

B. N. BANDODKAR COLLEGE OF SCIENCE, THANE
F.Y.B.Sc. (INFORMATION TECHNOLOGY) SEMESTER – I EXAMINATION; OCTOBER
2014
COURSE CODE– USIT104

Duration: 2½ Hrs
Marks: 75

Total

N.B. 1. All questions are compulsory.

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| Q. 1 | Answer any two out of following | 10 |
| | a Differentiate between Conductor, Semiconductor and Insulator. | |
| | b Explain the working of P-N junction diode. | |
| | c Explain the working of Transistor as Switch. | |
| | d Write note on i) Resistance ii) Capacitance | |
| Q. 2 | Answer any two out of following | 10 |
| | a What is an amplifier? Explain how transistor works as an amplifier. | |
| | b Discuss frequency response characteristics of an amplifier. | |
| | c Write note on Impedance | |
| | d Write note on Bandwidth of an amplifier. | |
| Q. 3 | Answer any two out of following | 10 |
| | a What is feedback? Explain the types of the feedback. | |
| | b Explain the working of RC Phase Shift oscillator. | |
| | c State and explain Barkhausen criterion for sustained oscillations. | |
| | d Discuss the working of IC 555 timer as Astable Multivibrator. | |
| Q. 4 | Answer any two out of following | 10 |
| | a What is modulation and Demodulation? What is Single Side Band? | |
| | b What is Amplitude modulation? Explain limitations of amplitude modulation. | |
| | c Derive an expression for amplitude modulated wave. | |
| | d Write note on Modulation Index. | |
| Q. 5 | Answer any two out of following | 10 |
| | a What is Frequency modulation? | |
| | b What are the advantages of frequency modulation over amplitude modulation? | |
| | c Write note on Pulse Amplitude Modulation | |
| | d Write note on Phase Modulation. | |
| Q. 6 | Answer any two out of following | 10 |
| | a Write note on Frequency Shift Keying (FSK). | |
| | b What is Optical Fiber? How is it useful in communications? | |
| | c What are the types of Optical fibers? | |
| | d Write note on LASER. | |

Q. 7 **Answer *any three* out of following**

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- a** Write note on n-type semiconductor.
- b** Define Gain, Voltage Gain, Current Gain and Power Gain.
- c** Discuss the advantages of Negative feedback.
- d** Derive expression for Power in Amplitude modulated wave.
- e** What is multiplexing? Explain Time Division Multiplexing (TDM) and Frequency Division Multiplexing (FDM).
- f** Write note on Amplitude Shift Keying (ASK).

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