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EC–1848

B. Tech. (First Semester)

EXAMINATION, 2020

ELECTRONICS ENGINEERING

Time : Three Hours

Maximum Marks : 100

Note : Attempt questions from both Sections as directed.

Section—A

(Short Answer Type Questions)

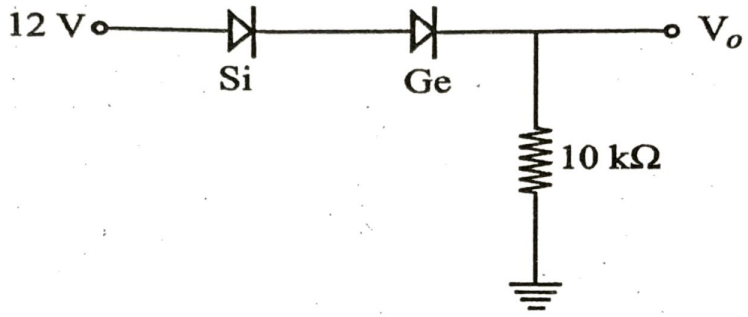
Note : Attempt any *ten* questions. Each question carries 4 marks. 10×4=40

1. What is meant by exceptor and donor impurities ?
2. Describe the static and dynamic resistance of diode.

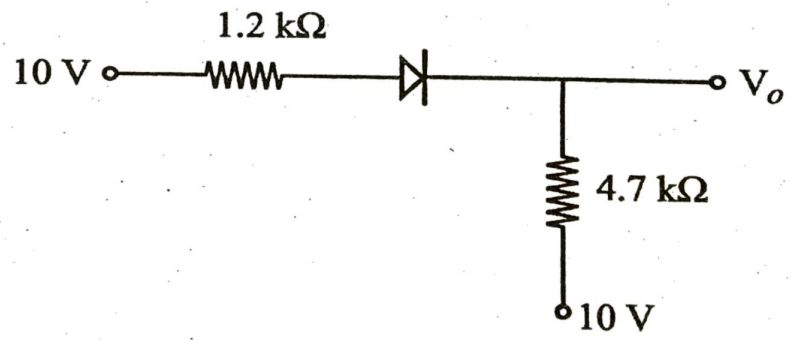
3. Draw the V-I characteristics of diode and explain it.

4. Determine the level of V_o for each network of given figure :

(a)



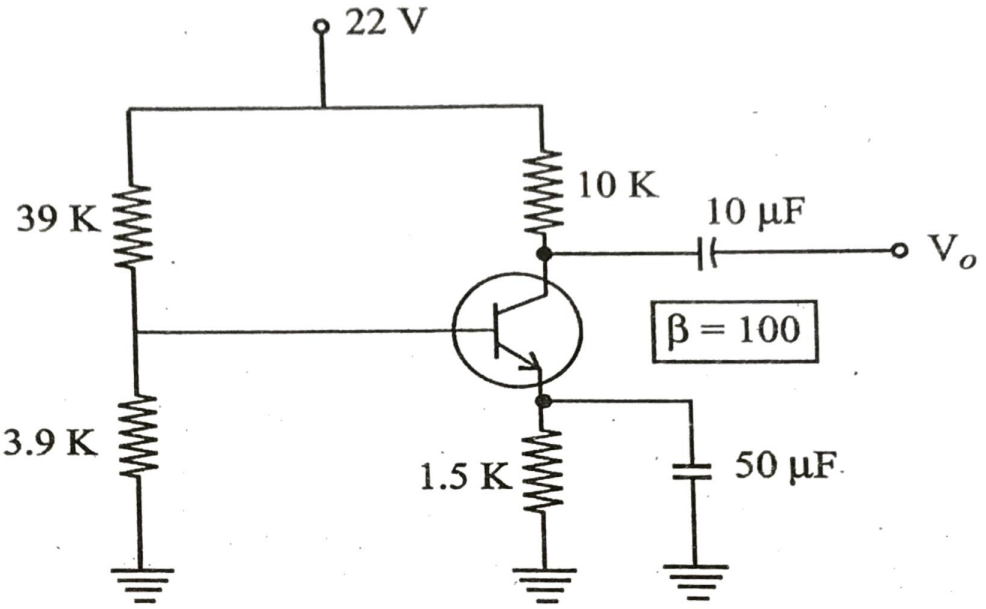
(b)



5. Explain the working of full wave bridge rectifier.

6. What is the significance of Q point in transistor ? Explain with neat diagram.

7. Determine the d.c. bias voltage V_{CE} and current I_C for the voltage divider configuration of given Fig. :



8. Find out the expression for Ripple factor.

9. (i) Convert the decimal number 53.62 into an equivalent binary number.

   (ii) Convert $(444.456)_{10}$ to an octal number.

10. Explain voltage follower or unit gain configuration of Op-Amp.

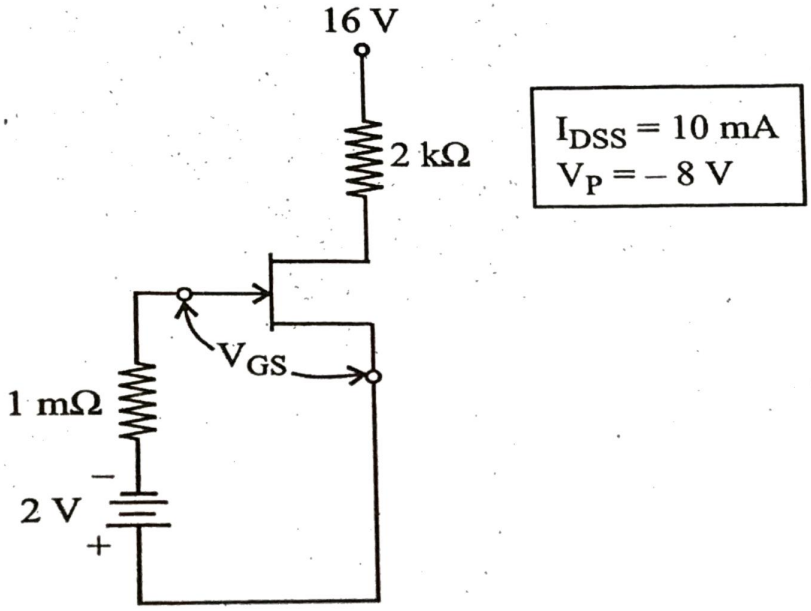
11. Explain the concept of virtual ground in Op-Amp. circuits.

13. Determine the following for the network of given Fig. :

(a) V_{GS} (b) I_D

(c) V_{DS} (d) V_D

(e) V_G (f) V_S



13. With the help of neat diagram, explain pinch-off condition in FET.

14. Prove that :

(i) $A + BC = (A + B)(A + C)$

(ii) $A \vee (A + B) = A$

Section—B

(Long Answer Type Questions)

Note : Attempt any *three* questions. Each question carries 20 marks. 3×20=60

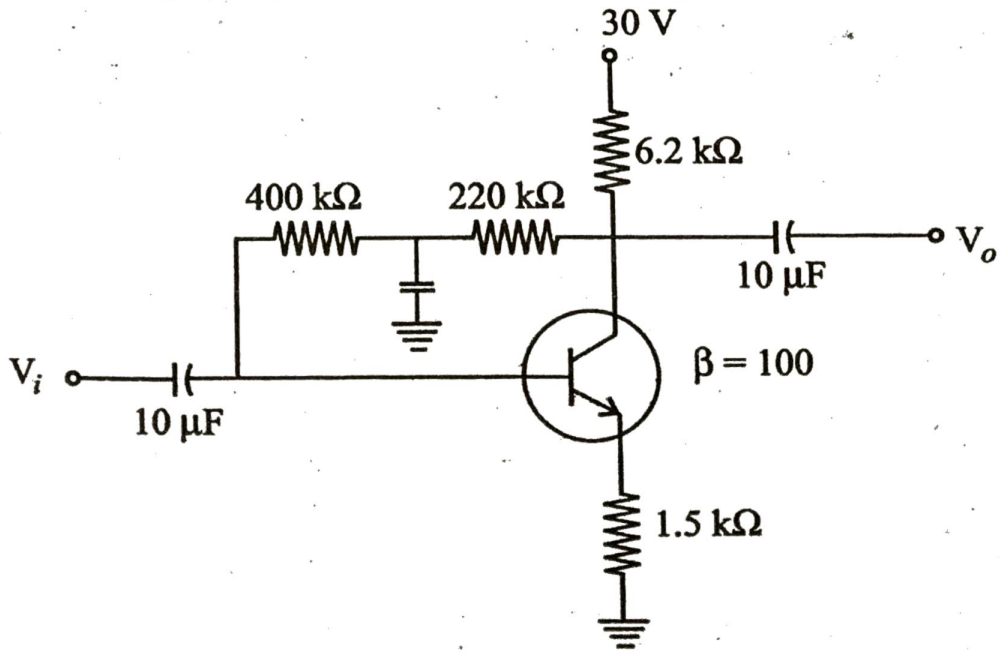
1. (a) What do you understand by clipper and clamper circuits ? Explain with suitable diagram.

   (b) Explain the working of P-N junction diode.

2. (a) For a voltage feedback network shown in Fig. given below, determine :

   (i) I_C (ii) V_C

   (iii) V_E (iv) V_{CE}



(b) With the help of a neat diagram, explain potential divider biasing. Also find out the expression for base current I_b and output voltage V_{CE}.

3. (a) With the help of a neat diagram, explain construction of D-MOSFET. Also explain its working.

(b) With the help of suitable diagram, explain the working of N-channel FET.

4. (a) With the help of block diagram, explain digital multimeter (DMM).

(b) With the help of a block diagram, explain the working of CRO.

5. (a) What do you understand by Op-Amp. ? Explain, how Op-Amp. performs addition operation.

(b) Draw the circuit diagram of an Op-Amp. integrator and show that output voltage is an integration of input voltage.

6. Write short notes on the following :

(a) Universal gates

(b) De Morgan's theorems

(c) Minimization techniques

(d) Ramp type DVM