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Reg. No.:_____ Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIRST/SECOND SEMESTER B.TECH DEGREE SPECIAL EXAMINATION, SEPT 2016

Course Code: EC100

Course Name: BASICS OF ELECTRONICS ENGINEERING

Max. Marks: 100 Duration: 3 Hours

PART A

Answer ALL questions. Each question carries 2 marks

1. Draw the symbol and write the general specifications of the following
   a) Resistor
   b) Loudspeaker
2. Write any four applications of electronics in the field of medical science.
3. What is inductance? Give at least two applications of inductor?
4. Differentiate between intrinsic and extrinsic semiconductors
5. What is base width modulation in a transistor?
6. Write the type number of the following
   a) Medium power transistor
   b) High frequency low power transistor
   c) Power transistor
   d) Silicon diode
7. What is the role of filters in rectifiers? List the different types of filters.
8. What is the need of biasing in transistor circuits?
9. What is the need for feedback in oscillators? Explain the criteria for sustained oscillation?
10. What are the advantages of DSO over analog CRO?
11. Write the truth table and symbol for EX-NOR gate and EX-OR gate.
12. Compare the characteristics of ideal and real op-amps.
13. What is the frequency deviation and modulation index for FM
14. Compare AM and FM.
15. What are the elements of a satellite transponder?
16. What are the merits and demerits of GEO satellites?
17. Distinguish between HLR and VLR in GSM.
18. Why the refractive index of core in optical fiber is greater than cladding.
19. Write the advantages and disadvantages of optical communication.
20. What are the merits of DTH over cable TV?

PART B

Answer any 8 complete questions each having 5 marks

21. Discuss the colour coding scheme of capacitors? Write the colour band sequence for the capacitance 470 pF?
22. With a neat figure, explain the construction of a carbon film resistor and mention its features.
23. Explain the working principle of LED? Explain the generation of different colours in LED with example.
24. Draw the output characteristics of a PNP transistor in CE mode and explain the three regions of operation.
25. Explain the principle of working of a Zener diode? Differentiate between Zener and Avalanche breakdown mechanisms?
26. Draw the circuit diagram of RC phase shift oscillator. How does the circuit satisfy the Barkhausen criteria?
27. Explain the operation of a bridge rectifier with circuit diagram and show that the ripple factor is 0.48.
28. Explain the operation of RC coupled amplifier with circuit diagram and frequency response.
29. State and explain De-Morgan's theorem.
    Realize the Boolean expression $X=AB + \overline{B}C$ using any one of the universal gates and write the truth table.
30. Draw the block diagram of a function generator and specify the functions of each block.

Answer any 4 complete questions each having 5 marks

31. Draw the block diagram of FM receiver and explain the functions of each block with waveforms.
32. Draw the block diagram of a RADAR and describe the method for measuring the range of an object.
33. Briefly explain satellite communication system with a block diagram.
34. What is the principle of operation of GSM? What are the services offered by GSM
35. Sketch the elements associated with an optical fiber communication system and describe the major light detectors.
36. With illustrations, explain the working of plasma display and mention its advantages and disadvantages.