1. The ability of a material to remain magnetized after removal of the magnetizing force is known as

Permeability
reluctance
hysteresis
retentivity
Ans:D

2. When a solenoid is activated, the force that moves the plunger is

an electromagnetic field
a permanent magnetic field
varying voltage
a steady current
Ans:A

3. Which of the following capacitors is polarized

mica
ceramic
plastic-film
electrolytic
Ans:D

4. In a series resonant band-pass filter, a lower value of Q results in

a higher resonant frequency
a smaller bandwidth
a higher impedance
a larger bandwidth
Ans:D

5. A steady-state condition is reached when

the output voltage reaches the average value of the input voltage
the output voltage reaches the input voltage
the output voltage reaches approximately 63% of the input voltage
the output voltage reaches the effective value of the input voltage
Ans:A

6. An RC differentiator acts as a

low-pass filter
high-pass filter
band-pass filter

band-stop filter
Ans:B

7. A balanced three-phase, 50 Hz voltage is applied to a 3 phase, 4 pole, induction motor. When the motor is delivering rated output, the slip is found to be 0.05. The speed of the rotor M.S.F. relative to the rotor structure is

1500 r.p.m.
1425 r.p.m.
25 r.p.m.
75 r.p.m.
Ans:D

Explanation: NS = 120f /P = 120 x 50 /4 =1500rpm

N = NS (1-s) = 1500 (1-0.05) = 1425

\relative speed = 1500 – 1425 = 75 rpm

8. A ceiling fan uses

split-phase motor.
capacitor start and capacitor run motor
universal motor.
capacitor start motor.
Ans:D

9. The drive motor used in a mixer-grinder is a

dc motor.
induction motor.
synchronous motor.
universal motor.
Ans:D

10. A 1:5 step-up transformer has 120V across the primary and 600 ohms resistanceacross the secondary. Assuming 100% efficiency, the primary current equals

0.2 Amp.
5 Amps
10 Amps.
20 Amps.
Ans:A

Explanation: I1= V1 /R1 = 120/600 = 0.2 (h = 100%, losses are zero \V1 = VR = I1R1)

11. A 50 Hz, 3-phase induction motor has a full load speed of 1440 r.p.m. The number of

poles of the motor are

4.
6.
12
8.
Ans:A

Explanation: N= Ns (1-S) = NS –NS x S

1440 = Ns (1-S)

Ns = 1440 / (1-S)

Ns = (120 f/ p) = 120 x 50/p = 6000 p

Ns will be closer to N i.e 1440

When P=2 ; Ns = 3000 rpm , not close to N

When P=4 ; Ns = 1500 rpm , it is closer to N

Therefore P =4 for N=1440

12. In a 3-phase synchronous motor

the speed of stator MMF is always more than that of rotor MMF.
the speed of stator MMF is always less than that of rotor MMF.
the speed of stator MMF is synchronous speed while that of rotor MMF is zero
rotor and stator MMF are stationary with respect to each other.
Ans:D

Explanation: Because, Motor is magnetically locked into position with stator, the rotor poles are engaged with stator poles and both run synchronously in same direction Therefore,

rotor & stator mmf are stationary w.r.t each other.

13. In a three-phase transformer, if the primary side is connected in star and secondary

side is connected in delta, what is the angle difference between phase voltage in the

two cases.

delta side lags by -30°.
star side lags by -30°.

delta side leads by 30°.
star side leads by -30°.
Ans:C

Explanation: This is vector group and has +30° displacement. Therefore, delta side leads by +30°.

14. Slip of the induction machine is 0.02 and the stator supply frequency is 50 Hz.

What will be the frequency of the rotor induced emf?

10 Hz.
50 Hz.
1 Hz.
2500 Hz.
Ans:C

Explanation: Given: s = 0.02; f = 50 Hz

Therefore, frequency of rotor induced emf = s f

= 0.02 x 50 = 1.0 Hz

15. A 4 pole lap wound dc shunt motor rotates at the speed of 1500 rpm, has a flux of 0.4mWb and the total number of conductors are 1000. What is the value of emf?

100 Volts.
0.1 Volts.
1 Volts.
10 Volts.
Ans:D

Explanation: Given N = 1500 rpm, F = 0.4 mWb, Z = 1000, P = 4, & A= 4

Therefore, Eb = NFPZ / 60 A

= 1500 x 0.4 x 4 x 1000 x 10-3 / 60 x 4

= 60/6 = 10 volts

EPI electronics question paper Contributed by Sreyas Rithy