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Director's Message



B. Singh (Ex. IES)

During the current age of international competition in Science and Technology, the Indian participation through skilled technical professionals have been challenging to the world. Constant efforts and desire to achieve top positions are still required.

I feel every candidate has ability to succeed but competitive environment and quality guidance is required to achieve high level goals. At MADE EASY, we help you to discover your hidden talent and success quotient to achieve your ultimate goals. In my opinion IAS, IES, GATE & PSU's exams are tool to enter into main stream of Nation serving. The real application of knowledge and talent starts, after you enter into the working system. Here at MADE EASY you are also trained to become winner in your life and achieve job satisfaction.

MADE EASY aluminae have shared their winning stories of success and expressed their gratitude towards quality guidance of MADE EASY. Our students have not only secured All India First Ranks in IES, GATE and PSU entrance examinations but also secured top positions in their careers. Now, I invite you to become aluminae of MADE EASY to explore and achieve ultimate goal of your life. I promise to provide you quality guidance with competitive environment which is far advanced and ahead than the reach of other institutions. You will get the guidance, support and inspiration that you need to reach the peak of your career.

I have true desire to serve 'society' and 'Nation' by way of making easy path of the education for the people of India.

It has been kept in consideration that the book should fulfill the need of the examination standard and syllabus. The book contains solved questions of previous DRDO, ISRO & BSNL-JTO (Electronics Engineering).

B. Singh (Ex. IES)

Founder & Director, MADE EASY Group

DRDO, ISRO, BSNL (JTO) : EC

Previous Year Solved Papers & Sample Papers

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EC

DRDO

Previous Solved Papers
(Technical & Non-Technical Sections)

• 2008 • 2009



Section : A
Previous Solved Papers

Defence Research and Development Organization

DRDO-2008

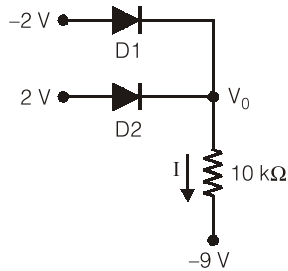
SECTION-A (TECHNICAL)

- The threshold voltage V_t is negative for
 - an n-channel enhancement MOSFET
 - an n-channel depletion MOSFET
 - a p-channel depletion MOSFET
 - a p-channel JFET
- At a given temperature a semiconductor with intrinsic carrier concentration $n_i = 10^{16}/\text{m}^3$ is doped with a donor dopant of concentration $N_D = 10^{26}/\text{m}^3$. Temperature remaining the same the hole concentration in the doped semiconductor is
 - $10^{26}/\text{m}^3$
 - $10^{16}/\text{m}^3$
 - $10^{14}/\text{m}^3$
 - $10^6/\text{m}^3$
- At room temperature the diffusion and drift constants for holes in a P-type semiconductor were measured to be $D_p = 10 \text{ cm}^2/\text{s}$ and $\mu_p = 1200 \text{ cm}^2/\text{V-s}$, respectively. If the diffusion constant of electrons in an N-type semiconductor at the same temperature is $D_n = 20 \text{ cm}^2/\text{s}$, the drift constant for electrons in it is
 - $\mu_n = 2400 \text{ cm}^2/\text{V-s}$
 - $\mu_n = 1200 \text{ cm}^2/\text{V-s}$
 - $\mu_n = 1000 \text{ cm}^2/\text{V-s}$
 - $\mu_n = 600 \text{ cm}^2/\text{V-s}$
- A common LED is made up of
 - intrinsic semiconductor
 - direct semiconductor
 - degenerate semiconductor
 - indirect semiconductor
- When operating as a voltage regulator the breakdown in a Zener diode occurs due to the
 - tunneling effect
 - avalanche breakdown
 - impact ionization
 - excess heating of the junction
- If the common base DC current gain of a BJT is 0.98, its common emitter DC current gain is
 - 51
 - 49
 - 1
 - 0.02
- Negative resistance characteristics is exhibited by a
 - Zener diode
 - Schottky diode
 - Photo diode
 - Tunnel diode
- Let E_{F_n} and E_{F_p} , respectively, represent the effective Fermi levels for electrons and holes during current conduction in a semiconductor. For lasing to occur in a P-N junction of band-gap energy 1.2 eV. $(E_{F_n} - E_{F_p})$ should be
 - greater than 1.2 eV
 - less than 1.2 eV
 - equal to 1.1 eV
 - equal to 0.7 eV
- In a P-well fabrication process, the substrate is

- (a) N-type semiconductor is used to build P-channel MOSFET
- (b) P-type semiconductor is used to build P-channel MOSFET
- (c) N-type semiconductor and is used to build N-channel MOSFET
- (d) P-type semiconductor and is used to build N-channel MOSFET

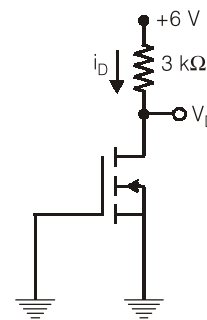
10. In a MOS capacitor with n-type silicon substrate, the Fermi potential $\phi_F = -0.41$ V and the flat-band voltage $V_{FB} = 0$ V. The value of the threshold voltage V_T is
- (a) -0.82 V
 - (b) -0.41 V
 - (c) 0.41 V
 - (d) 0.82 V

Refer Figure for Q. 11 and Q. 12. Assume D1 and D2 to be ideal diodes.



11. Which one of the following statements is true?
- (a) Both D1 and D2 are ON
 - (b) Both D1 and D2 are OFF
 - (c) D1 is ON and D2 is OFF
 - (d) D2 is ON and D1 is OFF
12. Values of V_0 and I , respectively, are
- (a) 2 V and 1.1 mA
 - (b) 0 V and 0 mA
 - (c) -2 V and 0.7 mA
 - (d) 4 V and 1.3 mA
13. In a BJT CASCODE pair, a
- (a) common emitter follows a common base
 - (b) common base follows a common collector
 - (c) common collector follows a common base
 - (d) common base follows a common emitter

14. Inside a 741 op-amp the last functional block is a
- (a) differential amplifier
 - (b) level shifter
 - (c) class-A power amplifier
 - (d) class-AB power amplifier
15. For the MOSFET in the circuit in figure, the threshold voltage $V_T = 0.5$ V, the process parameter $K_P = 150 \mu\text{A}/\text{V}^2$ and $W/L = 10$. The values of V_D and I_D , respectively, are



- (a) $V_D = 4.5$ V and $I_D = 1$ mA
 - (b) $V_D = 4.5$ V and $I_D = 0.5$ mA
 - (c) $V_D = 4.8$ V and $I_D = 0.4$ mA
 - (d) $V_D = 6$ V and $I_D = 0$ mA
16. A negative feedback is applied to an amplifier with the feedback voltage proportional to the output current. This feedback increase the
- (a) input impedance of the amplifier
 - (b) output impedance of the amplifier
 - (c) distortion in the amplifier
 - (d) gain of the amplifier
17. The early effect in a BJT is modeled by the small signal parameter
- (a) r_0
 - (b) r_π
 - (c) g_m
 - (d) β
18. For a given filter order, which one of the following type of filters has the least amount of ripple both in pass-band and stop-band?
- (a) Chebyshev type-I
 - (b) Bessel
 - (c) Chebyshev type-II
 - (d) Elliptic