Paper / Subject Code: 50105 / APPLIED ELECTRICAL & ELECTRONICS ENGINEERING

SE | MTRX | Sem-III | CBSGS | SH-2018 17/12/2018

(3 HOURS) **[Total Marks :80]**

NB 1. Question no 1 is compulsory. Attempt any Four

2 .Attempt any three question from remaining

3. Assume suitable data if required, justify your assumptions

Q.1 a) Explain basic construction of a n-channel JFET **05**

b) Draw the equivalent circuit of n-p-n transistor and explain the operation of an unbiased transistors. **05**

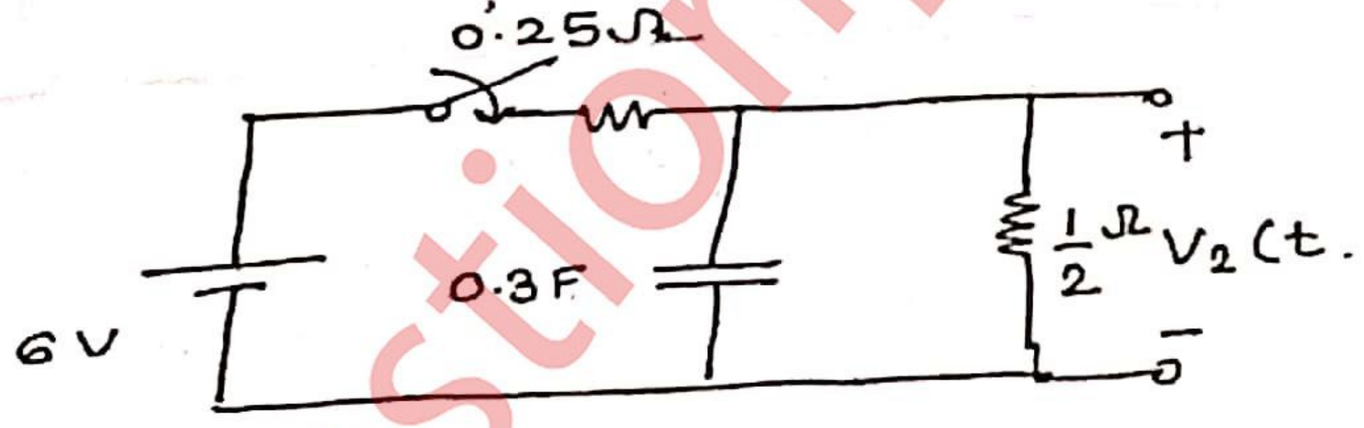
c) A fore-pole generator, having wave wound armature winding has 51 slots. Each slot containing 20 conductors. What will be the voltage generated in the machine when driven at 1500 rpm assuming the flux per pole to be 7.0mWb. **05**

d) Compare of JFET and DMOSFET. **05**

e) Derive an expression for Natural response of RC circuit and time constant. **05**

Q.2 a) Explain Speed Control methods of three phase AC motor. **10**

b) In the network of fig the switch is open for a long time and at t = 0, it is closed. Determine V_2 (t) **10**



Q. 3 a) Compare Enhancement type and Depletion type MOSFET on the basis of their construction, working principle, Characteristics and biasing. **10**

b) The input to 230 V d.c shunt motor is 11 KW. Calculate i) the torque developed ii) the efficiency iii) the speed at this load. The particulars of the motor are as follows: **10**

No-load current =5A; N0 load speed= 1150 r.p.m. Arm Resistance= 0.5Ω. Shunt field resistance =110 Ω **10**

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Q.4 a)) A 4 Pole long shunt lap wound generator supplies 25KW at a terminal voltage of 500 V. The armature resistance is 0.03 ohm, series filed resistance is 0.04 ohm and shunt field resistance is 200 ohm. The brush drop may be taken as 1.0 V. Determine the e.m.f generated. Calculate also the no of conductors if the speed is 1200 r. p. m and flux per pole is 0.02 weber. Neglect armature reaction. 10

b) With Neat diagram explain minority carrier distribution in npn transistor operating in forward active mode. 10

Q.5 a) Name different type of Unipolar brushless DC motor and describe any one type in detail. 10

b) Using pole zero plot find magnitude and phase of the function 10

$$F(s)=\frac{(S+1)(S+3)}{S(S+2)} \text{ at } S=j4$$

Q.6 Write Short note on Any Three 20

a) Natural response of RLC network
b) Regions of operation as an amplifier & switch
c) Transfer function
d) State the type of Synchronous motor
