| Electrical Engineering	Sample Paper-2

Q.1- A cable has following characteristics L=0.201 µH/m & C=196.2 pF/m. The velocity of wave propagation through the cable is
    (a) 32 m/s   (b)159.24 µH/m`   (c) 0.0312 m/s   (d) 159.24 m/µs

Q.2- An Industrial consumer has a daily load pattern of 2000 kW, 0.8 leg for 12 Hrs ., and 1000 kW UPF for 12 Hrs the load factor is
    (a) 0.5   (b)0.75   (c)0.6   (d) 2.0

Q.3- In the Signal flow graph shown below. The correct relationship is
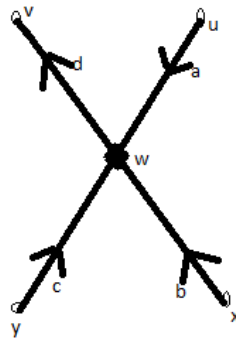
    (a) w= au+bx+cy-dv   (b) w= au+bx+cy
    (c) w= au+bx+dv   (d) w= au+cy+bx-dw

Q.4- The close loop transfer fxn of a control system is given by
$$\frac{C(s)}{R(s)} = \frac{1}{1+S}$$
For input r(t) = sin t, the steady state volume c(t) is give by:-
    (a) $\frac{1}{\sqrt{2}}$ cost   (b)1   (c) $\frac{1}{\sqrt{2}}$sin t + $\frac{1}{2}$ e^{-t} (d) $\frac{1}{\sqrt{2}}$sin (t- $\frac{\pi}{2}$) + $\frac{1}{2}$ e^{-t}

ENGINEERS CAREER GROUP[TM]
Head Office: S.C.O-80-81-82,3[rd] and 4th floor, Sector-34/A, Chandigarh
TOLL FREE: 1800-270-4242
WEB: www.engineerscareergroup.in

Q.5- Match the following

| List-1	List-2
A. No load and blocked rotor	1. Transformer
B. Sumpner's test	2. Induction Machine
C. Swinbum's test	3. Synchronous Machine
	4.DC machine Function

CODES:

(a) A2   B1   C4
(b) A1   B2   C3
(c) A3   B2   C1
(d) A4   B1   C2

Q.6- A 220 V, 15 kW, 1000 rpm shunt motor with armature resisitance of 0.25Ω, has a rated line current of 68 A and a rated field current of 2.2 A. The change in field flux required to obtain a speed of 1600 rpm while drawing a line current of 52.8 Amp and a field current of 1.8 Amp is

(a) 18.18% increase
(b) 18.18% Decrease
(c) 36.36% increase
(d) 36.36% decrease

Q.7- In the following linear circuit, it is given that V_{AB}=4v and $R_{L=}$ 10k, and V_{AB}= 1V, & R_L = 2k
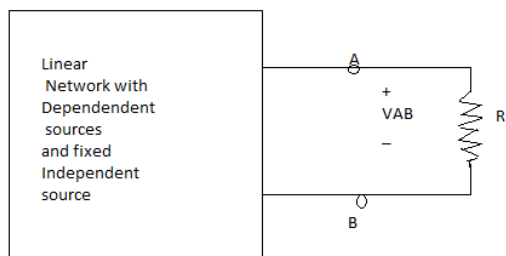
The value of thevnin resistance and voltage for the network "N" is given by

(a) 16 Ω,30v
(b) 30k Ω,16v
(c) 3k Ω, 6v
(d) 50k Ω, 30v

Q.8- A 800 kV transmission line is having per phase line inductance of 1.1 mH/km and per phase line capacitance of 11.78 nF/km. Ignoring the length of line its ideal power transfer capability in MW is

(a) 1204 MW
(b) 1504 MW
(c) 2085MW
(d) 2606 MW

ENGINEERS CAREER GROUP[TM]
Head Office: S.C.O-80-81-82,3[rd] **and 4**[th] **floor, Sector-34/A, Chandigarh**
TOLL FREE: 1800-270-4242
WEB: www.engineerscareergroup.in

Q.9- An EHV transmission line of length 300 km can be approximate by a loss less line having propagation constant β=0.00127 rad/km. then the percentage ratio of line length to the wave length will be given by

(a) 24.24 % (b) 12.12 % (c) 19.05 % (d) 6.06 %

Q.10- state equation are represented by

$$X = \begin{bmatrix} 0 & 1 \\ -2 & -1 \end{bmatrix} X + \begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix} u$$

The Eigen value are

(a) 1, -1 (b) -0.5± j 1.323 (c)-1, -1 (d) +1, +1

Q.11- A system is having a damping ratio of 1.25 and ω_n (natural frequency) of 200 rad/see and D.C gain of "1".
The response of system to a unit step input is

(a) $1+\frac{5}{3} e^{-50t} - \frac{2}{3} e^{-150t}$

(b) $1+\frac{1}{3} e^{-100t} - \frac{4}{3} e^{-400t}$

(c) $1-\frac{4}{3} e^{-100t} + \frac{1}{3} e^{-400t}$

(d) $1+\frac{2}{3} e^{-50t} - \frac{5}{3} e^{-150t}$

Q.12- The surge impedance of 400 km long overhead transmission line is 400 ohm. For a 200 km length of the same line, the surge impedance will be

(a) 200 ohm (b) 800 ohm (c) 400 ohm (d) 100 ohm

Q.13- The closed loop transfer function of a system is given by

$$\frac{C(S)}{R(S)} = \frac{50}{S(1+ST)(1+0.5S)+50}$$

Find the value of 'T' such that the system is driven on to verge of instability and find Resulting frequency of oscillation.

(a)T=$\frac{1}{48}$, w=9.8rad/see

(b) T=$\frac{1}{41}$, w=19.7rad/see

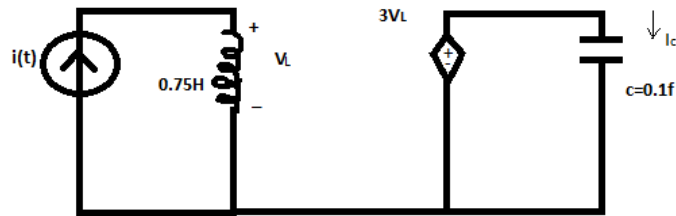(c) T=$\frac{2}{41}$, w=7.8rad/see

(d) None of these

Q.14- The forward transfer function of a unity feedback "type 1", 2nd order system has a pole at -2 the nature of Gain K is so adjusted that the damping ratio is 0.4. The above equation is subjected to the input r(t)=1+4t
Find steady state error?

(a) e_{ss}=1.28 (b) e_{ss}=2.94 (c) e_{ss}=1.12 (d) e_{ss}=1.02

ENGINEERS CAREER GROUP™
Head Office: S.C.O-80-81-82,3ʳᵈ and 4ᵗʰ floor, Sector-34/A, Chandigarh
TOLL FREE: 1800-270-4242
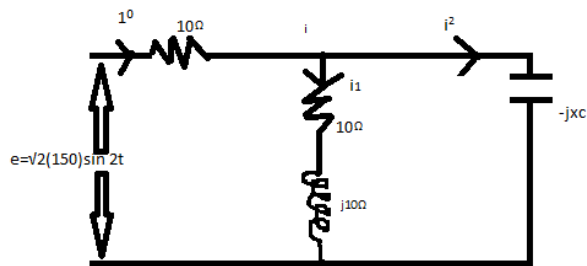**WEB: www.engineerscareergroup.in**

Q.15- L(t) = 2 sin 2t in the following circuit
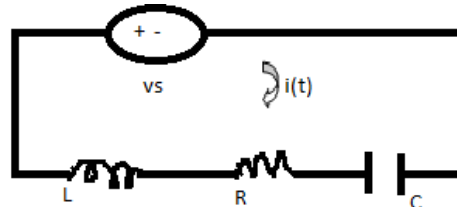

(a) 1.8 sin 2t   (b) -1.8 sin 2t   (c) -0.9 cos2t   (d) 0.9 cos 2t

Q.16- In the given circuit below, e, and "i" are in phase calculate phase angle between "e" and "i_1",

(a) -45°   (b) 45°   (c) 90°   (d) 63°

Q.17- Construct the dual network for curves circuit diagram.

ENGINEERS CAREER GROUP™
Head Office: S.C.O-80-81-82,3ʳᵈ and 4ᵗʰ floor, Sector-34/A, Chandigarh
TOLL FREE: 1800-270-4242
WEB: www.engineerscareergroup.in

Q.18- The Impedance of following network consists of

$I(t)$

$v(t)$

$=10u(t)- 10u(t-2)$

Network

$I(t)=e^{-t} - e^{-(t-2)}$

Z
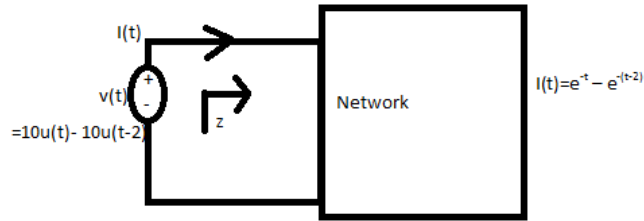
(a) Resister only   (b) Resister and capacitor

(c) Capacitor, inductor, resister   (d) resister, inductor

Q.19- The step response of RLC series ckt. Is given by

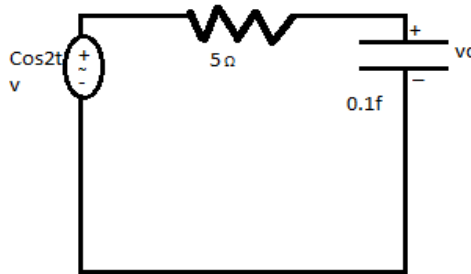$$\frac{d^2 I(t)}{dt^2} + \frac{2dI(t)}{dt} + 5I(t) = 10$$

$$I(o+) = 2, \frac{dI(o)+}{dt} = 4$$

Find $I(t) = ?$

(a) $1+\bar{e}^{4t} \cos 4t$ amp   (b) $4-2\bar{e}^{4t} \cos 4t$ amp

(c) $2+\bar{e}^{4t} \sin 4t$ amp   (d) $10+\bar{e}^{4t} \sin 4t$ amp

Q.20- In the given ckt. Of fig. below

$V_c(t)$ is

$Cos2t$ v

5Ω

vc

$0.1f$

(a)$1/\sqrt{2} \cos(2t - 45^o)v$ (b) $1/\sqrt{2}\cos(2t+45^o)v$

(c) $1/\sqrt{2} \sin(2t-45^o)v$ (d) None of these

Q.21- The Integral

$$\frac{1}{2\pi} \int_{o}^{2\pi} \sin(t - \tau) \cos\tau \; d\tau \; equals$$

(a) sint cost   (b) 0   (c)$\frac{1}{2}$cost   (d) $\frac{1}{2}$sint

Q.22- Let A $= \begin{matrix} 2 & -0.1 \\ 0 & 3 \end{matrix}$ and A$^{-1} = \begin{matrix} \frac{1}{2} & a \\ 0 & b \end{matrix}$ then a+b is equal to

(a) 7/20   (b) 3/20   (c) 19/60   (d) 11/20

Q.23- The area in first quadrant under curve

$$y = \frac{1}{x^2+6x+10} \text{ is}$$

(a) $\frac{\pi}{2}$ (b) $\frac{\pi}{4}$ -tan^{-1} 3   (c) $\frac{\pi}{2}$ - tan^{-1} 3   (d) $\frac{\pi}{2}$ - tan^{-1} 3

Q.24-The Newton Raphson method

$$X_{n+1} = \frac{X_n}{2} + \frac{3}{2x_n}$$

Can be used to solve the equal

(a) $x^2=3$ (b) $x^3=3$ (c) $x^2=3$ (d) $x^{-3}=3$

Q.25- The solution of $x\frac{dy}{dx} + y = x^4$ with the condition

$$Y(1) = \frac{6}{5} \text{ is}$$

(a) $y = \frac{x^4}{5} + \frac{1}{x}$ (b) $y = \frac{4x^4}{5} + \frac{4}{5x}$ (c) $y = \frac{x^4}{5} + 1$ (d) $y = \frac{x^5}{5} + 1$

Q.26- Mamta had no _____about going the chairman's clerk and throwing her resignation letter to him.

(a) Apathy   (b) Penchant   (c) Compunction   (d) Juxtaposition

Q.27- Make the correct word from the meaning given in the question:-
To speak in an indirect manner to evade a point, to mislead

(a) Prevaricate   (b) Concede   (c) Relegate   (d) Remonstrate

Q.28- Three pipes of varying diameters can fill the vessels of 1,2,and 3 L in 4, 18, and 48 min respectively. What is the ratio of the diameters?

(a) 6:4:3   (b) 2:3:4   (c) 1:4:5   (d) 2:5:8

Q.29- $125^x + 45^x = 2.(27)^x$ has……….

(a) No solution   (b) One solution   (c) Two solution   (d) More than two solution

Q.30- If X follows binomial distribution with parameter n=8 and p=1/2 then p ($\left| x-4 \right| \leq 2$) equals to

(a) $\frac{118}{128}$ (b) $\frac{119}{128}$ (c) $\frac{117}{128}$ (d) None of these

ENGINEERS CAREER GROUP^{TM}
Head Office: S.C.O-80-81-82,3rd and 4th floor, Sector-34/A, Chandigarh
TOLL FREE: 1800-270-4242
WEB: www.engineerscareergroup.in