

III B. Tech II Semester Supplementary Examinations, November/December – 2016

ENVIRONMENTAL ENGINEERING – I

(Civil Engineering)

Time: 3 hours

Max. Marks: 70

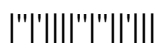
- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
 2. Answering the question in **Part-A** is compulsory
 3. Answer any **THREE** Questions from **Part-B**

PART -A

- | | | |
|---|--|------|
| 1 | a) What is meant by safe and wholesome water? | [3M] |
| | b) With a neat sketch, describe an artesian spring. | [4M] |
| | c) Write the drinking water standards for Nitrates and Iron. | [3M] |
| | d) What are pressure filters? | [4M] |
| | e) How is temporary hardness removed? | [4M] |
| | f) Write the purpose of air valve and scour valve. | [4M] |

PART -B

- | | | |
|---|---|------|
| 2 | a) Write the role of an environmental engineer. | [6M] |
| | b) What are the factors affecting water demand? | [6M] |
| | c) The population of a certain town was 40,000 in the year 1950 and 50,000 in 1960. Determine its population in the year 1970 by Annual rate of Increase method. | [4M] |
| 3 | a) What are wells? How are they classified? | [4M] |
| | b) What are the operations involved in laying of pipes? | [8M] |
| | c) Write the design considerations for intake structures. | [4M] |
| 4 | a) Define the terms Alkalinity and Acidity. Write the importance of determining them in public water supply. | [8M] |
| | b) Explain the method of estimation of solids in water – total solids, dissolved solids and settleable solids. | [8M] |
| 5 | a) Explain the construction of Rapid Sand Filter (Gravity type). | [8M] |
| | b) Give the Flow diagram of Water Treatment plant and write the principles involved at each stage. | [8M] |
| 6 | a) Describe Aeration methods for the removal of objectionable dissolved gases. | [8M] |
| | b) For disinfecting water supply, it is required to treat 500,000litres of daily supply with 0.5ppm of chlorine. If the disinfectant is available in the form of bleaching powder containing 30% of available chlorine, calculate the amount of bleaching powder required to treat the daily flow of water. | [8M] |
| 7 | a) With neat sketch describe the Grid Iron system of distribution. Mention its advantages and disadvantages. | [8M] |
| | b) Write about use of water meters, their classification and merits and demerits of using meters. | [8M] |



III B. Tech II Semester Supplementary Examinations, November/December – 2016
MICROPROCESSORS AND MICROCONTROLLERS

(Electrical and Electronics Engineering)

Time: 3 hours

Maximum Marks: 70

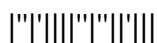
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PART -A

- | | | |
|---|---|------|
| 1 | a) Explain Bus interfacing Unit of 8086. | [3M] |
| | b) What is meant by instruction pipelining? Is it available in 8086? Explain. | [4M] |
| | c) Discuss any three assembler directives with examples. | [4M] |
| | d) Explain the main features of 8225. | [4M] |
| | e) Write the advantages of microcontrollers. | [3M] |
| | f) Explain the applications of microcontrollers. | [4M] |

PART -B

- | | | |
|---|--|-------|
| 2 | What are the two functional units of 8086? Explain the architecture of 8086 with neat block diagram. | [16M] |
| 3 | a) Discuss I/O map of 8086 with neat diagram. | [8M] |
| | b) Explain the process of external synchronization using TEST'. | [8M] |
| 4 | a) Explain the following assembler directives:
i) DB ii) EXTRN iii) LENGTH iv) OFFSET. | [8M] |
| | b) Write an 8086 assembler program to decide the parity of a given number. The given number might be a multi-byte with a maximum length of 8 bytes. | [8M] |
| 5 | a) Discuss the interrupt priority schemes used in 8259. | [8M] |
| | b) Interface D to A converter DAC 0800 with 8086 running at 8 MHz and write an ALP to generate a triangular wave of 1kHz frequency with V_{max} of 5V. | [8M] |
| 6 | a) Draw and explain the flag register of 8051 microcontroller. | [8M] |
| | b) Discuss the internal memory organization of 8051 microcontroller. | [8M] |
| 7 | Discuss the keyboard interfacing with 8051 microcontroller. | [16M] |



III B. Tech II Semester Supplementary Examinations, November/December – 2016

OPERATIONS RESEARCH

(Mechanical Engineering)

Time: 3 hours

Maximum Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
 2. Answering the question in **Part-A** is compulsory
 3. Answer any **THREE** Questions from **Part-B**

PART -A

- 1 a) Explain fundamental principle of duality. [3M]
 b) Explain what you mean by flow shop sequencing. [4M]
 c) Explain the applications of group replacement. [4M]
 d) What are the characteristics of game theory? [4M]
 e) What are the different types of inventories? Briefly explain them. [4M]
 f) What is simulation and what are the different types of it? [3M]

PART -B

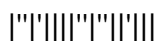
- 2 a) Solve by Big -M method [10M]
 Minimize Z $2x_1 + x_2$
 Subject to $3x_1 + x_2 = 3$
 $4x_1 + 3x_2 \geq 6$
 $x_1 + 2x_2 \leq 4$
 $x_1, x_2 \geq 0$
- b) State and discuss about the characteristics of operation research. [6M]
- 3 a) Solve the following transportation problem. [10M]

				to			
		D1	D2	D3	D4	D5	availability
	A	4	1	2	6	9	100
from	B	6	4	3	5	7	120
	C	5	2	6	4	8	120
	requirements	40	50	70	90	90	

- b) We have five jobs, each of which has to go through the machines A and B in the order AB. Processing times are given in the table below. [6M]

Job	A _i	B _i
1	5	2
2	1	6
3	9	7
4	3	8
5	10	4

Find the sequence and total make span?



- 4 a) Machine A costs Rs 45,000 and the operating costs are estimated at Rs 1000 for the first year, increasing by Rs 10,000 per year in the second and subsequent years. Machine B costs Rs 50,000 and operating costs are Rs 2000 for the first year, increasing by Rs 4000 in the second and subsequent years. If you have a machine of type A, should we replace with B? If so when? Assume that both machines have no resale value and future costs are not discounted. [10M]
- b) What is meant by time value of money? Explain. [6M]
- 5 a) Using dominance principle to simplify the rectangular game with the following pay of matrix, and solve it graphically: [8M]

		Player B			
		I	II	III	IV
Player A	I	18	4	6	4
	II	6	2	13	7
	III	11	5	17	3
	IV	7	6	12	2

- b) In a railway station only one train is handled at a time. The railway yard is sufficient for two trains to wait while others is given signal to leave the station. Trains arrive at a station at a average of 6 per hour and the railway station can handle them at an average rate of 12 per hour. Assuming Poisson arrival and exponential service distribution, find the steady state probabilities of the various number of trains in the system. Also find the average number of trains in the system. [8M]
- 6 a) Find the order quantity for a product for which the price breaks are as follows [10M]

Quantity (units)	Unit cost (Rs)
$0 < Q_1 < 500$	10.00
$500 \leq Q_2 < 750$	9.25
$Q_3 \geq 750$	8.75

The monthly demand for the product is 400 units. The storage cost is 2 percent of the unit cost and the cost of ordering is Rs350.

- b) Explain VED analysis with example. [6M]
- 7 a) Find the non-negative real numbers such that sum of squares of these numbers is minimum with restriction that their sum is not less than 75. Show the stages in dynamic programming to solve the problem. [10M]
- b) Explain the phases of simulation. [6M]



Code No: RT32041

R13

SET - 1

III B. Tech II Semester Supplementary Examinations, November/December – 2016
MICRO PROCESSORS AND MICRO CONTROLLERS

(Common to ECE, EIE and E.Comp.E)

Time: 3 hours

Maximum Marks: 70

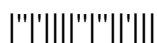
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2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

PART -A

- 1 a) Write about Waitt and Idle states. [3M]
- b) Differentiate between static and dynamic RAMs. [4M]
- c) Give the status register of 8251 and explain each bit. [4M]
- d) What is cache maintenance? [3M]
- e) Write the Features of ARM architecture. [4M]
- f) Write the important features of 8257. [4M]

PART -B

- 2 a) Briefly explain about the signal description of 8086 processor. [8M]
- b) Discuss briefly about pre-fetch queue in 8086. [8M]
- 3 a) Write an 8086 assembly program to convert a 16-bit binary into equivalent BCD. [8M]
- b) Draw and discuss the interrupt vector table of 8086 microprocessor. [8M]
- 4 a) With the help of basic cell, explain SRAM and DRAM. Discuss the advantage and dis-advantage of the memories. [8M]
- b) Draw the block diagram of 8251 and explain about each block. [8M]
- 5 a) Explain about different addressing modes supported by 80386 processor. [8M]
- b) Write a short note on virtual 8086 mode. [8M]
- 6 Draw and explain the internal architecture of 8051 microcontroller. Also list different applications of 8051. [16M]
- 7 a) Explain about the memory organization of PIC microcontroller. [8M]
- b) Briefly explain about the different types of interrupts handled by PIC 16C61/71 microcontroller [8M]



III B.Tech II Semester Supplementary Examinations, November/December – 2016

SOFTWARE ENGINEERING

(Computer Science and Engineering)

Time: 3 hours

Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)

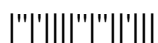
2. Answering the question in **Part-A** is compulsory3. Answer any **THREE** Questions from **Part-B**

PART -A

- 1 a) What is Software? Explain. [3M]
- b) Write about Data Dictionaries. [4M]
- c) What are structure charts? Explain. [4M]
- d) Define regression Testing. [3M]
- e) Write about Software Configuration Management. [4M]
- f) Write about Software Quality Assurance. [4M]

PART -B

- 2 Explain the incremental process model with advantages and disadvantages. [16M]
- 3 Explain in detail about data oriented Analysis. [16M]
- 4 What are the design principles of a good software design? Explain. [16M]
- 5 What is testing? Explain the different levels of testing. [16M]
- 6 a) What is effort? What is the need of effort and Project size estimation? [7M]
- b) Discuss about the project planning activities. [9M]
- 7 Explain in detail about capability maturity model. [16M]



Code No: R32031

R10

Set No. 1

III B.Tech II Semester Supplementary Examinations, November/December – 2016

METROLOGY

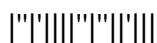
(Mechanical Engineering)

Time: 3 hours

Max. Marks: 75

**Answer any FIVE Questions
All Questions carry equal marks**

- 1 a) Define and explain the terms: calibration and interchangeability? [6]
b) Explain the purpose of calibrating an instrument and discuss the various calibrating systems. [9]
- 2 Explain the following [15]
i) Go gauge and No go gauges. ii) Ring gauge iii) Snap gauge.
- 3 a) Explain the principle and working of tool makers microscope. [8]
b) Explain about flatness measuring instruments. [7]
- 4 a) Explain the methods measuring surface roughness. [9]
b) Write ISI symbols for surface roughness? [6]
- 5 a) Compare Electrical, Electronics and Optical comparators? [9]
b) Briefly describe any one mechanical comparator? [6]
- 6 Explain the following [15]
i) Tooth to tooth composite error. ii) Rolling rear tester.
iii) In volute profile check.
- 7 a) Explain the terms with necessary sketches: [6]
i) Effective diameter ii) Angle of thread.
b) Describe the three wire method to find the Effective diameter of screw thread? [9]
- 8 a) State the geometrical checks made on machine tools before acceptance. [8]
b) Explain the procedure with a neat sketch to check the alignment of both centres of a lathe machine in vertical plane. [7]



Code No: **R32041**

R10

Set No. 1

III B.Tech II Semester Supplementary Examinations, November/December – 2016

COMPUTER NETWORKS

(Common to ECE and ECM)

Time: 3 hours

Max. Marks: 75

**Answer any FIVE Questions
All Questions carry equal marks**

- 1 Discuss in detail the architecture of the OSI reference model. [15M]
- 2 a) Draw and explain the structure of the ATM Adaptation layer. [8M]
b) Explain different types of switching with example. [7M]
- 3 Explain the sliding window protocol and compare its performance against the simple stop and wait protocol. [15M]
- 4 a) Explain the addressing mechanism of IEEE 802.11. [8M]
b) Discuss Full Duplex Ethernet in detail. [7M]
- 5 a) Write short note on Hierarchical routing. [7M]
b) Give an example of a situation in which multicast addresses might be beneficial. [8M]
- 6 Give the internetworking architecture and describe the same with neat diagram. [15M]
- 7 a) Explain how connections are established at the transport layer. [8M]
b) Explain flow control in TCP. [7M]
- 8 a) Write a short note on SNMP. [6M]
b) What do you mean by guided media? Explain about the different guided media used for communication. [9M]

