# Electrical Sample Questions

## Questions And Answers

| No. | Question |
|---|---|
| 1 | For the scalar field u = $\frac{x^2}{2} + \frac{y^2}{3}$, magnitude of the gradient at the point (1,3) is |
| Options | **A)** $\sqrt{13/9}$ **B)** $\sqrt{9/2}$ **C)** $\sqrt{5}$ **D)** $\frac{9}{2}$ |
| Correct Answer | C |
| 2 | 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 |
| 3 | A single-phase half-controlled rectifier is driving a separately excited dc motor. The dc motor has a back emf constant of 0.5 V/rpm. The armature current is 5 A without any ripple. The armature resistance is 2Ω. The converter is working from a 280 V, single phase ac source with a firing angle of 80°. Under this operating condition, the speed of the motor will be |
| Options | **A)** 339 rpm **B)** 359 rpm **C)** 366 rpm **D)** 386 rpm |
| Correct | C |

Answer



4 In relation to the synchronous machines, which one of the following statements is false?

Options
**A)** In salient pole machines, the direct-axis synchronous reactance is greater than the quadrature-axis synchronous reactance
**B)** The damper bars help the synchronous motor self start
**C)** Short circuit ratio is the ratio of the field current required to produce the rated voltage on open circuit to the rated armature current
**D)** The V-curve of a synchronous motor represents the variation in the armature current with field excitation, at a given output power

Correct Answer C

5 The 8085 assembly language instruction that stores the content of H and L registers into the memory locations $2050_H$ and $2051_H$, respectively, is

Options
**A)** SPHL $2050_H$ **B)** SPHL$2051_H$
**C)** SHLD $2050_H$ **D)** STAX $2050_H$

Correct Answer C

6 If $\vec{E}$ is the electric field intensity, $\nabla(\nabla \times \vec{E})$ is equal to

Options
**A)** $\vec{E}$ **B)** $|\vec{E}|$
**C)** null vector **D)** zero

Correct D

Answer

7 For the function $f(x) = x^2 e^{-x}$, the maximum occurs when x is equal to

Options **A)** 2 **B)** 1
**C)** 0 **D)** -1

Correct Answer B

8 Two wattmeters, which are connected to measure the total power on a three - phase system supplying a balanced load, read 10.5 kW and - 2.5 kW, respectively. The total powere and the power factor, respectively, are

Options **A)** 13.0 kW, 0.334 **B)** 13.0 kW, 0.684
**C)** 8.0 kW, 0.52 **D)** 8.0 kW, 0.334

Correct Answer D



9 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

10 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

11 A dc potentiometer is designed to measure up to about 2 V with a slide wire of

800 mm. A standard cell of emf 1.18 V obtains balance at 600 mm. A test cell is seen to obtain balance at 680 mm. The emf of the test cell is

Options

**A)** 1.00V **B)** 1.34V

**C)** 1.50V **D)** 1.70V

Correct Answer B

12 High Voltage DC (HVDC) transmission is mainly used for

Options

**A)** bulk power transmission over very long distances

**B)** inter-connecting two systems with the same nominal frequency

**C)** eliminating reactive power requirement in the operation

**D)** minimizing harmonics at the converter stations

Correct Answer A



13 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

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 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

17 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

18 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

19 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



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