Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 41008

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018

Sixth Semester

Electrical and Electronics Engineering

EE 6602 – EMBEDDED SYSTEMS

(Common to : Electronics and Instrumentation Engineering/Instrumentation and Control Engineering)

(Regulations 2013)

Time : Three Hours | Maximum : 100 Marks

Answer ALL questions

PART – A (10×2=20 Marks)

1. What are the typical characteristics of an embedded system ?
2. What are the functional requirements of embedded system ?
3. Define bus.
4. Give the limitations of polling technique.
5. Define and differentiate simulator and emulator in the context of embedded system.
6. Compare Dataflow model and finite state model.
7. Define task and Task state.
8. Compare user threads and kernel threads.
9. List any four applications of Micro-Controller Operating System MUCOS.
10. Classify Electronic Control Unit (ESU). Give its uses.

PART – B (5×13=65 Marks)

11. a) Explain :
    i) Concept of DMA. (6)
    ii) Structural units of Embedded processor. (7)

    (OR)

    b) i) Describe the working principle of incircuit emulator. (6)
    ii) Classify and explain the various types of embedded systems. (7)

12. a) i) Give the summary of I/O devices used in embedded system. (6)

ii) Demonstrate the signal using a transfer of byte when using the I^2C bus and also the format of bits at the I2C bus with diagram. (7)

(OR)

b) i) Compare the advantages and disadvantages of data transfer using serial and parallel port/devices. (6)

ii) Compare the RS-232C and RS485 Serial interfaces. (7)

13. a) i) What are the issues in hardware software and co-design ? (5)

ii) Discuss in detail about the different phases of EDLC. (8)

(OR)

b) Explain Common computation models and illustrate the purpose of each.

14. a) i) Summarize the system level and task service functions of μc/OS. (6)

ii) Enumerate type of semaphores and explain the use of semaphore. (7)

(OR)

b) i) Draw the Microkernel Architecture and explain the basic functions of RTOS kernel. (6)

ii) Explain the need for interprocess communication and IPC functions. (7)

15. a) Design architectural hardware and software units needed in smart card.

(OR)

b) Identify and explain hardware units needed in each of the systems :

i) Camera. (7)

ii) Automatic chocolate vending machine. (6)

PART – C (1×15=15 Marks)

16. Design and discuss an embedded system solution for a typical automotive system. Your answer must include design and development of necessary hardwares and software for the automotive system to incorporate efficient fuel management systems, vehicle performance monitoring systems, vehicle tracking and navigation systems.

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Question Paper Code : 40977

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018
Sixth Semester
Electrical and Electronics Engineering
EE 6002 – POWER SYSTEM TRANSIENTS
(Regulations 2013)

Time : Three Hours | Maximum : 100 Marks

Answer ALL questions

PART – A **(10×2=20 Marks)**

1. Write down the importance of transient study in power system planning.
2. What are the effects of transients in power systems ?
3. What is meant by Ferro resonance ?
4. Distinguish between Lightning Surges and Switching Surges.
5. Mention different theories of charge formation.
6. Write down the significance of tower footing resistance.
7. Why step waves are considered to be dangerous to the apparatus ?
8. Define Standing Wave Ratio.
9. What are the effects of load rejection in power system ?
10. What is meant by kilometric fault ?

PART – B **(5×13=65 Marks)**

11. a) Explain the switching transients of RL circuit with sine wave excitation.

(OR)

b) i) Discuss the various types of power system transient's. **(8)**

ii) Briefly discuss the various sources of transients on power system. **(5)**

12. a) With neat sketch explain the capacitance switching with multiple restrikes.

(OR)

b) i) Analyze in detail the resistance switching with suitable diagram. (6)

ii) With neat sketch explain the concept of Current Chopping. (7)

13. a) i) Demonstrate how lightning interact with power system. (9)

ii) With the use of Simpson's Theory, outline the formation of Thunder clouds. (4)

(OR)

b) Explain the lightning protection schemes for transmission lines.

14. a) Derive the reflection and refraction coefficients of a travelling wave.

(OR)

b) With neat sketch explain Bewley's Lattice diagram.

15. a) i) Explain voltage transients on closing and reclosing lines. (9)

ii) Describe the causes of over voltages induced by various faults in a power system. (4)

(OR)

b) i) With neat sketch explain switching surges on integrated system. (9)

ii) Briefly discuss the applications of EMTP for transient computation. (4)

PART – C

(1×15=15 Marks)

16. a) With a suitable illustration discuss computation mechanism and algorithms for analysing the transients in integrated power systems.

(OR)

b) Propose and discuss the design methods, selection procedure and importance of various protective elements should be used in power systems against transients.
