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**SB-0612**  
**First Year B. Sc. Examination**  
**March / April – 2011**  
**Electronics : Paper - I**  
*(Electronics Devices & Components)*

Time : 3 Hours]

[Total Marks : 70

**Instruction :**

<p>नीचे दृशावेल निशानीवाणी विगतो उत्तरवही पर अवश्य लभवी. Fillup strictly the details of signs on your answer book.</p> <p>Name of the Examination : F. Y. B. Sc.</p> <p>Name of the Subject : Electronics - 1</p> <p>Subject Code No. : <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; text-align: center;">0</td><td style="width: 20px; text-align: center;">6</td><td style="width: 20px; text-align: center;">1</td><td style="width: 20px; text-align: center;">2</td></tr></table> Section No. (1, 2,.....) : Nil</p>	0	6	1	2	<p>Seat No. : <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table></p> <div style="border: 1px solid black; border-radius: 15px; width: 100%; height: 80px; margin-top: 10px; display: flex; align-items: center; justify-content: center;"><p>Student's Signature</p></div>						
0	6	1	2								

- (2) Figures on the right indicate full marks.
- (3) All symbols and abbreviations have their usual meaning.
- (4) Non-programmable calculators are allowed.
- (5) Q.1 is compulsory.
- (6) Assume data if necessary.

- |          |   |           |
|----------|---|-----------|
| <b>1</b> | Answer in short (7×2)                               | <b>14</b> |
|          | (a) Define "Tolerance"                              |           |
|          | (b) Write colour code for 10 kΩ, 100 kΩ             |           |
|          | (c) Compare BJT and FET                             |           |
|          | (d) Write the full form of :                        |           |
|          | (1) MOSFET  |           |
|          | (2) P.T.C.  |           |
|          | (3) LCD   |           |
|          | (4) SCR   |           |
|          | (e) What is junction capacitance in diode ?         |           |
|          | (f) Define "Operating point"                        |           |
|          | (g) Write the names of different types of switches  |           |
| <b>2</b> | (a) Describe all types of transformer in detail     | <b>8</b>  |
|          | (b) Explain in brief (1) Dielectric constant        | <b>6</b>  |
|          | (2) Power factor (3) Dielectric losses of capacitor |           |

**OR**

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**1**

**[Contd...**

- 2 (a) What is V.D.R and L.D.R ? Explain in brief 8  
(b) Write note on LVDT 6
- 3 (a) Compare conductor, semiconductor and insulator 6  
(b) What is Avalanche and Zener breakdown ? Explain with figure. 5  
(c) How is transistor working as switch? 3

OR

- 3 (a) Explain diode characteristics with figure. 6  
(b) Briefly explain working of SCR 5  
(3) If  $V_F = 0.9$  and  $I_F = 18$  mA in forward diode characteristics, calculate the static forward resistance. 3
- 4 (a) Define  $\alpha$  . Show that it is always less than unity 8  
Define  $\beta$  , Show that  $\beta = \frac{\alpha}{(1-\alpha)}$
- (b) Draw the load line and explain the importance of load line 3  
(c) A transistor has an  $I_C$  of 100 mA and  $I_B$  of 0.6 mA. What is the value of  $\alpha_{dc}$  ? 3

OR

- 4 (a) Explain principle and working MOSFET 8  
(b) What is intrinsic stand off ratio? Briefly explain working of UJT. 5
- 5 Write short notes on any two : 7×2=14  
(a) Tunnel diode  
(b) Reed relay  
(c) Photo voltaic Cell  
(d) TRIAC.