Electrical Sample Questions

Questions And Answers

No.	Question
1	A 50 kW dc shunt motor is loaded to draw rated armature current at any given speed. When driven (i) at half the rated speed by armature voltage control and (ii) at 1.5 times the rated speed by field control, the respective output powers delivered by the motor are approximately.
Options	**A)** 25kW in (i) and 75kW in (ii) **B)** 25kW in (i) and 50kW in (ii) **C)** 50kW in (i) and 75kW in (ii) **D)** 50kW in (i) and 50kW in (ii)
Correct Answer	B
2	A fair coin is tossed three times in succession. If the first toss poduces a head, then the probability of getting exactly two heads in three tosses is
Options	**A)** $\frac{1}{8}$ **B)** $\frac{1}{2}$ **C)** $\frac{3}{8}$ **D)** $\frac{3}{4}$
Correct Answer	D
3	In the matrix equation Px = q, which of the following is a necessary condition for the existence of at least one solution for the unknown vector x:
Options	**A)** Augmented matrix [Pq] must have the same rank as matrix P **B)** Vector q must have only non-zero elements **C)** Matrix P must be singular **D)** Matrix P must be square

Correct Answer A

4 At an industrial sub-station with a 4 MW load, a capacitor of 2 MVAR is installed to maintain the load power factor at 0.97 lagging. If the capacitor goes out of serivce, the load power factor becomes

Options
A) 0.85 **B)** 1.00
C) 0.80 lag **D)** 0.90 lag

Correct Answer C

5 In the GH(s) plane, the Nyquist plot of the loop transfer function G(s)H(s) = $\frac{\pi e^{-0.25}}{s}$ asses through the negative real axis at the point

Options
A) (-0.25, j0) **B)** (-0.5, j0)
C) (-l, j0) **D)** (-2, j0)

Correct Answer B

6 If S = $\int_1^{\infty} x^{-3}\,dx$, then S has the value

Options
A) $\frac{-1}{3}$ **B)** $\frac{1}{4}$
C) $\frac{1}{2}$ **D)** 1

Correct Answer	C

7	The following motor definitely has a permanent magnet rotor
Options	**A)** DC commutator motor **B)** Brushless dc motor **C)** Stepper motor **D)** Reluctance motor
Correct Answer	C

8	The conduction loss versus device current characteristic of a power MOSFET is best approximated by
Options	**A)** a parabola **B)** a straight line **C)** a rectangular hyperbola **D)** an exponentially decaying function
Correct Answer	A

9	A digital-to-analog converter with a full-scale output voltage of 3.5 V has a resolution close to 14m V. Its bit size is
Options	**A)** 4 **B)** 8 **C)** 16 **D)** 32
Correct Answer	B

10	A 50 Hz, bar primary CT has a secondary with 500 turns. The secondary supplies 5 A current into a purely resistive burden of l W. The magnetizing ampere-turns is 200. The phase angle between the primary and secondary current is
Options	**A)** 4.6° **B)** 85.4° **C)** 94.6° **D)** 175.4°
Correct Answer	A

11	The armature resistance of a permanent magnet dc motor is 0.8 W. At no load, the motor draws 1.5 A from a supply voltage of 25 V and runs at 1500 rpm. The efficiency of the motor while it is operating on load at 1500 rpm drawing a current of 3.5 A from the same source will be
Options	**A)** 48.0% **B)** 57.1% **C)** 59.2% **D)** 88.8%
Correct Answer	A

12	A bipolar junction transistor (BJT) is used as a power control switch by biasing it in the cut-off region (OFF state) or in the saturation region (ON state). In the ON state, for the BJT
Options	**A)** both the base-emitter and base-collector junctions are reverse biased **B)** the base-emitter junction is reverse biased, and the base-collector junction is forward biased **C)** the base-emitter junction is forward biased, and the base-collector junction is reverse biased **D)** both the base-emitter and base-collector junctions are forward biased
Correct Answer	D

13	For the equation, $s^3 - 4s^2 + s + 6 = 0$ the number of roots in the left half of s-plane will be
Options	**A)** zero **B)** one **C)** two **D)** three
Correct Answer	C

14	The Q - meter works on the principle of

Options
A) mutual inductance **B)** self inductance
C) series resonance **D)** parallel resonance

Correct Answer C

15 A 800 kV transmission line is having per phase line inductance of 1.1 mH/km and per phase line capacitance of 11.68 nF/km. Ignoring the length of the line, its ideal power transfer capability in MW is

Options
A) 1204 MW **B)** 1504 MW
C) 2085 MW **D)** 2606 MW

Correct Answer C

16 The insulation strength of an EHV transmission line is mainly governed by

Options
A) load power factor **B)** switching over-voltages
C) harmonics **D)** corona

Correct Answer B

17 If the following program is executed in a icroprocessor, the number of instruction cycles it will take from START to HALT is

```
START MVI A, 14H ; Move 14H to register A
SHIFT   RLC      ; Rotate left without carry
        JNZ SHIFT ; Jump on non-zero to SHIFT
        HALT
```

Options
A) 4 **B)** 8
C) 13 **D)** 16

Correct Answer C

18	A moving iron ammeter produces a full scale torque of 240 μNm with a deflection of 120° at a current of 10 A. The rate of change of self inductance (μH/radian) of the instrument at full scale is
Options	**A)** 2.0 μH/radian **B)** 4.8 μH/radian **C)** 12.0 μH/radian **D)** 114.6 μH/radian
Correct Answer	B

19	The output voltage waveform of a three-phase square-wave inverter contains
Options	**A)** only even harmonics **B)** both odd and even harmonics **C)** only odd harmonics **D)** only triplen harmonics
Correct Answer	C

20	If P and Q are two random events, then the following is TRUE
Options	**A)** Independence of P and Q implies that probability (P ∩Q) = 0 **B)** Probability (P ∪ Q) ≥ Probability (P) + Probability (Q) **C)** If P and Q are mutually exclusive, then they must be independent **D)** Probability (P ∩ Q) ≤ Probability (P)
Correct Answer	D