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**10026**

Reg. No.:_____ Name: _____

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

FIRST/SECOND SEMESTER B.TECH DEGREE EXAMINATION, JULY 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. For the samples given below, specify the nominal value, tolerance, maximum and minimum value.
    a. A resistor coloured -yellow, violet, orange and gold
    b. A capacitor with code- 104K
2. Differentiate active and passive components. Name at least two in each category.
3. Write any four applications of electronics in the field of automobile.
4. How a potential barrier is created in an open circuited PN junction diode?
5. Why Silicon diode is more popular than Germanium? Mention its applications and cut-in voltage.
6. Draw the symbol and write the general specifications of the following
    a) Photo diode b) PNP transistor
7. Define peak inverse voltage and write the values for Half wave, Centre tapped and Bridge rectifiers.
8. Draw the block diagram of a regulated power supply.
9. Compare positive and negative feedback.
10. What are the ideal characteristics of an op-amp?
11. What are the applications of CRO?
12. State and prove De-Morgan's theorem with truth table.
13. Modulation reduces the height of the antenna. Justify.
14. Define modulation index in AM and compute the percentage of modulation, when the maximum amplitude is 10V and minimum is 6V.
15. What is uplink and downlink in satellite communication? Which frequency is kept higher and why?
16. Write at least four important applications of RADARs.
17. What is hand-off in mobile communication and mention the types?

18. What are the major light detectors used in optical fiber communication system.
19. Why scanning and synchronizing is required in TV systems.
20. What is the need for cell splitting in cellular system?

## PART B

***Answer any 8 complete questions each having 5 marks***

21. Discuss the construction, working and application of an electro-mechanical relay.
22. On what basis the capacitors are classified? List the different types of capacitors and discuss the operation of a variable capacitor?
23. Analyze the common emitter configuration of the transistor and derive the relation between $\alpha$ and $\beta$.
24. Draw and explain the experimental setup for obtaining the forward and reverse characteristics of a diode and plot the approximate graphs for silicon and germanium diodes.
25. Differentiate intrinsic and extrinsic semiconductors and discuss the formation of PN junction.
26. With neat circuit diagram and waveforms explain the working of a centre tapped full wave rectifier with capacitor filter.
27. Draw and explain the block diagram of a public address system.
28. What are oscillators? List the types and principle involved. Explain the working of any one oscillator with circuit diagram.
29. Draw the circuit and explain the working of a non-inverting amplifier with op-amp and obtain the expression for its closed loop gain.
30. Draw the block diagram of a digital storage oscilloscope and specify the functions of each block.

***Answer any 4 complete questions each having 5 marks***

31. Draw the block diagram of AM receiver and explain the functions of each block with waveforms.
32. What is GPS? Explain how GPS tracks the position?
33. Explain with a block schematic of the transponder used in satellite and list the band of frequencies used for different applications.
34. How does a GSM network connect people around? Describe the sequence of operations and components involved.
35. Explain optical communication with the help of block diagram and list the merits and demerits.
36. Describe a typical HDTV system with block diagram.