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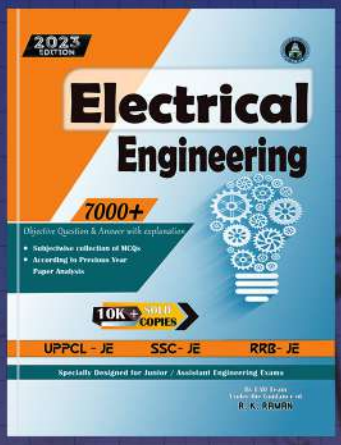

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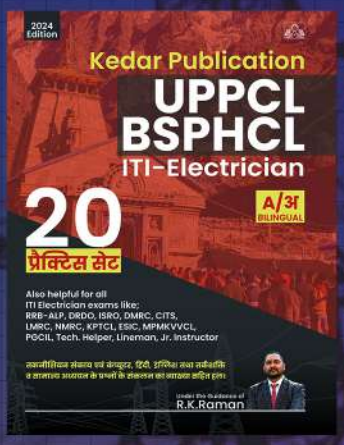

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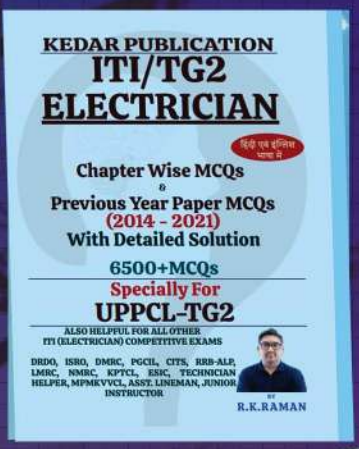

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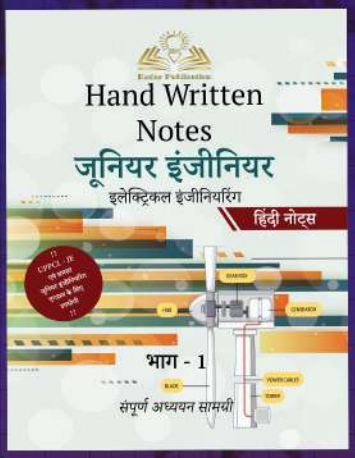

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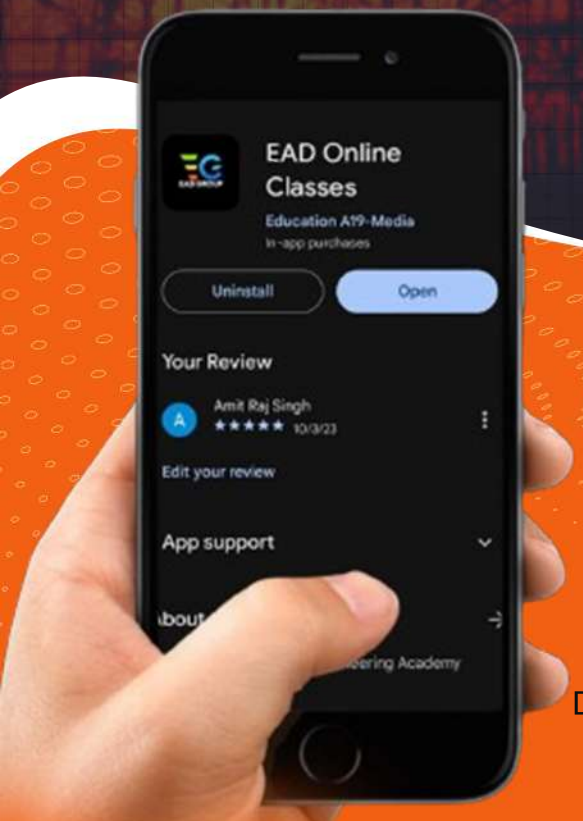

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Exam Date: **06-Jan-2021**
Exam Time: **09:00-11:00**
Post Name: **Vidhyut Sahayak - Junior Eng-Electrical**

GENERAL KNOWLEDGE - GENERAL KNOWLEDGE

Question No.1

Which among the following cities will host the Summer Olympic Games in 2024?
(A) ○ **Paris (Correct Answer)**
(B) ○ New Delhi
(C) ○ London
(D) ○ Sydney

Question No.2

Who has been appointed as the first Lieutenant Governor of the Union Territory of Ladakh?
(A) ○ **Radha Krishna Mathur (Correct Answer)**
(B) ○ Amit Shah
(C) ○ Satya Pal Malik
(D) ○ Ram Nath Kovind

Question No.3

Which state has recently approved the 'Disha Bill 2019' which mandates disposal of cases of atrocities against women within 21 days?
(A) ○ West Bengal
(B) ○ Punjab
(C) ○ Uttar Pradesh
(D) ○ **Andhra Pradesh (Correct Answer)**

Question No.4

What is the full form of TRAI?
(A) ○ **Telecom Regulatory Authority of India (Correct Answer)**
(B) ○ Transmission Regulatory Authority of India
(C) ○ Technological Regulatory Authority of India
(D) ○ Television Regulatory Authority of India

Question No.5

Who is the chairman of 15th Finance Commission of India?
(A) ○ **Nand Kishore Singh (Correct Answer)**
(B) ○ Urjit Patel
(C) ○ Arvind Panagariya
(D) ○ Rajiv Kumar

Question No.6

Which of the following countries partnered with India under IBSA Dialogue Forum?
(A) ○ Bangladesh, Singapore and Australia
(B) ○ Brunei, Sudan and Armenia
(C) ○ **Brazil and South Africa (Correct Answer)**
(D) ○ Bhutan, Sri Lanka and Afghanistan

Question No.7

Which among the following Indian states shares its border with Nepal?
(A) ○ Assam
(B) ○ **Uttarakhand (Correct Answer)**
(C) ○ Arunachal Pradesh
(D) ○ Himachal Pradesh

Question No.8

When was the Poona Pact signed by B.R.Ambedkar?
(A) ○ 1940
(B) ○ 1945

(C) ○ 1947
(D) ○ **1932 (Correct Answer)**

Question No.9

AIDS is an acronym of _____
(A) ○ Acquired Integrated Deficiency Syndrome
(B) ○ Acquired Inoculation Deficiency Syndrome
(C) ○ **Acquired Immune Deficiency Syndrome (Correct Answer)**
(D) ○ Acquired Influenza Deficiency Syndrome

Question No.10

Lignite is an example of which type of rock?
(A) ○ Plutonic Rock
(B) ○ **Sedimentary Rock (Correct Answer)**
(C) ○ Metamorphic Rock
(D) ○ Volcanic Rock

ENGLISH KNOWLEDGE - ENGLISH KNOWLEDGE

Question No.1

Replace the underlined phrase grammatically and conceptually with the help of the given options. If the given sentence is correct then select the option 'The given sentence is correct'.

The conference **was prolongs because they were** waiting for their chief guest to arrive
(A) ○ The given sentence is correct
(B) ○ **was prolonged because they were (Correct Answer)**
(C) ○ was prolonged since they will
(D) ○ was prolonged because they was

Question No.2

Fill in the blanks with suitable Article from the given alternatives.

Oncologists are doctors who specialize in treating _____ cancer
(A) ○ the
(B) ○ **No article (Correct Answer)**
(C) ○ an
(D) ○ a

Question No.3

Choose the word which best expresses the similar **meaning** of the given word " INEPT "
(A) ○ Expert
(B) ○ **Artless (Correct Answer)**
(C) ○ Lucid
(D) ○ Able

Question No.4

Rearrange the following to form a meaningful sentence and find the most logical order from the given options.

P: as an environmental scourge that killed
Q: in 2017, air pollution should be
R: an estimated 1.24 million people in India
S: among the highest policy priorities
(A) ○ PSRQ
(B) ○ **PRQS (Correct Answer)**
(C) ○ PRSQ
(D) ○ PQRS

Question No.5

Fill in the blanks with suitable Preposition from the given alternatives.

My friend is afraid _____ animals
(A) ○ beneath
(B) ○ above
(C) ○ in
(D) ○ **of (Correct Answer)**

Question No.6

Choose the best option from the given alternatives which can be substituted for the given word/sentence.

A place for clothes

(A) ○ Oasis
(B) ○ **Wardrobe (Correct Answer)**
(C) ○ Corridor
(D) ○ Abattoir

Question No.7

Find the word which is correctly spelt from the given options.

(A) ○ **Beautifully (Correct Answer)**
(B) ○ Encaptulate
(C) ○ Contagiuous
(D) ○ Detorioration

Question No.8

Find the word which is correctly spelt from the given options.

(A) ○ Enacttment
(B) ○ Consistancy
(C) ○ **Abandoned (Correct Answer)**
(D) ○ Benavolent

Question No.9

In the following question, one part of the sentence may have an error. Find out which part of the sentence has an error and select the option corresponding to it. If the sentence contains no error, Select "No error" option. (Avoid punctuation errors)

(A) How long have / (B) you been working / (C) on this company?/ (D) NO ERROR

(A) ○ A
(B) ○ D
(C) ○ B
(D) ○ **C (Correct Answer)**

Question No.10

Choose the word which expresses nearly the **opposite** meaning of the given word " TURMOIL "

(A) ○ Disorder
(B) ○ **Calm (Correct Answer)**
(C) ○ Disturbance
(D) ○ Bustle

ELECTRICAL ENGINEERING - ELECTRICAL ENGINEERING

Question No.1

A step down DC chopper has input voltage of 200 V with 10 Ω load resistor connected, voltage drop across chopper is 2 V when it is ON. For a duty cycle of 0.6, calculate the average value of output voltage.

(A) ○ 131 V
(B) ○ 154 V
(C) ○ **118.8 V (Correct Answer)**
(D) ○ 121.2 V

Question No.2

If the severity of single line-to-ground fault at the terminals of an unloaded star connected synchronous generator is greater than that of 3-phase faults, then _____ where, X_1 is the positive sequence reactance of the generator, X_{g0} is the zero sequence reactance of the generator and X_n is the neutral reactance.

(A) ○ $X_n = \frac{1}{3}(X_1 - X_{g0})$

(B) ○ $X_n < \frac{1}{3}(X_1 - X_{g0})$ **(Correct Answer)**

(C) ○ $X_n = 3(X_1 - X_{g0})$

(D) ○ $X_n > \frac{1}{3}(X_1 - X_{g0})$

Question No.3

Hay's bridge is suitable for the measurement of _____.

(A) ○ capacitance with low dissipating factors

(B) ○ capacitance with high dissipating factors

(C) ○ inductance with Q<10

(D) ○ **inductance with Q>10 (Correct Answer)**

Question No.4

The value of $\int_0^{2+i} \bar{z}^2 dz$ along the line $y = x/2$ is equal to _____.

(A) ○ $\frac{5}{2}(2-i)$

(B) ○ $\frac{5}{3}(2-i)$ **(Correct Answer)**

(C) ○ $\frac{5}{3}(2i+1)$

(D) ○ $\frac{5}{3}(2+i)$

Question No.5

The condition for symmetry of impulse response of M-point linear phase FIR system, when h(n) is non-zero for 0 ≤ n ≤ M-1, is _____.

(A) ○ h(n) = h(M-1)

(B) ○ h(n) = h(M+1+n)

(C) ○ h(n) = h(M-n)

(D) ○ **h(n) = h(M-1-n) (Correct Answer)**

Question No.6

Two identical coaxial circular coils carry the same current 'I', but in opposite directions. The magnitude of the magnetic field 'B' at a point on the axis midway between the coils is _____.

(A) ○ twice that produced by one coil

(B) ○ **Zero (Correct Answer)**

(C) ○ half that produced by one coil

(D) ○ same as that produced by one coil

Question No.7

A 250 V DC shunt motor takes 41 A at full load. The resistances of motor armature and shunt field windings are 0.1 Ω and 250 Ω respectively. Calculate the back emf on full load.

(A) ○ E_b = 254 V

(B) ○ E_b = 250 V

(C) ○ E_b = 125 V

(D) ○ **E_b = 246 V (Correct Answer)**

Question No.8

The input voltage applied to a 1 kΩ resistance in order that a current of 100 mA may flow is:

(A) ○ 0.1 V

(B) ○ **100 V (Correct Answer)**

(C) ○ 1 V

(D) ○ 10 V

Question No.9

Two inductively coupled coils have self inductance L_1 = 50 mH and L_2 = 200 mH. The maximum possible mutual inductance between the coils is _____.

(A) ○ **100 mH (Correct Answer)**

(B) ○ 250 mH

(C) ○ 150 mH

(D) ○ 200 mH

Question No.10

A unity feedback control system has an open loop transfer function

$$G(s)=\frac{K}{s(s+1)(s+2)(s+3)}.$$

The centroid of the asymptotes in root-locus will be .....

(A) ○ -1
(B) ○ **-1.5 (Correct Answer)**
(C) ○ Zero
(D) ○ 2

Question No.11

In power system load flow studies, the quantities specified at a slack bus are _____ and _____.
(A) ○ **V and δ (Correct Answer)**
(B) ○ P and δ
(C) ○ P and Q
(D) ○ P and V

Question No.12

If the field of the synchronous motor is over excited, the power factor will be _____.
(A) ○ Unity
(B) ○ Zero
(C) ○ Lagging
(D) ○ **Leading (Correct Answer)**

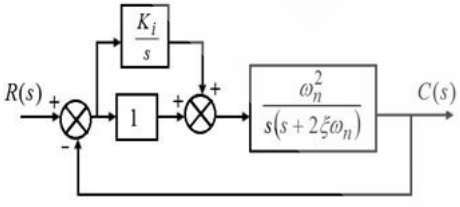
Question No.13

The Fourier series for the function $f(x)=x(\pi-x)$ in $0\le x\le\pi$ is $f(x)=\frac{\pi^2}{6}-4\left[\frac{\cos 2x}{2^2}+\frac{\cos 4x}{4^2}+\cdots\right]$ then $\frac{1}{1^4}+\frac{1}{2^4}+\frac{1}{3^4}+\frac{1}{4^4}+\cdots\infty$ is _____

(A) ○ $\frac{\pi^2}{6}$
(B) ○ $\frac{\pi^4}{90}$ **(Correct Answer)**
(C) ○ $\frac{\pi^2}{12}$
(D) ○ $\frac{\pi}{8}$

Question No.14

For the closed-loop second order system with PI controller shown in Fig., the steady state error for unit ramp input is given by:



(A) ○ $e_{SS}=\frac{2\xi}{\omega_n}$
(B) ○ **Zero (Correct Answer)**
(C) ○ $e_{SS}=\frac{\xi}{\omega_n}$
(D) ○

$e_{SS} = 2\xi\omega_n$

Question No.15

The value of $\iint r^3 dr d\theta$ over the area between $r = 2sin\theta$ and $r = 4sin\theta$ is equal to _____.

(A) ○ $\frac{45}{2}$

(B) ○ $\frac{\pi}{2}$

(C) ○ $\frac{45\pi}{2}$ **(Correct Answer)**

(D) ○ $\frac{43\pi}{2}$

Question No.16

The open loop transfer function of unity feedback control system is:

$G(s) = \frac{K}{s(s+a)(s+b)}$, $0 < a \leq b$. The system is stable if

(A) ○ $0 < K < ab(a+b)$ **(Correct Answer)**

(B) ○ $0 < K < \frac{a(a+b)}{b}$

(C) ○ $0 < K < \frac{(a+b)}{ab}$

(D) ○ $0 < K < \frac{ab}{(a+b)}$

Question No.17

The emf generated by a DC generator running at 600 rpm is 400 V. What should be the speed of rotation if the induced emf is 500 V? Assume the flux to be constant.

(A) ○ 600 rpm

(B) ○ **750 rpm (Correct Answer)**

(C) ○ 330 rpm

(D) ○ 480 rpm

Question No.18

Determine the constant ' c ' such that the vector

$\vec{F} = (x+5y)\hat{a}_x + (y-3x)\hat{a}_y + (x+cz)\hat{a}_z$ will be Solenoidal.

(A) ○ c = 1

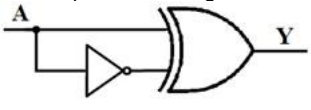
(B) ○ c = -1

(C) ○ c = 2

(D) ○ **c = -2 (Correct Answer)**

Question No.19

The output Y of the logic circuit shown in Fig. is _____.



(A) ○ Y = A

(B) ○ $Y = \overline{A}$

(C) ○ **Y = 1 (Correct Answer)**
(D) ○ Y = 0

Question No.20

A resistor of 50 Ω, an inductor of 0.02 H and a capacitor of 5 μF are connected in series. The power factor at resonance is _____.
(A) ○ zero
(B) ○ 0.8 leading
(C) ○ **unity (Correct Answer)**
(D) ○ 0.8 lagging

Question No.21

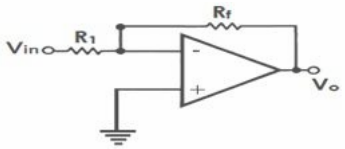
If 'f' is the supply frequency, then in a 3-phase full converter, the output voltage pulsates at a frequency equal to _____.
(A) ○ **6f (Correct Answer)**
(B) ○ 2f
(C) ○ 3f
(D) ○ f

Question No.22

The per unit impedance of a generator on a 60 MVA, 20 kV base is j0.09 p.u. The per unit impedance to a 100 MVA, 20 kV base will be _____.
(A) ○ j 0.54 p.u.
(B) ○ j 1.5 p.u.
(C) ○ **j 0.15 p.u. (Correct Answer)**
(D) ○ j 0.054 p.u.

Question No.23

In the inverting amplifier circuit shown in Fig., R_1 = 1 kΩ and R_f= 3 kΩ. Determine the output voltage 'V_o' when the input voltage is V_{in} = 1V.



(A) ○ V_o = 3 V
(B) ○ V_o = 1.5 V
(C) ○ V_o = -1.5 V
(D) ○ **V_o = -3 V (Correct Answer)**

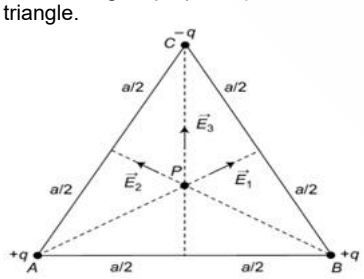
Question No.24

$$\lim_{x\to 0^+} \frac{\log x}{\cot x} =$$

(A) ○ 2
(B) ○ 1
(C) ○ **0 (Correct Answer)**
(D) ○ -1

Question No.25

Three charges q, -q and q are situated at the vertices of an equilateral triangle of side 'a' as shown in Fig. Find the field at the centroid of the triangle.



(A) ○ $E = \frac{3}{2}\left(\frac{q}{\pi\varepsilon a^2}\right)$ **(Correct Answer)**
(B) ○

$$E = \frac{1}{2}\left(\frac{q}{\pi\varepsilon a^2}\right)$$

(C) ○ $$E = \frac{3}{4}\left(\frac{q}{\pi\varepsilon a^3}\right)$$

(D) ○ $$E = \frac{1}{3}\left(\frac{q}{\pi\varepsilon a}\right)$$

Question No.26

If ' P_m ' is the gross mechanical power developed, ' P_{cu} ' is the rotor copper loss and ' s ' is the slip of induction motor, then the ratio of rotor copper loss to the gross mechanical power developed is _____.

(A) ○ $$\frac{P_{cu}}{P_m} = s$$

(B) ○ $$\frac{P_{cu}}{P_m} = 1 - s$$

(C) ○ $$\frac{P_{cu}}{P_m} = \frac{1-s}{s}$$

(D) ○ $$\frac{P_{cu}}{P_m} = \frac{s}{1-s}$$ **(Correct Answer)**

Question No.27

In the toggle mode, a JK flip-flop has _____.

(A) ○ J =0 and K =1

(B) ○ J = 1 and K = 0

(C) ○ **J =1 and K =1 (Correct Answer)**

(D) ○ J = 0 and K = 0

Question No.28

A 3-phase inverter delivers power to a resistive load from a DC source 'V_S '. For star connected load of 'R' Ω per phase, the RMS value of load current (I_{or}) for 120 degree conduction mode is _____.

(A) ○ $$I_{or} = \frac{1}{\sqrt{2}}\left(\frac{V_s}{R}\right)$$

(B) ○ $$I_{or} = \frac{\sqrt{3}}{2}\left(\frac{V_s}{R}\right)$$

(C) ○ $$I_{or} = \frac{1}{\sqrt{3}}\left(\frac{V_s}{R}\right)$$

(D) ○ $$I_{or} = \frac{1}{\sqrt{6}}\left(\frac{V_s}{R}\right)$$ **(Correct Answer)**

Question No.29

The solution of $(D^2 - 7DD' + 6D'^2)z = 0$ is _____ [where $D = \frac{\partial}{\partial x}$ & $D' = \frac{\partial}{\partial y}$]

(A) ○ $z = f_1(y+x) + f_2(y+6x)$ **(Correct Answer)**

(B) ○ $z = f_1(y+x) + f_2(y-6x)$

(C) ○ $z = f_1(y-x) + f_2(y+6x)$

(D) ○

$z = f_1(y - x) + f_2(y - 6x)$

Question No.30

When the load impedance is equal to the characteristic impedance of the transmission lines, then the reflection coefficient and standing wave ratio are, respectively _____.

(A) ○ **0 and 1 (Correct Answer)**

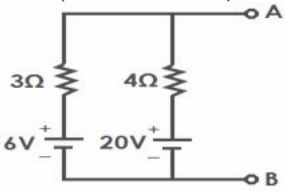
(B) ○ 0 and 0

(C) ○ 1 and 1

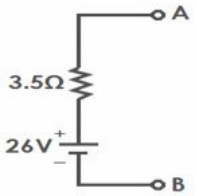
(D) ○ 1 and 0

Question No.31

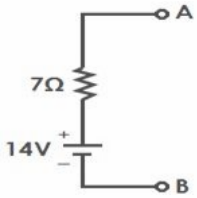
The equivalent circuit representation for the electrical circuit shown in Fig. is



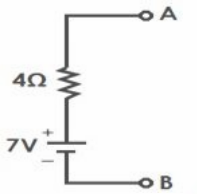
(A) ○



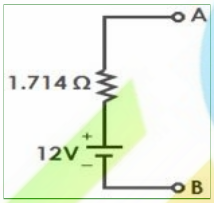
(B) ○



(C) ○



(D) ○



(Correct Answer)

Question No.32

What is the fundamental period ' T_o ' of the signal x(t) = 2 cos(t/4)?

(A) ○ $T_o = 6\pi$

(B) ○ $T_o = 10\pi$

(C) ○ $T_o = 4\pi$

(D) ○ **$T_o = 8\pi$ (Correct Answer)**

Question No.33

For 'n' on-cycles and 'm' off-cycles of single phase AC voltage controller, the input power factor is _____.

(A) ○ $\sqrt{\frac{n}{n+m}}$ **(Correct Answer)**

(B) ○ $\sqrt{\frac{m}{n}}$

(C) ○ $\sqrt{\frac{n}{m}}$

(D) ○ $\sqrt{nm}$

Question No.34

A transformer has equivalent resistance referred to secondary R_{02} and reactance referred to secondary X_{02} . The regulation will be zero when the phase angle is _____.

(A) ○ $\phi = \tan^{-1}\left(\frac{R_{02}}{X_{02}}\right)$ **(Correct Answer)**

(B) ○ $\phi = \tan^{-1}\left(\sqrt{\frac{R_{02}}{X_{02}}}\right)$

(C) ○ $\phi = \tan^{-1}\left(\frac{X_{02}}{R_{02}}\right)$

(D) ○ $\phi = \tan^{-1}\left(\sqrt{\frac{X_{02}}{R_{02}}}\right)$

Question No.35

What capacitance must be connected in series with a 30μF capacitor for the equivalent capacitance to be 10μF?

(A) ○ 10 μF

(B) ○ 20 μF

(C) ○ 5 μF

(D) ○ **15 μF (Correct Answer)**

Question No.36

An induction motor has a short-circuit current equal to five times the full-load current and full load slip is 4%. If the motor is started by a direct-on-line starter, then the ratio of the starting torque ' T_{st} ' to the full load torque ' T_{fl} ' is given by _____.

(A) ○ $\frac{T_{st}}{T_{fl}} = 1$ **(Correct Answer)**

(B) ○ $\frac{T_{st}}{T_{fl}} = 0.04$

(C) ○ $\frac{T_{st}}{T_{fl}} = 4$

(D) ○ $\frac{T_{st}}{T_{fl}} = 1.25$

Question No.37

A fixed resistor of suitable value is usually connected across a thermistor to _____.

(A) ○ **improve its linearity (Correct Answer)**

(B) ○ decrease its resistance

(C) ○ increase its sensitivity

(D) ○ compensate its self-heating effect

Question No.38

The minimum number of 2-input NAND gates required to implement a 2-input XOR gate is _____.

(A) ○ **4 (Correct Answer)**

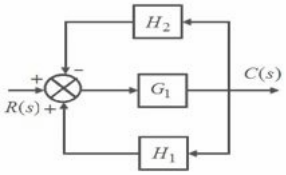
(B) ○ 2

(C) ○ 3

(D) ○ 5

Question No.39

Determine the closed loop transfer function C(s)/R(s) for the block diagram shown in Fig.



(A) ○ $\frac{C(s)}{R(s)} = \frac{G_1}{1 + G_1H_1 + G_1H_2}$

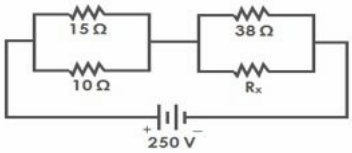
(B) ○ $\frac{C(s)}{R(s)} = \frac{G_1}{1 - G_1H_1 - G_1H_1H_2}$

(C) ○ $\frac{C(s)}{R(s)} = \frac{G_1}{1 - G_1H_1 + G_1H_2}$ **(Correct Answer)**

(D) ○ $\frac{C(s)}{R(s)} = \frac{G_1}{1 + G_1H_1 + G_1H_1H_2}$

Question No.40

For the circuit shown in Fig., find the value of resistor R_x such that the total power dissipated in the circuit is 2.5kW.



(A) ○ **38 Ω (Correct Answer)**
(B) ○ 12 Ω
(C) ○ 19 Ω
(D) ○ 21 Ω

Question No.41

A single phase transformer is connected to a 800 V supply. The voltage/turn of the transformer is 8 V. The secondary voltage of the transformer is found to be 400 V. Determine the number of primary and secondary winding turns.

(A) ○ N_1 = 80 turns and N_2 = 30 turns
(B) ○ N_1 = 75 turns and N_2 = 25 turns
(C) ○ **N_1 = 100 turns and N_2 = 50 turns (Correct Answer)**
(D) ○ N_1 = 125 turns and N_2 = 65 turns

Question No.42

Consider an analog signal x(t) = 5 sin(6000πt)+10 cos(12000πt). What is the Nyquist rate for this signal?

(A) ○ 24000 Hz
(B) ○ **12000 Hz (Correct Answer)**
(C) ○ 18000 Hz
(D) ○ 6000 Hz

Question No.43

Which of the following multirange voltmeters has high and constant input impedance?

(A) ○ **Electronic Voltmeter (Correct Answer)**
(B) ○ Moving Iron Voltmeter
(C) ○ Dynamometer Type Voltmeter
(D) ○ PMMC Voltmeter

Question No.44

Which one of the following networks gets affected by the method of neutral grounding?

(A) ○ Positive sequence network
(B) ○ Negative sequence network
(C) ○ **Zero sequence network (Correct Answer)**
(D) ○ Both Positive and Negative sequence network

Question No.45

A 6-pole, 3-phase induction motor operates from a supply whose frequency is 50 Hz. Calculate the speed of the rotor when the slip is s=4%.

(A) ○ **960 rpm (Correct Answer)**
(B) ○ 1000 rpm
(C) ○ 1500 rpm
(D) ○ 980 rpm

Question No.46

Three loads, each of resistance 50 Ω are connected in delta to a 400 V, 3-phase supply. Determine the phase voltage and the phase current.

(A) ○ **400 V, 8 A (Correct Answer)**
(B) ○ 230 V, 8 A
(C) ○ 400 V, 14 A
(D) ○ 230 V, 14 A

Question No.47

If $u(t-a)$ is a unit step function, then $L(u(t-a)) =$

(A) ○ $\frac{e^{-as}}{s}$ **(Correct Answer)**
(B) ○ $\frac{e^{as}}{s}$
(C) ○ $\frac{e^{-as}}{s^2}$
(D) ○ $\frac{e^{as}}{s^2}$

Question No.48

If the time constant of the series RL circuit with R = 250 Ω is 1 sec, find the required value of self-inductance.

(A) ○ 500 H
(B) ○ 50 H
(C) ○ **250 H (Correct Answer)**
(D) ○ 100 H

Question No.49

The state variable description of an LTI system is given by

$$\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \\ \dot{x}_3 \end{bmatrix} = \begin{bmatrix} 0 & a_1 & 0 \\ 0 & 0 & a_2 \\ a_3 & 0 & 0 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} + \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} u$$

$$y = \begin{bmatrix} 1 & 0 & 0 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix}$$

The system is controllable for _____.

(A) ○ $a_1 \neq 0, a_2 \neq 0, a_3 = 0$ **(Correct Answer)**
(B) ○ $a_1 \neq 0, a_2 = 0, a_3 \neq 0$
(C) ○ $a_1 = 0, a_2 \neq 0, a_3 \neq 0$
(D) ○ $a_1 = 0, a_2 \neq 0, a_3 = 0$

Question No.50

What is the equivalent inertia constant, if two machines having inertia constants H_1 and H_2 are swinging coherently?

(A) ○ $H_{eq} = H_1 - H_2$
(B) ○ $H_{eq} = H_1 H_2 / (H_1 - H_2)$
(C) ○ **$H_{eq} = H_1 + H_2$ (Correct Answer)**

(D) ○ $H_{eq} = H_1 H_2 / (H_1 + H_2)$

Question No.51

The sum of squares of the Eigen values of the matrix $A = \begin{pmatrix} 1 & 0 & 0 \\ 3 & -1 & 0 \\ 2 & 4 & 3 \end{pmatrix}$ is equal to _____.

(A) ○ 3
(B) ○ **11 (Correct Answer)**
(C) ○ 9
(D) ○ 5

Question No.52

The solution of the differential equation $y'' + y = 0$ satisfying the conditions $y(0) = 1$ & $y\left(\frac{\pi}{2}\right) = 2$, is _____.

(A) ○ $\cos x + 2\sin x$ **(Correct Answer)**
(B) ○ $e^x + 2e^x$
(C) ○ $e^x(A + Bx)$
(D) ○ None of the above

Question No.53

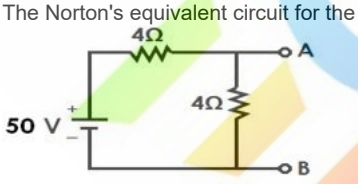
Which of the following is a current controlled device with bidirectional current capability?
(A) ○ MOSFET
(B) ○ **TRIAC (Correct Answer)**
(C) ○ BJT
(D) ○ SCR

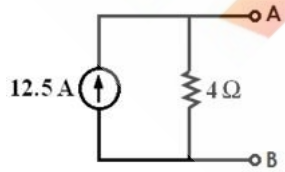
Question No.54

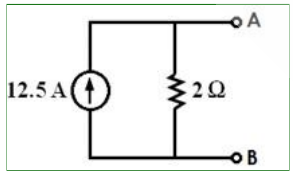
The phase voltage of a delta-connected three phase system with balanced loads is 240 V. The line voltage is:
(A) ○ **240 V (Correct Answer)**
(B) ○ 139 V
(C) ○ 320 V
(D) ○ 415 V

Question No.55

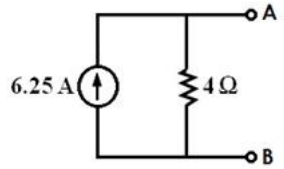
The Norton's equivalent circuit for the circuit shown in Fig. is _____.



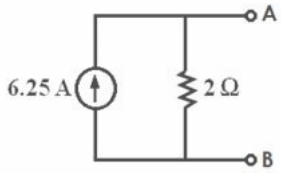
(A) ○


(B) ○


(Correct Answer)

(C) ○


(D) ○



Question No.56

The Fourier Cosine transform of the function $F(x) = \begin{cases} 1, |x| < a \\ 0, |x| > a \end{cases}$

(A) ○ $\sqrt{\frac{2}{\pi}}\frac{\sin as}{s}$ **(Correct Answer)**

(B) ○ $\sqrt{\frac{1}{\pi}}\frac{\cos as}{s}$

(C) ○ $\sqrt{\frac{1}{\pi}}\frac{\sin as}{s}$

(D) ○ $\frac{1}{\sqrt{2\pi}}\frac{\cos as}{s}$

Question No.57

A 500 kVA transformer with 5% reactance on its own rated kVA base will have a reactance of 10% at _____.

(A) ○ 1500 kVA base

(B) ○ 2500 kVA base

(C) ○ **1000 kVA base (Correct Answer)**

(D) ○ 500 kVA base

Question No.58

If $u = \frac{x^3y^3z^3}{x^3+y^3+z^3}$, then $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} + z\frac{\partial u}{\partial z} =$

(A) ○ **6u (Correct Answer)**

(B) ○ 9u

(C) ○ 0

(D) ○ 3u

Question No.59

What is the flux density in a magnetic field of cross-sectional area 20 cm^2 having a flux of 3 mWb?

(A) ○ 3 T

(B) ○ 6.5 T

(C) ○ 4.25 T

(D) ○ **1.5 T (Correct Answer)**

Question No.60

A separately excited DC generator has induced emf of 250V and a full load terminal voltage of 240 V. If the value of armature resistance is 0.1 Ω, find the output of the generator.

(A) ○ 26 kW

(B) ○ 25 kW

(C) ○ **24 kW (Correct Answer)**

(D) ○ 28 kW

COMPUTER KNOWLEDGE - COMPUTER KNOWLEDGE

Question No.1

Identify whether the following statements are True or False with respect to Multithreading in Operating System:

Statement A: Single threaded process can run only on one processor regardless of how many processors are available.
Statement B: Multi-threading on a multiple CPU machine increases parallelism.

(A) ○ Statement A is False and Statement B is True

(B) ○ **Both Statement A & Statement B are True (Correct Answer)**

○

(C) Both Statement A & Statement B are False
(D) ○ Statement A is True and Statement B is False

Question No.2

Identify which is not a type of SAN protocol?
(A) ○ Internet Small Computer System Interface (iSCSI)
(B) ○ Fibre Channel Protocol (FCP)
(C) ○ Fibre Channel over Ethernet (FCoE)
(D) ○ **Network File System (NFS) (Correct Answer)**

Question No.3

_____ is an act of sending Unsolicited Bulk E-mails (UBI) which one has not asked for.
(A) ○ Ads in websites
(B) ○ **E-mail spamming (Correct Answer)**
(C) ○ Vitus
(D) ○ Marketing mails

Question No.4

AGP, AMR, CNR, PCI are some of the slots in Motherboard. Identify the usage of these slots:
(A) ○ Inductor
(B) ○ RAM slot
(C) ○ **Expansion slot (Correct Answer)**
(D) ○ CPU slot

Question No.5

Identify the shortcut key in MS Word for indenting text.
(A) ○ Ctrl +J
(B) ○ Ctrl + K
(C) ○ Ctrl + I
(D) ○ **ctrl + M (Correct Answer)**

Question No.6

_____ is the portion of virtual memory that is on the hard disk, used when RAM is full.
(A) ○ Additional space
(B) ○ Free space
(C) ○ **Swap space (Correct Answer)**
(D) ○ Empty space

Question No.7

_____ is the geometric representation of all the nodes in a network.
(A) ○ Logical topology
(B) ○ **Physical topology (Correct Answer)**
(C) ○ Bus Topology
(D) ○ Mesh Topology

Question No.8

The operating system maintains a _____ for every process and a list of free memory blocks along with segment numbers, their size and corresponding memory locations in main memory.
(A) ○ page map table
(B) ○ page number
(C) ○ **segment map table (Correct Answer)**
(D) ○ offset

Question No.9

_____ particularly infects the executable files; the files with .com or .exe extensions. The virus becomes active when the infected file is executed.
(A) ○ Computer Worm
(B) ○ **File Infector Virus (Correct Answer)**
(C) ○ Multipartite Virus
(D) ○ Boot Virus

Question No.10

What will the shortcut key Ctrl + 9 will do in MsExcel?

(A) ○ Its use is to show (unhide) the hidden rows.

(B) ○ **Its use is to hide the selected rows in the worksheet (Correct Answer)**

(C) ○ It is used to hide the selected columns.

(D) ○ Its use is to put the strikethrough to all selected cells.

GUJARATI LANGUAGE AND GRAMMAR - GUJARATI LANGUAGE AND GRAMMAR

Question No.1

સાઠ વર્ષે ઊજવાતો ઉત્સવ'- આ માટે વપરાતો એક શબ્દ જણાવો.

(A) ○ રજત મહોત્સવ

(B) ○ **હીરક મહોત્સવ (Correct Answer)**

(C) ○ સુવર્ણ મહોત્સવ

(D) ○ અમૃત મહોત્સવ

Question No.2

તે પૂરાં ભજિયાં બનાવતાં ય જાણતી નથી. આ વાક્યને સુધારીને સાચો વિકલ્પ આપો.

(A) ○ **તે ભજિયાં બનાવતાંય પૂરું જાણતી નથી. (Correct Answer)**

(B) ○ તે પૂરાં ભજિયાં બનાવવાનું ય જાણતી નથી.

(C) ○ તે પૂંરા ભજિયાં બનાવતાં ય જાણતી નથી.

(D) ○ કોઇ સુધારો નહિ

Question No.3

પ્રસાદ : કૃપા : : પ્રાસાદ : _____ અર્થભેદ સ્પષ્ટ કરો.

(A) ○ પ્રાસ

(B) ○ નૈવેધની પ્રસાદી

(C) ○ પ્રસન્નતા

(D) ○ **મહેલ (Correct Answer)**

Question No.4

નીચેનામાંથી કયા વિકલ્પમાં વિરુદ્ધાર્થી શબ્દ છે?

(A) ○ બપોર- મધ્યાહ્ન

(B) ○ ચડતી-પ્રગતિ

(C) ○ સગવડ-સુવિધા

(D) ○ **ફળદ્રુપ-ઉજ્જડ (Correct Answer)**

Question No.5

શિક્ષકે પૂછ્યું, તારે શું જોવે છે? રેખાંકિત ભાગમાં ભૂલ લાગતી હોય તો પ્રથમ ત્રણમાંથી સાચો વિકલ્પ પસંદ કરો અથવા ભૂલ ન હોય તો ચોથો વિકલ્પ આપો.

(A) ○ કોઇ ભૂલ નથી

(B) ○ જુવે છે

(C) ○ **જોઇએ છે (Correct Answer)**

(D) ○ જોઇએ છીએ

Question No.6

પોલીસે ચોરનો હાથ ઝાલ્યો અને તેને હાથકડી પહેરાવી.' આ વાક્ય રચનાનો પ્રકાર જણાવો.

(A) ○ સાદું વાક્ય

(B) ○ **સંયુક્ત વાક્ય (Correct Answer)**

(C) ○ સંકુલ વાક્ય

(D) ○ પ્રેરક વાક્ય

Question No.7

આપેલા વાક્યોમાંથી કઇ રચના ભાવે પ્રકારની છે?

(A) ○ તેનાથી બારમાની પરીક્ષા અપાઇ.

(B) ○ મારાથી ગીત ગવાયું.

(C) ○ મારાથી પત્ર લખાય છે.

(D) ○ **મારાથી મિત્રને વળગીને ખૂબ રડાયું. (Correct Answer)**

Question No.8

અહીં આપેલા વિરુદ્ધાર્થી જોડકાં પૈકી કયું જોડકું અયોગ્ય છે?

(A) ○ સાર્થક X નિરર્થક

(B) ○ **નિવૃત્તિ X સંવૃત્તિ (Correct Answer)**

(C) ○ શાશ્વતX ક્ષણિક

(D) ○ શિખર X તળેટી

Question No.9

આપેલા વિકલ્પોમાંથી કયું સંકુલ વાક્ય છે તે જણાવો.

(A) ○ તેણે ખૂબ મહેનત કરી પણ કામમાં ન આવી.

(B) ○ **હું જેમ બોલું તેમ બોલ. (Correct Answer)**

(C) ○ બોલવું ન હતું એટલે બોલ્યો નહિ.

(D) ○ વાંચો અને પાસ થાવ.

Question No.10

અહીં આપેલા શબ્દોને અર્થપૂર્ણ ક્રમમાં ગોઠવો. (1) દૂધ (2) ઘી (3) ગાય (4) ઘાસ (5) માખણ

(A) ○ 5,4,3,2,1

(B) ○ **3,4,1,5,2 (Correct Answer)**

(C) ○ 4,3,5,1,2

(D) ○ 4,3,1,2,5

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