

Electrical Sample Questions

Questions And Answers

No.	Question
1	<p>For the scalar field $u = \frac{x^2}{2} + \frac{y^2}{3}$, magnitude of the gradient at the point (1,3) is</p> <p>A) $\frac{13}{9}$ B) $\frac{9}{2}$</p> <p>C) $\sqrt{5}$ D) $\frac{9}{2}$</p>
Options	
Correct Answer	C
2	<p>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</p> <p>A) 4 B) 8</p> <p>C) 16 D) 32</p>
Options	
Correct Answer	B
3	<p>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</p> <p>A) 339 rpm B) 359 rpm</p> <p>C) 366 rpm D) 386 rpm</p>
Options	
Correct Answer	C

Answer

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

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

Options **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

A) SPHL 2050_H **B)** SPHL2051_H

Options **C)** SHLD 2050_H **D)** STAX 2050_H

Correct Answer C

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

A) $\frac{\nabla \times \mathbf{E}}{E}$ **B)** $\frac{\nabla \cdot \mathbf{E}}{E}$

Options **C)** null vector **D)** zero

Correct Answer D

Answer

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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 power 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

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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

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

Options

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

Correct Answer

B

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

A) bulk power transmission over very long distances

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

Options

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

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

Options

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

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

16

```
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 μ Nm with a deflection of 120° at a current of 10 A. The rate of change of self inductance (μ H/radian) of the instrument at full scale is

Options A) 2.0 μ H/radian B) 4.8 μ H/radian
 C) 12.0 μ H/radian D) 114.6 μ H/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 service, 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 $(P \cap Q) = 0$ B) Probability $(P \cup Q) \geq$ Probability (P) + Probability (Q)
C) If P and Q are mutually exclusive, then they must be independent D) Probability $(P \cap Q) \leq$ Probability (P)

Correct Answer D