ONGC Whole Test Paper

1 A single phase transformer is connected to a supply of voltage V and frequency f and is supplying a load, connected across its secondary winding. If the supply voltage is reduced from V to V/2, the flux established in the core will

decrease by nearly 50%

increase by nearly 50%

remain unchanged

be affected by amount of load and not by the applied voltage

2 Under magnetic saturation of the core of a transformer, the reactance parameters of its equivalent circuit are affected such that

X1 and X2 increase while Xm does not change

X1 and X2 do not change while Xm decreases

X1 and X2 do not change while Xm increases

X1 and X2 decreases while Xm does not change

3 A single phase 2000/200 V, 10 kVA, two winding transformer is reconnected as a step-up autotransformer with 2000 V winding as primary. The kVA rating of the autotransformer shall be

10 kVA

11 kVA

110 kVA

220 kVA

4 The power factor at which power is drawn by a transformer is

very low under O.C. test but high under S.C. test

high under O.C. test but low under S.C. test

low both under O.C. and S.C. tests

high both under O.C. and S.C. tests

5 The O.C.C. of a shunt d.c. generator is represented by E = 12+66I. If the field resistance is 70 ohms, the no-load voltage of the generator will be

144 V

210 V

220 V

288 V

6 In d.c. shunt motors, the developed torque is proportional to

induced e.m.f.

armature current

output power

line current

7 The speed of a separately excited d.c. motor can be controlled below base speed by (a) armature resistance control and (b) supply voltage control. What happens to the slope of modified speed-torque characteristics under the two methods?

It changes in both types of control

It remains unchanged in both types of control

It remains unchanged in armature resistance control while changes in supply voltage control

It remains unchanged in supply voltage control while changes in armature resistance control

8 The polarity of interpoles used in d.c. machines is

same as the main pole ahead in generators while opposite of the main pole ahead in motors

same as the main pole ahead ion motors while opposite of the main pole ahead in generators

same as the main pole ahead in both motors and generators

opposite of the main pole ahead in both motors and generators

9 In synchronous generators, examine the following statements about voltage regulation:

Synchronous impedance method gives pessimistic results

MMF method gives optimistic results

In unsaturated machine both methods (synchronous impedance and MMF) give same result

Which of the statements are correct?

1, 2 and 3

Only 1 and 2

Only 3

Only 2 and 3

10 Under symmetrical short circuit of a synchronous generator, the armature reaction is

magnetizing

demagnetizing

cross-magnetising

mainly magnetising

11 In synchronous generators, the fifth harmonic in induced emf can be eliminated by using coils show chorded by an angle

9o

18o

27 o

36o

12 In induction motor operation, a slip greater than 1 refers to

regenerative braking

motoring in reverse direction

plugging

dynamic braking

13 As the applied voltage to an induction motor, operating under no-load, is reduced to half

its speed reduced and stator current increases

its speed reduced and stator current also reduces

its speed reduces but there is not change in stator current

there is no change in speed but stator current reduces

14 A 3-phase induction motor is delivering a load of 10 kW at a lagging p.f. of 0.5. If a 3-phase capacitor bank of 7.3 kVAR is connected at its input, the resulting kVA drawn from supply shall be (approximately)

26.5

24.5

20.0

14.0

15 An electric motor developing a starting torque of 10 Nm starts with a load of 6 Nm at its shaft. If the acceleration at start is 2 rad/sec2 , the moment of inertia of the system must be

2 kg-m2

2 N-m2

0.5 kg-m2

0.5 N-m2

16 A synchronous motor works as a synchronous condenser if

underexcited

overexcited

excited with 100% excitation

unexcited

17 In relation to damper bar winding in a synchronous motor, examine the following statements:

Damper bars are provided in slots on poles

Damper bars improve excitation

Damper bars help the motor self start

Damper bars minimize hunting.

Which of the statements are correct?

1, 2, 3

2, 3

1, 4

1, 3, 4

18 In large power ratings, synchronous motor is considered superior to induction motor, since

it is less expensive

its efficiency is better

it can be operated at better power factor

its speed regulation is superior.

19 An induction motor drive is designed for two speed operation. For this purpose, the motor is provided with two windings on its stator corresponding to 4

poles and 8 poles. While the motor was running on 4 pole winding, a changeover to 8 pole winding is made. The motor will

experience dynamic braking

experience regenerative braking

experience no braking but will slow down due to its inertia

draw dangerously high current

20 A d.c. shunt motor drive of 100 h.p. is run (a) at half the rated speed by armature voltage control and (b) at 1.5 times the rated speed by field control. Its power rating in the two cases shall be modified as

100 h.p. in both cases

50 h.p. in case (a) and 150 h.p. in case (b)

50 h.p. in case (a) and 100 h.p. in case (b)

100 h.p. in case (a) and 150 h.p. in case (b)

21 A single phase full controlled rectifier can work as inverter, if the firing angle is between

0o and 90o

60o and 90o

90o and 180o

0o and 60o

22 When d.c. voltage is converted to a.c. by an inverter, PWM technique is used to

control only the output voltage from within the inverter

control both the output voltage and frequency from within the inverter

control the output current

reduce losses in the inverter

23 A thyristor which is in ON state is to be switched OFF. For this purpose a reverse bias is applied across it. Examine the following statements regarding flow of current from anode to cathode (forward current):

Forward current can continue to flow if the circuit is purely resistive

Forward current can continue to flow if the circuit is dominantly inductive

Forward current can continue to flow if the circuit is dominantly capacitive

Forward current will immediately stop flowing.

24 Which of the above statements are correct?

Only 4

Only 1

Only 2 and 3

Only 2

25 In a 3-phase full controlled thyristor bridge rectifier operating under continuous conduction mode, each thyristor conducts for

180o and two thyristors conduct at a time

120o and three thyristors conduct at a time

180o and three thyristors conduct at a time

120o and two thyristors conduct at a time

26 A single phase fully controlled rectifier is feeding a d.c. motor. At a = 0o, the armature voltage is 200 V and motor speed is 1000 rpm. Neglecting armature resistance and considering continuous conduction, the armature voltage and speed at a = 60o will be

100 V and 500 rpm

100 V and 1000 rpm

200 V and 500 rpm

100 V and speed will depend upon load

27 The grading capacitors are provided across the series connected interrupters in EHV circuit breakers for

reducing short circuit current

improving power factor

equalizing distribution of recovery voltage across the interrupters

preventing inductive current chopping.

28 The minimum cost operating condition for a thermal plant is that

the larger units should generate more power as compared to smaller units

the smaller units should generate more power as compared to larger units

the incremental cost rate of the units be proportional to their rating

the incremental cost rate of all the units be equal

29 The effect of earth on a three-phase transmission line is to

increase its capacitance and decrease inductance

decrease its capacitance and increase inductance

increase its capacitance without affecting inductance

increase its inductance without affecting capacitance.

30 In case of a transmission line if the voltage regulation is negative, then the load power factor is

zero

lagging

unity

leading