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Total No. of Pages : 02

Total No. of Questions : 08

M.Tech. (Emb Sys) (2016 & Onwards) (Sem.-1)**DESIGNING WITH POWER DEVICES****Subject Code : MTED-105****Paper ID : [74134]****Time : 3 Hrs.****Max. Marks : 100****INSTRUCTION TO CANDIDATES :**

1. Attempt any FIVE questions out of EIGHT questions.
2. Each question carries TWENTY marks.

- Q1 a) Describe the construction and working of IGBT.
- b) Explain rating and specification of Power MOSFETs.
- c) How MCTs work? Draw its equivalent circuit.
- Q2 a) How is Pulse width Modulation (PWM) current controller used in speed control of DC motor? Explain with diagram.
- b) How are high frequency transformers designed? Explain.
- Q3 a) Explain the operation of Push-Pull converter.
- b) What are the various external factors that affect the operation of pulse transformer?
- Q4 a) Draw the appropriate and labeled circuit diagram for Buck Switching regulator. Also explain working of the same.
- b) What is importance of protection circuit in power supply? Design a protection circuit for switch mode power supply.
- Q5 Write short notes on following :
- a) Power BJT
- b) Off line UPS system
- c) Core materials in Transformer design.
- d) Power frequency Inductors.

- Q6 a) Describe constructional working of IGBT with its characteristics.
- b) How CuK converter is better than Buck Boost converter? Explain its working.
- Q7 a) What is the importance of Electromagnetic Compatibility? Briefly explain the problem with non-compliance.
- b) How solar cell works as a power source? With the help of appropriate circuit explain its characteristics.
- Q8 a) Describe all the four parameters that affect the inductor's performance.
- b) What are various reliability considerations in modern UPS System? Explain briefly.

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