VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
B.E. II Year (Mech. Engg.) II-Semester (Supplementary) Examinations, December-2016

Applied Electronics

Time: **3 hours**   Max. Marks: **70**

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Part-A (10 × 2 = 20 Marks)

1. Distinguish between diffusion current and drift current.
2. Differentiate between dynamic and static resistance.
3. Compare ripple factor and efficiency of half wave and full wave rectifiers.
4. Describe the principle of operation of photoelectric devices and differentiate between photodiode and phototransistor.
5. Bring out the advantages of negative feedback in amplifiers.
6. Define voltage gain and 3 dB bandwidth.
7. List the characteristics of an ideal operational amplifier.
8. Bring out the difference between the half adder and full adder.
9. Mention the principle of operation of strain gauge.
10. List any four special function registers of 8051 microcontroller and write their functions in brief.

Part-B (5 × 10 = 50 Marks)

11. a) Briefly explain the V-I characteristics and working principle of zener diode.   [5]
    b) With a neat schematic diagram, explain the construction and working of UJT.   [5]

12. a) Draw the circuit diagram of half wave rectifier and explain its working. Derive the   [7]
       expressions for its ripple factor, efficiency, transformer utilization factor.
    b) A half wave rectifier is used to supply 26 V_{dc} to a resistive load of 600 Ω and the diode   [3]
       has a forward resistance of 40 Ω. Calculate the maximum value of the ac voltage required
       at the input.

13. a) Sketch a neat circuit diagram of NPN transistor in common emitter configuration and write   [5]
       input/output characteristics.
    b) Briefly explain the working of crystal oscillator.   [5]

14. a) Define operational amplifier. Explain any two applications of OP-AMP with neat diagrams.   [7]
    b) List the characteristics of an ideal operational amplifier.   [3]

15. a) Draw and explain the architecture of 8051 microcontroller.   [7]
    b) Explain the working principle of LVDT with a neat circuit.   [3]

16. a) Briefly explain the construction and working of SCR.   [5]
    b) Explain the working of shunt capacitor filter.   [5]

17. Write short notes on any *two* of the following: [10]
    a) RC and LC oscillators.
    b) Flip flops.
    c) Instruction set of 8051 microcontroller.

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