : B

105) The relay used for feeder protection is

   A. Under voltage relay

   B. Translay relay

   C. Thermal relay

   D. Buchholz relay

ANSWER : B

106) Which one of the following relay has the capability of anticipating the possible major fault in a transformer ?

   A. Over-current relay

   B. Differential relay

   C. Buchholz relay

   D. Over fluxing relay

ANSWER : C

107) Zero sequence current is used for relaying purpose only in the case of

A. Phase over current really

B.Phase impedance relay

C. Ground over current relay

D. Ground impedance relay

ANSWER : C

108) How many relays are used to detect interphase fault of a three line system?

A. One

B. Two

C. Three

D. Six

ANSWER : C

109) For protection of parallel feeders fed from one end, the relays required are-

A. Nondirectional relays at the source end and directional relay at the load end

B. Nondirectional relay at both ends

C. Directional relay at source end and nondirectional relay at load end

D. Directional relay at both ends

ANSWER : A

110) In order that current should flow without causing excessive heating or voltage drop, the relay contacts should

A. Have low contact resistance

B. Be clean and smooth

C. Be of sufficient size and proper shape

D. Have all above properties

ANSWER : D