Electronics Engineering	Sample Paper-1

Q.1-A tunnel diode
(1) Is used in an oscillator.
(2) Has greater breakdown voltage than ordinary diode.
(3) Is like a linear resister in reverse bias.
(4) Has heavily doped p-n junction.
(a) 1&4   (b) 2&4   (c) 1,3&4   (d) 1&3

Q.2- The early effect in BJT is caused by
(a) Fast turn-on   (b) fast turn off
(c)large collector-based reverse bias   (d) large emitter-base forward bias

Q.3- The effective channel length modulation of a MOSFET in saturation decrease with increase in.
(a) gate voltage   (b) drain voltage   (c) source voltage   (d) body voltage

Q.4- choose proper substitutes for X and Y to make the following statement correct Tunnel diode and Avalanche photodiode are operated in X bias y bias respectively
(a) reverse, reverse   (b)forward, reverse   (c)forward, reverse   (d)forward, forward

Q.5- A non ideal diode is connected to a battery in series with a resistance such that the diode is forward biased and conducting with voltage drop of 0.7 Volts. Suddenly the polarity of the battery is reversed at t=0. Just after that (i.e. at t=0+)
(a)current will flow in opposite direction.   (b)no current will flow.
(c)the voltage across the diode is –ve.   (d)the voltage across the diode is zero.

Q.6- in the circuit shown below , for different values of R, the value of V and I are given, other elements remaining the same.
When R = ∞, V= 5V
When R = 0 , I = 2.5 A
When R = 3Ω, the value of V is given by

(A)1V   (B)2V   (C)3V   (D)5V

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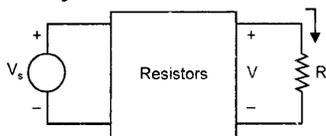
Q.7-
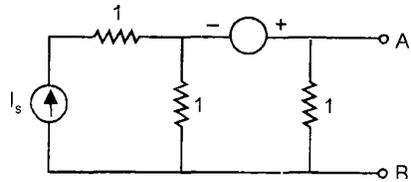
The Thevenin equivalent circuit to the left of AB has R_{eq} given by

(a)1/3　　　(b)1/2　　　(c)1　　　(d)3/2

Q.8- In the circuit shown in the figure below, the effective resistance faced by the voltage source is.


(a)1Ω　　　(b)3Ω　　　(c)2Ω　　　(d)3.3Ω
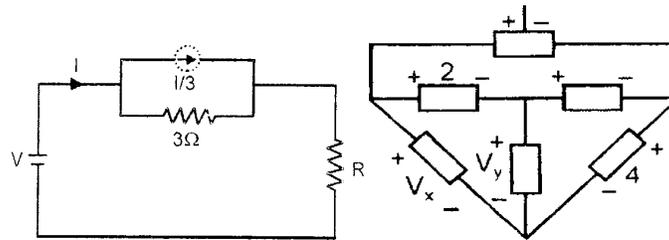
Q.9- In the circuit shown above , the voltage across some elements are given. The values of V_X and V_Y respectively , are.

(a) 3 , 1　　　(b) 3 , 5　　　(c) 5 , 3　　　(d) 5 , 7

Q.10- The current in the circuit shown in the given figure is.
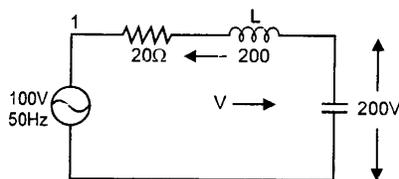
(a) 5A　　　(b) 10A　　　(c) 15A　　　(d) 25A

Q.11- A current shown in the figure passes through a pure inductance at 3 mH. The instantaneous power in watts during $0 < 1 < 2$ ms is.
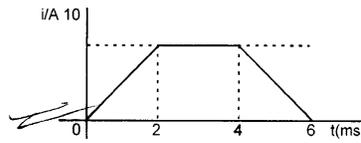
(a) 25000 t   (b) 5000 t   (c) 75000 t   (d) 1,00,000 t.

Q.12- The delta connected network with Y-equivalent is shown below.
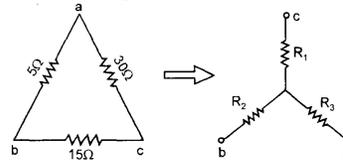
   The resistance R_1, R_2, R_3 (in ohms) are respectively.
(a) 1,5,3 and 9   (b) 3,9 and 1.5
(c) 9,3 and 1.5   (d) 2,1.5 and 0.

Q.13- In the circuit shown in the figure , output $[V_0 (j\omega)]$ is .
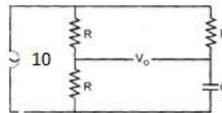
(a) indeterminable as values of R and C are not given.
(b) 2.5V   c) $5\sqrt{2}$V   (d) 5V

Q.14- In the figure the switch was closed for a long time before opening at t = 0. The voltage V_x at $t = 0^+$ is.
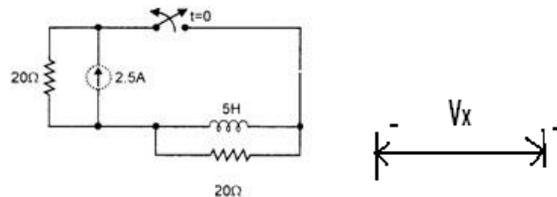
(a) 25 C   (b) 50 V   (c) -50 V   (d) 0 V

Q.15- The transfer function

$$\frac{V_2(s)}{V_1(s)} = \frac{10s}{s^2 + 10s + 100}.$$

Is for an active.

(a) low pass filter   (b) band pass filter   (c) high pass filter   (d) all pass filter.

Q.16- In the circuit shown below, the knee current of the ideal Zener diode is 10Ma. To maintain 5V across R_L, the minimum value of R_l in Ω and the minimum power rating of Zener diode in mW, respectively, are
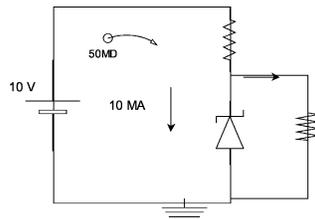
P_{min}= (50m)(5)= 250 mw

(a) 125 and 125   (b) 125 and 250   (c) 250 and 125   (d) 250 and 250.

Q.17- The small- signal resistance (i.e. dV_B/dI_D) in $k\Omega$ offered by the n-channel MOSFET M shown in the figure below, at a bias point of $V_B = 2V$ is(device data for M: device transconductance parameter $k_N = \mu_n c'_{0x}(W/L) = 40\mu A/v^2$, threshold voltage $V_{TN}=IV$, and neglected body effect and channel length modulation effect)

(a) 12.5   (b) 25   (c) 50   (d) 100

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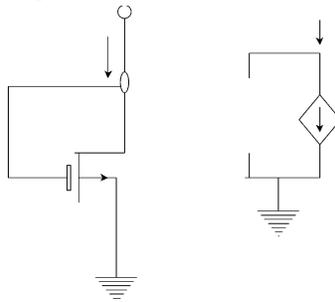
Q.18- Choose the correct match for input resistance of various amplifier configuration shown below

Configuration   Input Resistance
CB   Lo: Low
CC   MO; Medium
CE   HL; high
(a) CB-LO, CC-MO, CE-HI   (b) CB-HI, CC-LO, CE-MO
(c) CB-MO, CC-HI, CE-LO   (d) CB-HI, CC-LO,CE-MO

Q.19- MOSPET can be used as a;
(a) Current controlled capacitor
(b) Voltage controlled capacitor
(c) Current controlled inductor
(d) Voltage controlled inductor

Q.20- The action of a JFET is equivalent circuit can be best represented as:
(a) current controlled current source
(b) current controlled voltage source
(c) Voltage controlled voltage source
(d) voltage controlled current source

Q.21- If D_1, D_2 are two diagonal matrices, then
(a) $D_1 D_2 = D_2 D_1$ (b) $D_1 D_2$ is a Diagonal matrix
(c) Both of the above   (d) $D_1 D_2$ may or may not defined

Q.22- If $A = \begin{bmatrix} 1 & 2 \\ 4 & -3 \end{bmatrix}$, then $A^2 + 4A - 5I$ equal to

(a) $\begin{bmatrix} 8 & 4 \\ 8 & 0 \end{bmatrix}$ (b) $\begin{bmatrix} 0 & -4 \\ 8 & 8 \end{bmatrix}$ (c) $\begin{bmatrix} 2 & 1 \\ 2 & 0 \end{bmatrix}$ (d) $\begin{bmatrix} 1 & 1 \\ 1 & 0 \end{bmatrix} A$

Q.23- If tow square are chosen at random on a chess board the probability that they have side in common is
(a) 1/9   (b) 2/7   (c) 1/18   (d) none

Q.24- An I.F. of the differential equation $(1-x^2)\dfrac{dy}{dx} - xy = 1$ is

(a) $-x$ (b) $\dfrac{x}{1-x^2}$ (c) $\sqrt{1-x^2}$ (d) $\dfrac{1}{2}\log_e(1-x^2)$

Q.25- A garrison of 3000 men has provision for 25 days, when given at the rate of 900g per head. At the end of 11 days, a reinforcement arrives and it was found that now the provision will be last 10 days more, when given at the rate of 840 g per head. The strength of reinforcement is
(a) 1200 men   (b) 1500 men   (c) 1600 men   (d) 1800 men

Q.26- Out of the given alternatives, choose the one which can be substituted for the given words or sentences.
Too much official formality
(a) delayed   (b) officiousness   (c) formality   (d) red tapism

Q.27- The following questions comprise two word each that have a certain relationship between them, followed by four lettered pair of word. Select the lettered pair that has the relationship as the original pair of words.
i) shrub : prune
(a) beard : shave   (b) hair : trim
(c) lawn: mow   (d) wool : shear

Q.28- A group of labourers promise to do a piece of work in 12 days, but 5 of them do not turn up. If the rest of the group do the work in 18 days, find the original number of men.
(a) 15   (b) 25   (c) 35   (d) 45

Q.29- Hari (H), Gita(G), Irfan(I) and Saira(S) are siblings(i.e., brothers and sisters). All were born on Ist January. They are difference between any two successive siblings (that is born one after another) is less than 3 year. Given the following facts:
I. Hari's age + Gita's age > Irfan's age + Saira's age
II. The age difference between Gita ans Saira os 1 year. However, Gita is not the oldest and Saira is not the youngest.
III. There are no twins.
In what order were they born (oldest first)?
(a) HSIG   (b) SGHI   (c) IGSH   (d) IHSG

Q.30- Given digits 2,2,3,3,3,4,4,4,4 how many distinct 4 digit numbers greater than 3000 can be formed?
(a) 50   (b) 51   (c) 52   (d) 54