

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

Fourth Year Examination

First Semester

Computer Science and Engineering

MULTIMEDIA SYSTEMS

[W.e. from Academic Year 2011-2012]

Time : Three Hours

Maximum : 60 Marks

*Answer any five questions, choosing one question from each unit.
All questions carry equal marks.*

Unit I

1. (a) Explain about the requirements and constraints of the quality of service. (6 marks)
- (b) Explain about quality aware service model. (6 marks)

Or

2. (a) Explain about the real time requirements of multimedia systems. (6 marks)
- (b) Explain about rate control and error control. (6 marks)

Unit II

3. (a) Explain about the Buffer Management techniques. (6 marks)
- (b) Explain about the multimedia file system. (6 marks)

Or

4. (a) Explain about the system model and multimedia disk scheduling. (6 marks)
- (b) Explain about the UNIX - based system architectures. (6 marks)

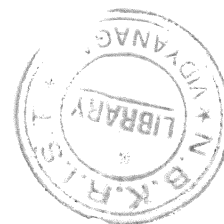
Unit III

5. (a) Explain in detail about the FDDI. (6 marks)
- (b) Explain about the early multimedia transport protocols. (6 marks)

Or

6. (a) Explain about the DQDB and orwell. (6 marks)
- (b) Explain about the IPV4 and IPV6. (6 marks)

Turn over

**Unit IV**

7. (a) Explain the dimensions of CSCW with its architecture. (6 marks)
(b) Explain about reference elements for synchronization and its types. (6 marks)

Or

8. (a) Explain about the session management with its architecture. (6 marks)
(b) Define Synchronization and explain about different object synchronization models. (6 marks)

Unit V

9. (a) Explain about the synthetic synchronization. (6 marks)
(b) Explain about existing classification methods for synchronization. (6 marks)

Or

10. (a) Explain about the Firefly based synchronization. (6 marks)
(b) Explain about the Axis based synchronization. (6 marks)

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

Fourth Year Examination

First Semester

Computer Science Engineering

ARTIFICIAL INTELLIGENCE

(With Effect from the Academic Year 2011-12)

[Common to CSE/IT branches]

Time : Three Hours

Maximum : 60 Marks

Answer any five questions, choosing one question from each unit.

All questions carries equal marks.

Random Table are Permitted.

Unit I

1. (a) Explain the Water Jug Problem. (6 marks)
- (b) Explain any *two* Heuristic Technique. (6 marks)

Or

2. (a) Describe the Means-ends analysis algorithm, list the merits and limitations of the algorithm. (6 marks)
- (b) Explain AO* Algorithm. (6 marks)

Unit II

3. (a) Explain about Forward and backward reasoning. (6 marks)
- (b) Explain Procedural and declarative Knowledge. (6 marks)

Or

4. Consider the following sentences :

- 1 Marcus was man
- 2 Marcus was a pompein
- 3 All Pompeins were romance
- 4 Cease was ruler
- 5 All Romans were either loyal to ceaser or hated him
- 6 Every one is loyal to some one

Turn over

- 7 People only try to assassinate rules they are not loyal to
- 8 Marcus tried to assassinate Caesar
- 9 All men are persons
- Translate these sentences into formulae in Predicate logic.
 - Prove that "Was marcus loyal to caesar" using Backward chaining
 - Convert the formulae in predicate logic to clause form
 - Prove that "Did Marcus hate Caesar" using resolution.

Unit III

5. Explain logic and implementation issues of non monotonic reasoning. (12 marks)
- Or*
6. (a) Explain Bayes Theorem. (6 marks)
- (b) With neat diagram explain the JTMS. (6 marks)

Unit IV

7. (a) Using Semantic net and portioned semantic nets represent the following sentences :—
- John gave the book to mary
 - Every dog in town has bitten the constable
 - Every dog has bitten every mail carrier.
- (6 marks)
- (b) List the primitive acts and rules required to represent knowledge using conceptual dependency. (6 marks)
- Or*
8. (a) Explain about Conceptual Dependence. (6 marks)
- (b) Explain about Scripts. (6 marks)

Unit V

9. (a) Describe the steps in natural language processing. (6 marks)
- (b) Write short note on Grammars. (6 marks)
- Or*
10. (a) Describe the Minmax Search Procedure. (6 marks)
- (b) Explain about discourse and pragmatic processing (6 marks)

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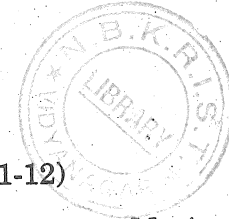
Fourth Year Examination

First Semester

Computer Science Engineering

COMPILER CONSTRUCTION

(With effect from the Academic Year 2011-12)



Time : Three Hours

Maximum : 60 Marks

*Answer any five questions, choosing one question from each unit.
All questions carry equal marks.*

Unit I

1. (a) Describe various phases of a Compiler, while translating following assignment statement into assembly language.

Position = Initial + Rate * 60

(8 marks)

- (b) Write short notes on input buffering.

(4 marks)

Or

2. (a) Explain, how Lexical analyzer is generated using LEX.

(6 marks)

- (b) Difference between Phase and Pass of a compiler.

(3 marks)

- (c) Difference between Compiler & Interpreter.

(3 marks)

Unit II

3. (a) Construct a Predictive parsing table for the following grammar :—

S -> A

A -> aB/Ad

B -> bBC / f

C -> g

(8 marks)

- (b) Explain why separate Lexical and Syntax analysis in a compiler.

(4 marks)

Or

Turn over

4. (a) Consider the following grammar and Construct the SLR parsing table :—

$$E \rightarrow E + T/T$$

$$T \rightarrow TF / F$$

$$F \rightarrow F^* / a / b$$

(8 marks)

- (b) Write an algorithm for closure and goto operations.

(4 marks)

Unit III

5. (a) Write Quadruples, Triples, and Indirect triples for the following expression :—

$$-(a + b) * (c + d) - (a + b + c)$$

(6 marks)

- (b) Write about elimination of the left recursion from a Translation Scheme.

(6 marks)

Or

6. (a) Explain SDT Scheme for assignment statements and draw an annotated parse tree.

(6 marks)

- (b) Explain how type checking is done for expressions.

(6 marks)

Unit IV

7. (a) What are the benefits of Intermediate Code Generation ?

(6 marks)

- (b) Explain the storage allocation in block structured languages.

(6 marks)

Or

8. (a) Explain briefly the data structures used for Symbol Table.

(7 marks)

- (b) Describe various Storage Allocation strategies employed by a Compiler.

(5 marks)

Unit V

9. (a) Why is Next Use information collected by a Code generator ? How is the information collected for a given Basic block ?

(5 marks)

- (b) Describe Code generation algorithm for a simple three address statement $X := Y + Z$.

(7 marks)

Or

10. What do you mean by Peephole operation? List the characteristics of Peephole operation.

(12 marks)

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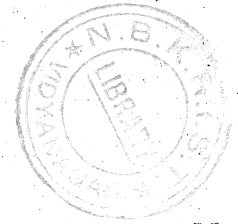
Fourth Year Examination

First Semester

EMBEDDED SYSTEMS

(Computer Science and Engineering)

[CSE/IT Branches]



Time : Three Hours

Maximum : 60 Marks

*Answer any five questions, choosing one question from each Unit.
All questions carry equal-marks.*

Unit I

1. (a) What are the classifications of embedded systems ? Explain briefly. (6 marks)
- (b) Explain the characteristics and applications of embedded systems. (6 marks)

Or

2. (a) Explain about any one way to document software in software design for embedded systems. (6 marks)
- (b) Explain the name of real world signals, sensors and transducers. (6 marks)

Unit II

3. (a) What are the differences between single chip and multi chip design and explain them with neat diagrams ? (6 marks)
- (b) Explain about the processor selection briefly. (6 marks)

Or

4. (a) Explain the importance of DFD and state diagram in software design with an example. (6 marks)
- (b) How will you organize the memory in different devices in hardware design ? (6 marks)

Unit III

5. (a) Explain timer functions and events in embedded systems. (6 marks)
- (b) Explain task states and their consequences of scheduler with a neat diagram. (6 marks)

Or

6. (a) Explain about the timer functions and its services in RTOS. (6 marks)
- (b) What is a Semaphore ? How it is used in RTOS ? (6 marks)

Turn over

Unit IV

7. Explain debugging techniques in embedded systems. (12 marks)

Or

8. (a) Explain the goals of typical testing process on host machine. (6 marks)

(b) How the linker works for embedded systems? (6 marks)

Unit V

9. (a) Explain the architecture of Symbian mobile operating systems. (6 marks)

(b) How the Linux OS is useful for embedded system? (6 marks)

Or

10. (a) Explain the design issues of Symbian mobile operating system. (6 marks)

(b) Explain the principles of Linux embedded systems. (6 marks)

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Fourth Year Examination

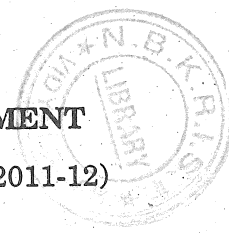
First Semester

Computer Science Engineering

SOFTWARE PROJECT MANAGEMENT

(With effect from the Academic Year 2011-12)

[Common to CSE/IT Branches]



Time : Three Hours

Maximum : 60 Marks

*Answer any five questions, choosing one question from each unit.
All questions will carries equal marks.*

Unit I

1. (a) What are the web engineering best practices? (6 marks)
(b) What are the attributes of web based systems? (6 marks)

Or

2. (a) How do plan web engineering projects? (6 marks)
(b) Discuss the metrics for web engineering applications. (6 marks)

Unit II

3. (a) What are the design issues of web applications. (6 marks)
(b) What do mean by hypermedia design patterns? (6 marks)

Or

4. (a) How do you test the interfaces? (6 marks)
(b) What is security testing? Explain with an example. (6 marks)

Unit III

5. (a) What do you mean by management spectrum? (6 marks)
(b) Discuss W5HH principle. (6 marks)

Or

6. What are the software quality metrics? (12 marks)

Unit IV

7. How do you plan a software project? (12 marks)

Or

Turn over

8. What are the reactive and proactive strategies in risk management ? Explain. (12 marks)

Unit V

9. What do you mean by statistical software quality assurance ? (12 marks)

Or

10. (a) Discuss formal methods. (6 marks)

- (b) Discuss functional specifications in clean room software engineering. (6 marks)

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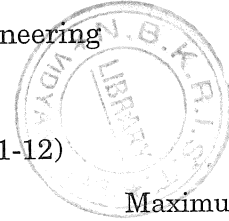
Fourth Year Examination

First Semester

Electronic Instrumentation and Control Engineering

ROBOTICS AND AUTOMATION

(With Effect from the Academic Year 2011-12)



Time : Three Hours

Maximum : 60 Marks

*Answer any five questions, choosing one question from each Unit.
All questions carry equal marks.*

Unit I

1. (a) Explain clearly the basic components of robot. (6 marks)
- (b) Write about drive and control system for robots. (6 marks)

Or

2. (a) What is an Actuator ? Explain the role of pneumatic actuators in robots. (6 marks)
- (b) Write about current amplifiers and voltage Amplifiers ? Explain the role of amplifiers in robots. (6 marks)

Unit II

3. (a) Write about tactile sensors and proximity sensors. (6 marks)
- (b) What is segmentation and feature extraction explains clearly with the help of images ? (6 marks)

Or

4. (a) Explain clearly the range sensors and acoustic sensors clearly. (6 marks)
- (b) What are the various methods for recognizing the objects using robots ? (6 marks)

Unit III

5. (a) Write about the end effector interface in robots. (6 marks)
- (b) Explain mechanical grippers with examples. (6 marks)

Or

6. (a) Explain clearly the software and used for industrial robots. (6 marks)
- (b) Explain about point to point program and continuous path program. (6 marks)

Turn over

Unit IV

7. What is Amnipulator ? Explain in detail about the manipulator Kinematics. (12 marks)

Or

8. Write about robot dynamics clearly. (12 marks)

Unit V

9. Explain the role of robots in industrial automation. (12 marks)

Or

10. Explain the role of robots in painting and assembly industries. (12 marks)

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

Fourth Year Examination

First Semester

Electronic Instrumentation and Control Engineering

NEURAL NETWORKS AND FUZZY LOGIC

(With effect from the Academic Year 2011-12)

Time : Three Hours

Maximum : 60 Marks

Answer any five questions, choosing one question from each unit.

All questions will carries equal marks.

Unit I

1. (a) What are neural networks ? Explain various applications of neural networks. (6 marks)
- (b) What are learning rules ? Explain delta learning rule in detail. (6 marks)

Or

2. (a) Write a short note on Out-Star learning rule. (6 marks)
- (b) Draw the structure of a single layer feed forward network and explain. (6 marks)

Unit II

3. (a) Draw the structure of a simple perceptron model and explain. (6 marks)
- (b) Why is the perceptron unable to find weights for non-linearly separable classification problems ? Explain. (6 marks)

Or

4. (a) Write a short note on ADALINE network ? What are its applications ? (6 marks)
- (b) Explain the radial basis function networks. (6 marks)

Unit III

5. (a) Explain the application of neural algorithms in character recognition. (6 marks)
- (b) What is a counter propagation network ? What are its characteristics ? (6 marks)

Or

6. (a) Write a short note on Hamming net and Max net. (6 marks)
- (b) Explain the role of neural networks in process identification. (6 marks)

Turn over

Unit IV

7. (a) Distinguish between fuzzy set theory and crisp set theory. (6 marks)
(b) What are basic fuzzy set operations? Explain in detail union and intersection with an example. (6 marks)

Or

8. (a) Let $\tilde{A} = \{(x_1, 0.2), (x_2, 0.7), (x_3, 0.4)\}$ and $\tilde{B} = \{(y_1, 0.5), (y_2, 0.6)\}$ be two fuzzy sets defined on the universes of discourse $X = \{x_1, x_2, x_3\}$ and $Y = \{y_1, y_2\}$. Find the fuzzy Cartesian product. (6 marks)
(b) With an example, explain the various operations on fuzzy relations. (6 marks)

Unit V

9. (a) What is a fuzzy system? Explain the components of a fuzzy system. (6 marks)
(b) What is defuzzification? Explain Mean of Maxima (MOM) defuzzification method. (6 marks)

Or

10. Explain various design steps in the control of airconditioner using fuzzy logic. Explain fuzzy rule base for the airconditioner control.

(12 marks)

[5 × 12 = 60 marks]

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

Fourth Year Examination

First Semester

Electronic Instrumentation and Control Engineering

PROCESS CONTROL

(With effect from the academic year 2011–2012)

Time : Three Hours

Maximum : 60 Marks

*Answer any five questions choosing one question from each unit.
All questions carry equal marks.*

Unit I

1. (a) Draw the basic block diagram of a process control system. Explain the function of each block.
(b) Describe the characteristics of thermal system.

Or

2. (a) A liquid storage vessel is spherical in shape. Calculate the capacitance as a function of head.
(b) Distinguish self-regulating and non-self-regulating processes with examples.

Unit II

3. (a) Analyse proportional control of a single capacitance liquid process.

- (b) A controller has the following functions in series : $(T_1S + 1)$, $(T_dS + 1)$, $\frac{1}{TS}$. What parameters determine derivative time, proportional sensitivity and integral time.

Or

4. (a) Obtain the response of PI controller for step input and sinusoidal input.
(b) Compare the performance of different control actions.

Unit III

5. Describe the following :

- (a) Hydraulic integral controller.
- (b) Electronic PID controller.

Or

6. (a) Compare pneumatic and hydraulic controllers.
(b) Describe the operation of electric proportional controller.

Unit IV

7. (a) Describe the criteria for good control.
(b) Describe controller lining by Z–N method.

Or

Turn over

8. Describe the following :

- (a) Cascade control.
- (b) Ratio control.

Unit V

9. (a) Describe the operation of pneumatic double acting piston activator with neat sketch.
(b) Describe the operation of electro-pneumatic activator with a neat sketch.

Or

10. (a) Explain the operation of hydraulic piston activator.
(b) Explain the operation of two position motor activator.

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

Fourth Year Examination

First Semester

Electronic Instrumentation and Control Engineering

BIO-MEDICAL INSTRUMENTATION

(With effect from the Academic Year 2011-2012)

[For EICE Only]

Time : Three Hours

Maximum : 60 Marks

*Answer any five questions, choosing one question from each unit.
All questions carry equal marks.*

Unit I

1. (a) What is meant by Bio-electric potential ? Briefly explain about various surface electrodes used to pick the Bio-electric potentials. (6 marks)
- (b) Discuss in detail about Heart and Cardiovascular system with the help of neat sketches. (6 marks)

Or

2. (a) Briefly explain the concepts of Resting and Action potentials of a cell. (6 marks)
- (b) Explain electrode theory. What do you understand by the term "Reference electrode ? (6 marks)

Unit II

3. (a) Write short notes on the following :—
 - EEG waves (3 marks)
 - Electro Myography (3 marks)
- (b) Discuss about Various ECG Lead configurations in detail. (6 marks)

Or

4. (a) What is Cardiac output ? How is it measured ? Discuss any one technique to measure it. (6 marks)
- (b) What is a Cardiac pacemaker ? Compare external and Implantable Pacemaker systems. (6 marks)

Turn over

Unit III

5. (a) What is meant by diathermy ? Explain surgical and shortwave diathermy units with the help of neat sketches. (6 marks)
- (b) Explain the physiology of a respiratory system. (6 marks)

Or

6. (a) Write notes on hearing aids describing all aspects. (6 marks)
- (b) What is nerve simulator ? Discuss about various types of waveforms used in simulator. (6 marks)

Unit IV

7. (a) What are the elements of intensive care monitoring ? Also explain patient monitoring displays. (6 marks)
- (b) What are the components of a Bio-telemetry system ? What are the applications of a telemetry in a emergency patient monitoring ? (6 marks)

Or

8. Write short notes on the following :—

- Central monitors. (4 marks)
- Bedside monitors. (4 marks)
- ECG Telemetry system. (4 marks)

Unit V

9. (a) Explain the principle and operation of a CT scanner. (6 marks)
- (b) Explain the applications of LASER in Medicine. (6 marks)

Or

10. Write short notes on the following :—

- MRI. (4 marks)
- Endoscopy. (4 marks)
- Ultra sound in Medicine. (4 marks)

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Fourth Year Examination

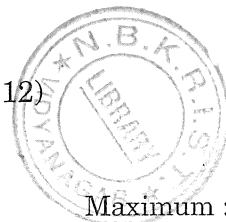
First Semester

Electronic Instrumentation and Control Engineering

MANAGEMENT SCIENCE

(With effect from the Academic Year 2011-2012)

[Common for EEE and EICE]



Time : Three Hours

Maximum : 60 Marks

*Answer any five questions, choosing one question from each unit.
All questions carry equal marks.*

Unit I

1. Define the concept of management and discuss the functions of management. (12 marks)

Or

2. (a) Name and describe the principles of organisation. (6 marks)
(b) Differentiate between line organisation and functional organisation. (6 marks)

Unit II

3. (a) Define the term corporate planning and state its objectives. (6 marks)
(b) Define production control. Explain its importance. (6 marks)

Or

4. (a) Describe the factors influencing the plant layout. (6 marks)
(b) Differentiate between process layout and product layout. (6 marks)

Unit III

5. Define merit rating and describe the various methods of merit rating. (12 marks)

Or

6. (a) State and describe the various factors affecting man power planning. (6 marks)
(b) Explain the functions of marketing. (6 marks)

Unit IV

7. (a) Explain the batch production system. State its characteristics. (6 marks)
(b) Describe the various ways to improve productivity. (6 marks)

Or

Turn over

8. (a) Explain in brief the basic procedure of work measurement. (6 marks)
 (b) State the methods of calculating depreciation and explain any *two* of them. (6 marks)

Unit V

9. (a) What is CPM ? What are the essential steps in CPM for project planning. (6 marks)
 (b) Write short notes on :
 (i) Network diagram.
 (ii) Float (or) slack.
 (iii) Event and activity. (6 marks)

Or

10. Table below gives the schedule of welding activities in an assembly shop.

<i>Activity No.</i>	<i>Duration days.</i>
0 - 1	2
1 - 2	4
0 - 3	2
2 - 5	1
3 - 4	2
4 - 5	5
5 - 6	3

- (i) Draw the network diagram.
 (ii) Calculate EST, LST, EFT, LFT and floats.
 (iii) Mark the critical path and final total project duration.

(12 marks)

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

Fourth Year Examination

First Semester

Mechanical Engineering

TOOL DESIGN (SI UNITS)

(With effect from the academic year 2011-2012)

Time : Three Hours

Maximum : 60 Marks

*Answer any five questions, choosing one question from each unit.
All questions will carry equal marks.
Draw sketches wherever necessary.*

Unit I

1. (a) Sketch and explain the geometry of a single point cutting tool as per ASA system. (6 marks)
- (b) Derive the expressions for shear angle, shear stress and shear strain in orthogonal metal cutting. (6 marks)

Or

2. (a) Sketch and explain different types of chips formed in metal cutting and the conditions favourable for their formation. (6 marks)
- (b) A mild steel tube of 40 mm diameter is turned on a lathe with a cutting speed of 20 m/min with a tool having a rake angle of 35° . The tool is given a feed of 0.1 mm/rev and the cutting force of 400N and a feed force of 160 N, length of continuous chip in one revolution is 50 mm. Calculate the shear plane angle, shear velocity, chip thickness and coefficient of friction. (6 marks)

Unit II

3. (a) Explain different mechanisms of tool wear and various tool life criteria. (6 marks)
- (b) Explain the sources of heat generation and temperature distribution in metal cutting. (6 marks)

Or

4. (a) What are the various factors affecting tool life ? Also explain the types of tool wear. (6 marks)
- (b) Explain the purpose and requirements of a cutting fluid. (6 marks)

Unit III

5. (a) Explain the suitability of HSS as a tool material and the types of HSS. (6 marks)
- (b) Explain various types of cemented carbides and their application. (6 marks)

Or

6. Sketch and explain the design procedure of a broach. (12 marks)

Turn over

Unit IV

7. (a) Sketch and explain the working of a compound die. (6 marks)
(b) Explain the affect of shear on cutting forces in press work. How it is provided for blanking and punching operations. (6 marks)

Or

8. (a) Derive expression for cutting speed in turning operation based on minimum total cost. (6 marks)
(b) Explain the following terms in Press Work :
(i) Strip layout. (ii) Centre of pressure. (6 marks)

Unit V

9. (a) Sketch and explain 3-2-1 principle of location in jigs. (6 marks)
(b) Explain the principles of location and various locating devices used in jigs and fixtures. (6 marks)

Or

10. (a) Explain the design principles of jigs and fixtures in detail. (6 marks)
(b) Sketch and explain the following jigs :
(i) Box jig. (ii) Indexing jig. (6 marks)

(5 × 12 = 60 marks)

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

Fourth Year Examination

First Semester

Mechanical Engineering

AUTOMOBILE ENGINEERING

(With effect from the academic year 2011-2012)

Time : Three Hours

Maximum : 60 Marks

*Answer any five questions, choosing one question from each unit.
All questions carry equal marks.*

Unit I

1. (a) Write notes of on numbering and arrangement of cylinders in the engine with sketches. (6 marks)
- (b) With neat sketches, explain about the combustion chambers of diesel engine. (6 marks)

Or

2. Explain about the function, construction. Design and manufacturing of crank shaft. (12 marks)

Unit II

3. (a) Explain about the fuel supply system of diesel engine with neat sketch. (6 marks)
- (b) What are the functions of manifolds ? Name different types of manifolds with neat sketches. Give different arrangements of manifolds to the engine. (6 marks)

Or

4. Explain the working of S.U. Solex carburettor with neat sketch. (12 marks)

Unit III

5. What are the requirements of lubricant ? Explain about the pressure lubrication and pre-lubrication methods with neat sketches. (12 marks)

Or

6. (a) Explain the working of cut-out relay and voltage and current regulator. (6 marks)
- (b) Explain the working of standard bendix drive with neat sketch. (6 marks)

Turn over

Unit IV

7. (a) Name various materials used in manufacturing clutches. Explain working of single plate clutch with neat sketch. (6 marks)
- (b) Distinguish fluid coupling from torque convertor. (6 marks)

Or

8. Write neat sketches, explain :

- (a) Automatic transmission.
(b) Constant mesh gear box.

(12 marks)

Unit V

9. Write short notes on :

- (a) Torsion bar. (b) Power steering.
(c) Wheel alignment. (d) Caster.

(12 marks)

Or

10. (a) Explain different types of rear axle floating methods. (6 marks)
- (b) With a neat sketch, explain about the hydraulic brake used on heavy vehicles. (6 marks)

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

Fourth Year Examination

First Semester

Mechanical Engineering

MECHANICAL MEASUREMENTS AND CONTROL

(With effect from the academic year 2011-2012)

Time : Three Hours

Maximum : 60 Marks

*Answer any five questions, choosing one question from each unit.
All questions carry equal marks.*

Unit I

1. (a) Distinguish between Accuracy and Precision. Which of these is more desirable during the act of measurement and why ? (6 marks)
- (b) Distinguish between and give appropriate examples in each case :
 - (i) Threshold and resolution.
 - (ii) Hysteresis and Dead zone. (6 marks)

Or

2. (a) What is the necessity and importance of dynamic performance of measurement systems ? (6 marks)
- (b) Define the terms : (i) Speed of response ; (ii) Dead time and Dead zone. (6 marks)

Unit II

3. (a) Describe the principle of operation of piezoelectric transducer. Identify input and output of the system. (6 marks)
- (b) Describe the principle of operation of LVDT with neat sketch. Identify the input and output of the system. (6 marks)

Or

4. (a) Explain with a neat sketch the construction, principle of operation of McLeod gauge. (6 marks)
- (b) Differentiate Bellow gauges and Diaphragm gauges with neat sketches. (6 marks)

Turn over

Unit III

5. (a) With neat sketches, explain the working of (i) Rotameter ; (ii) Turbine meters. (6 marks)
(b) Explain the various flow visualization methods. (6 marks)

Or

6. (a) What is the principle of operation of thermocouple ? Explain various thermocouple circuits. (6 marks)
(b) Explain the principle of resistance thermometer with a neat sketch. Also state the advantages of resistance thermometer over thermocouples. (6 marks)

Unit IV

7. (a) Write short notes on temperature compensation of strain gauges. (6 marks)
(b) Derive the equation of gauge factor. Also state the principle of electrical resistance strain gauge. (6 marks)

Or

8. (a) With a neat sketch, explain the principle and working of seismic accelerometer. (6 marks)
(b) Define vibration. How it is characterised and list some of its harmful effects. (6 marks)

Unit V

9. (a) Explain the concept of control in Engineering. Describe any two control devices which you are familiar. (6 marks)
(b) Distinguish open loop and closed loop systems. (6 marks)
- Or*
10. (a) What is a transfer function ? Derive transfer function for spring mass damper system. (6 marks)
(b) Give the block diagram of air conditioner. (6 marks)

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

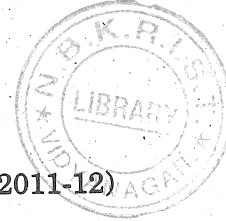
Fourth Year Examination

First Semester

Mechanical Engineering

ME 11412—CAD/CAM

(With effect from the Academic Year 2011-12)



Time : Three Hours

Maximum : 60 Marks

*Answer any five questions, choosing one question from each Unit.
All questions carry equal marks.*

Unit I

1. (a) Discuss in detail the design work station for CAD.
- (b) Distinguish between the Shigley design process and the CAD process.

Or

2. (a) What are the applications of CAD/CAM ?
- (b) Distinguish between DVST and Raster Scan process of image generation.

Unit II

3. (a) Translate a polygon with Co-ordinates A (2,5), B (7,10) and C (10,2) by 3 units in X direction and 4 units in Y direction.
- (b) Explain window to viewport co-ordinate transformation.

Or

4. (a) Differentiate Windowing and clipping.
- (b) Explain Sutherland-Hodgeman Polygon clipping algorithm.

Unit III

5. (a) Write the various features of a wire frame and a solid model.
- (b) Explain an algorithm for curve generation using interpolation

Or

6. (a) Explain various types of curves and their features.
- (b) Explain the method of Bezier surface generation.

Turn over

Unit IV

7. (a) What are part families ? Explain the method of developing part families.
(b) Explain the Composite part concept.

Or

8. (a) What is the need of FMS ? Explain the importance.
(b) Discuss in detail the material handling systems in FMS.

Unit V

9. (a) What is MRP ? Explain.
(b) What are the functions of SFC ?

Or

10. (a) What are the problems with traditional Production planning and control ?
(b) Explain the various data collection systems in Shop floor.

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

Fourth Year Examination

First Semester

Mechanical Engineering

ANALYSIS AND CONTROL OF PRODUCTION SYSTEMS

(With effect from the academic year 2011-2012)

Time : Three Hours

Maximum : 60 Marks

Answer any five questions, choosing one question from each unit.
All questions will carry equal marks.

Unit I

1. (a) Differentiate between the types of Production System. (6 marks)
 - (b) What is meant by production ? How it can be described as a system ? (6 marks)
- Or
2. Explain, with an example, the MICLASS coding system. (12 marks)

Unit II

3. (a) Define Facility Layout. Explain about the factors affecting the facility and plant layout. (6 marks)
 - (b) Explain about REL chart with an example. (6 marks)
- Or
4. Find the Optimum Layout using CRAFT. Total no.of. depts-3, Inter changeable depts : 3.

To From	1	2	3
1	-	1	1
2	1	-	1
3	1	1	-

Cost
Matrix

	3	3
4	1	2
4	3	
	6	

(12 marks)

Unit III

5. Determine the forecast using three months weighted moving average and exponential.

Month	J	F	M	A	M	J	J	A	S	O	N	D
Demand	350	340	360	410	420	395	375	460	410	420	440	450

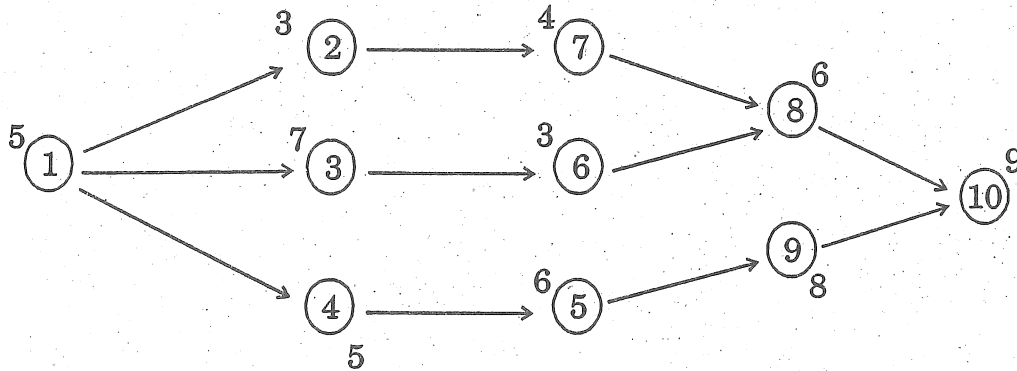
take weights 0.25, 0.25 and 0.5 for recently used data and $\alpha = 0.2$.

(12 marks)

Or

Turn over

6. The demand for an assembly line is 50 units/week. Calculate the delay time and efficiency of the given assembly line.



Unit IV

7. (a) For the following data, sequence the jobs to minimize make span.

Job	Machine	
	A	B
1	4	10
2	6	2
3	15	6
4	11	20
5	3	8

(6 marks)

- (b) For the above problem, find the mean flow time, delay time.

(6 marks)

Or

8. (a) Explain Travelling Salesman problem with an example.

(6 marks)

- (b) Explain priority scheduling rules.

(6 marks)

Unit V

9. For the following data, draw the network find critical path, project duration and slacks.

Activity	1-2	2-3	1-4	3-5	3-7	5-6	4-8	7-9	6-10	9-10	8-11	10-12	11-13	12-13
Duration (days)	5	8	6	4	4	5	3	1	3	5	4	9	2	4

Or

10. Explain MRP I and MRP II with neat sketches.

(12 marks)

(5 × 12 = 60 marks)

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

Fourth Year Examination

First Semester

Mechanical Engineering

ACCOUNTANCY

(With effect from the Academic Year 2011-2012)

Time : Three Hours

Maximum : 60 Marks

Answer any **three** questions, choosing **one** question from each unit.
All questions will carries equal marks.

Unit I

1. (a) Explain the Basic Principles of Accounting. (10 marks)
(b) Enumerate the modifying principles of accounting. (10 marks)

Or

2. From the following particulars for the year ending 31.3.2012, prepare Trading Account, Profit and Loss Account and Balance Sheet :—

Particulars	Dr. Rs.	Cr. Rs.
Purchases / Sales	16, 25,050	25,24,000
Sundry debtors / sundry creditors	5,02,000	3,57,260
Bills payable	—	39,500
Opening stock (1-4-2011)	2,67,250	—
Wages	2,31,370	—
Salaries	55,750	—
Furniture	72,500	—
Power and fues	55,760	—
Bad debts	5,250	—
Loan	30,000	—
Cash in hand and at bank	1,58,310	—
Drawings	44,520	—
Capital	—	1,07, 000
Bank over draft	—	20,000
Total	30,47,760	30,47,760

Turn over

Adjustments :

- (1) Allow 10% interest on capital.
- (2) Closing Stock (31-3-2012) was valued at Rs. 1, 25, 500.
- (3) Wages outstanding Rs. 23,630.

(20 marks)

Unit II

3. (a) From the following, you are required to calculate :

- 1 P/V Ratio.
- 2 BEP.

	Rs.
3 Sales required to earn a profit of ...	90,000
Fixed cost ...	72,000
Variable cost per unit ...	15
Selling price per unit ...	24

(10 marks)

(b) What is meant by break-even analysis ? Discuss the assumptions and the limitations of this technique.

(10 marks)

Or

4. (a) Explain the different methods of costing ?

(10 marks)

(b) What is budgetary control ? Explain its significance.

(10 marks)

Unit III

5. (a) What factors should a finance manager take into consideration while estimating working capital needs of a firm ?

(10 marks)

(b) What is capital budgeting ? State the objectives and process of capital budgeting ?

(10 marks)

Or

6. (a) What are the factors that determine the optimum capital structure ?

(10 marks)

(b) Explain the different methods of capital budgeting appraised ?

(10 marks)

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

Fourth Year Examination

First Semester

Mechanical Engineering

MANAGERIAL ECONOMICS

(With effect from the academic year 2011-2012)



Time : Three Hours

Maximum : 60 Marks

*Answer any five questions, choosing one question from each unit.
All questions carry equal marks.*

Unit I

1. Define the law of diminishing marginal utility and explain its uses to a consumer. (12 marks)

Or

2. Explain the law of demand and state its limitations. (12 marks)

Unit II

3. Explain the law of variables proportions. State the conditions of its applicability. (12 marks)

Or

4. Discuss any *two* of the following :—

- (a) Monopoly market structure.
- (b) Total Revenue.
- (c) Original Revenue.

(6 + 6 = 12 marks)

Unit III

5. What are the factors of production ? How each factor is variable while in production process ? (12 marks)

Or

6. Discuss the managerial uses of break-even analysis as a tool for profit planning. What are its limitations ? (12 marks)

Unit IV

7. Define perfect competition and imperfect competition. Write the features of perfect competition. (12 marks)

Or

Turn over

8. Bring out clearly the significance of each of the following cost classification :—

- (i) Direct and Indirect.
- (ii) Fixed and variables.

(6 + 6 = 12 marks)

Unit V

9. Explain the following :—

- (i) Isoquants.
- (ii) Iso-cost.

(6 + 6 = 12 marks)

Or

10. Briefly explain any *two* of the following :—

- (i) Elasticity of demand.
- (ii) Properties of indifference curve.
- (iii) Diminishing returns to scale.

(6 + 6 = 12 marks)

FOUR YEAR B.TECH. DEGREE EXAMINATION, JANUARY 2013

Fourth Year Examination

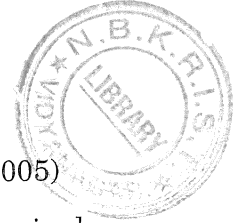
First Semester

Mechanical Engineering

TOOL DESIGN (SI UNITS)

(Revised Regulations with effect from 2004-2005)

[Common to Industrial and Production Engineering]



Time : Three Hours

Maximum : 100 Marks

Answer any five questions, choosing one question from each unit.

All questions carry equal marks.

Draw sketches wherever necessary.

Unit I

1. (a) Explain why “studying the mechanism of metal cutting” is important in understanding cutting operations. (10 marks)

- (b) Write a detail note on specific energy in cutting. (10 marks)

Or

2. (a) Explain the following (i) Chip breakers ; (ii) Types of chips. (10 marks)

- (b) Explain the signature of a single point cutting tool with neat sketch. (10 marks)

Unit II

3. (a) Explain the following (i) Cutting fluids ; (ii) Types of tool wear. (10 marks)

- (b) Explain the factors affecting the tool wear. (10 marks)

Or

- 4 (a) What is Taylor’s tool life equation and explain how the tool life is specified. (10 marks)

- (b) Explain any *two* methods of measuring chip-tool interface temperature. (10 marks)

Unit III

- 5 (a) Explain the requirements of cutting tool materials. (10 marks)

- (b) Advantages, Diamonds and CBN tools as cutting tools for high speed machining. (10 marks)

Or

6. (a) Define the term broaching and explain the applications of broaching. (10 marks)

- (b) What is the need for indexable inserts ? Explain with a neat sketch. (10 marks)

Turn over

Unit IV

7. (a) Explain the causes of failure of Dies in metal working operations. (10 marks)
(b) Classification of presses according to (i) Action ; (ii) Frame. (10 marks)

Or

8. (a) Explain the various costs associated with machining operations. (10 marks)
(b) What is optimum cutting speed for minimum cost in turning ? Discuss in detail. (10 marks)

Unit V

9. (a) Explain the need for jigs and fixtures in high speed machining. (10 marks)
(b) Explain 3-2-1 principle of location. (10 marks)

Or

10. Write a note on the following :

- (i) Types of clamping devices.
(ii) Fixtures for Turning and Milling.

(10 × 2 = 20 marks)

FOUR YEAR B.TECH. DEGREE EXAMINATION, JANUARY 2013

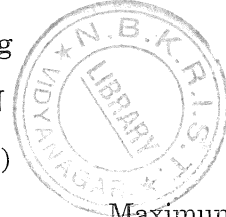
Fourth Year Examination

First Semester

Electrical and Electronics Engineering

SWITCHGEAR AND PROTECTION

(Revised Regulations w.e.f. 2004–2005)



Time : Three Hours

Maximum : 100 Marks

Answer any five questions, choosing one question from each unit.

All questions carry equal marks.

Assume suitable data if necessary.

Unit I

1. (a) Explain, how travelling waves can cause damage to electrical equipment and explain how protective devices can provide protection of electrical equipment against such waves. (10 marks)
- (b) Write notes on : (i) Rod gap ; (ii) Arcing horns ; (iii) Basic impulse insulation level. (3 + 3 + 4 = 10 marks)

Or

2. (a) Explain clearly how the protection of transmission line against direct lightning strokes. What are the requirements of a ground wire to provide efficient protection ? (10 marks)
- (b) How a metal oxide surge arrester is ideal one over other types of surge arrester ? What are advantages over conventional arresters ? (10 marks)

Unit II

3. (a) Explain the principle of Arc interruption. What are the two methods of Arc interruption ? (10 marks)
- (b) What are advantages of air blast circuit breaker over oil circuit breaker ? Explain working principle of air blast circuit breaker with neat diagram. (10 marks)

Or

4. (a) Explain phenomenon of current chopping. Describe how the capacitive currents can be interrupted. (10 marks)
- (b) Define fuse. Describe the construction, operation of the HRC cartridge fuse with its advantages and disadvantages and applications. (10 marks)

Turn over

Unit III

5. (a) What do you understand by a Zones of protection ? Discuss various zones of protection for modern power systems. (8 marks)
- (b) Compare time-current characteristics of inverse, very inverse and extremely inverse over current relays. Discuss their area of application. (12 marks)

Or

6. (a) Explain the terms : (i) Plug setting multiplier ; (ii) Time setting multiplier. (8 marks)
- (b) What is meant by direction feature of a directional overcurrent relay ? Describe construction, principle of operation of a directional over current relay. (12 marks)

Unit IV

7. (a) What is universal torque equation ? Using this equation, device the characteristics of impedance, reactance and mho relays with its characteristics by indicating zones of operation and non-operation. (10 marks)
- (b) Classify static relays and describe the analysis of the amplitude and phase comparators. (10 marks)

Or

8. (a) Describe the principle of reactance type distance relays. Explain how it is acting as a over current relay with directional restraint. (10 marks)
- (b) Describe the duality between amplitude and phase comparators with necessary phasor diagram. (10 marks)

Unit V

9. (a) What type of protective device is used for the protection of an alternator against overheating of its (i) stator and (ii) rotor ? Discuss. (10 marks)
- (b) What type of protective scheme is employed for the protection of large power transformer against short ckts ? Discuss its working principle and operation. (10 marks)

Or

10. (a) Explain the differential protection of feeders. (10 marks)
- (b) Describe the rotor protection against earth fault. (10 marks)

FOUR YEAR B.TECH. DEGREE EXAMINATION, JANUARY 2013

Fourth Year Examination

First Semester

Electrical and Electronics Engineering

DIGITAL SIGNAL PROCESSING

(Revised Regulations w.e.f. 2005–2006)

[Common for LIC/ICE]



Time : Three Hours

Maximum : 100 Marks

*Answer any five questions, choosing one question from each unit.**All questions carry equal marks.**Tables for Analog/digital filter design are to be provided.***Unit I**

1. (a) Find the z -transform of $x(n) = ((-0.5)^{n-2} + (0.2)^{n-1}) u(n)$. (10 marks)
- (b) State and prove Parseval's theorem of z -transforms. (10 marks)

Or

2. (a) Find the inverse z -transform of

$$H(z) = \frac{1}{1 - 2r \cos \theta z^{-1} + r^2 z^{-2}}; |z| > r > 0. \quad (10 \text{ marks})$$

- (b) State and prove the following Z -transform properties :

- (i) Time shifting.
- (ii) Differentiation.
- (iii) Multiplication by an exponential sequence.

(10 marks)

Unit II

3. (a) State and prove the following properties in DFT :

- (i) Time reversal of a sequence.
- (ii) Circular frequency shift.
- (iii) Circular convolution.

(12 marks)

- (b) Compute the DFT of the sequence $x(n) = \{1, 2, 3, 4, 4, 3, 2, 1\}$ using DIFFFT algorithm.

(8 marks)

*Or***Turn over**

4. An 8 point sequence is given by $x(n) = \{1, 2, 3, 4, 4, 3, 2, 1\}$ compute 8 point DFT of $x(n)$

By :

- (a) radix-2 DIT FFT.
 (b) radix-2 DIF FFT and sketch magnitude and phase spectra.

(20 marks)

Unit III

5. (a) With examples, explain various digital filter realization structures. (10 marks)
 (b) Determine the Direct form II realization for the following system

$$y(n) = -0.1 y(n-1) + 0.72 y(n-2) + 0.7 x(n) - 0.252 x(n-2).$$

(10 marks)

Or

6. Convert the given system function into a lattice-ladder structure and cascade structure

$$H(z) = \frac{(1 + 2z^{-1} + 2z^{-2} + z^{-3})}{\left(1 + \frac{13}{24}z^{-1} + \frac{5}{8}z^{-2} + \frac{1}{3}z^{-3}\right)}.$$

(20 marks)

Unit IV

7. (a) Derive the expression to calculate the order of the analog lowpass Butterworth filter. (10 marks)
 (b) Design an analog Butterworth filter that has

$$\alpha_p = 0.5 \text{ db}, f_p = 10 \text{ kHz}, \alpha_s = 22 \text{ db}, f_s = 25 \text{ kHz}.$$

(10 marks)

Or

8. Design a digital Chebyshev filter to meet the constraints

$$\frac{1}{\sqrt{2}} \leq H(e^{j\omega}) \leq 1 \text{ for } 0 \leq \omega \leq 0.2\pi$$

$$0 \leq |H(e^{j\omega})| \leq 0.1 \text{ for } 0.5\pi \leq \omega \leq \pi$$

by using bilinear transformation and assume sampling period $T = 1 \text{ msec}$.

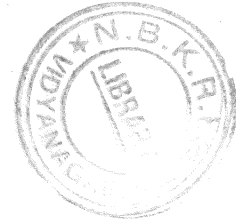
(20 marks)

Unit V

9. (a) Design an FIR filter approximating the ideal frequency response

$$H_d(e^{j\omega}) = e^{-j\omega n} ; |\omega| \leq \frac{\pi}{6}$$

$$= 0 ; \frac{\pi}{6} \leq |\omega| \leq \pi$$



Determine the filter coefficients for $N = 13$.

(10 marks)

- (b) Show that an FIR filter with impulse response $h(n)$ is linear phase.

(10 marks)

Or

10. Design an ideal High pass filter with a frequency response

$$H_d(e^{j\omega}) = 1 ; \frac{-\pi}{4} \leq |\omega| \leq \pi$$

$$= 0 ; |\omega| \leq \frac{\pi}{4}$$

Find the value of $h(n)$ using Hanning window and Hamming window.

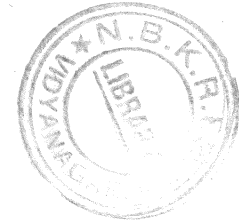
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Determine the filter coefficients for $N = 13$.

(10 marks)

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$$= 0 ; |\omega| \leq \frac{\pi}{4}$$

Find the value of $h(n)$ using Hanning window and Hamming window.

(20 marks)

FOUR YEAR B.TECH. DEGREE EXAMINATION, JANUARY 2013

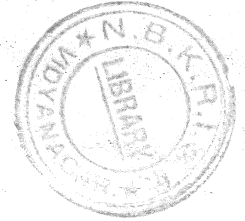
Fourth Year Examination

First Semester

Electrical and Electronics Engineering

DIGITAL SIGNAL PROCESSING

(Revised Regulations w.e.f. 2009–2010)



Time : Three Hours

Maximum : 100 Marks

*Answer any five questions, choosing one full question from each unit.**All questions carry equal marks.**Tables for Analog/digital filter design are to be provided.***Unit I**1. Determine the z -transform of the following sequences :

(a) $x(n) = \frac{1}{2}(n^2 + n)\left(\frac{1}{3}\right)^{n-1} u(n-1).$

(b) $x(n) = (-1)^n \cos\left(\frac{\pi}{3}n\right)u(n).$

(c) $x(n) = 2^n u(-n).$

(d) $x(n) = e^{j\pi n}u(n).$

(20 marks)

Or

2. (a) Find the inverse z -transform of $X(Z) = \frac{z}{3z^2 - 4z + 1}$ for the region of convergence :

(i) $|z| > 1.$

(ii) $|z| < \frac{1}{3}.$

(iii) $\frac{1}{3} < |z| < 1.$

(10 marks)

(b) Determine the unit step response of the system whose difference equation is :

$y(n) + y(n-1) - 2y(n-2) = x(n-1) + 2x(n-2).$ If $y(-1) = 0.5$; $y(-2) = 0.25.$

(10 marks)

Turn over

Unit II

3. Draw the signal flow graph for 16-point DFT using (a) DIT algorithm ; (b) DIF algorithm. (20 marks)

Or

4. (a) Compare DIT and FFT algorithms. (6 marks)
 (b) Define circular convolution. Explain how circular convolution is obtained. (4 marks)
 (c) Compute the IDFT of the sequence $X(K) = \{5, 0, 1-j, 0, 1, 0, 1+j, 0\}$ using :
 (i) DIT algorithm. (ii) DIF algorithm. (10 marks)

Unit III

5. Obtain the direct form I, direct form II, cascade and parallel form :

$$y(n) = -0.1y(n-1) + 0.2y(n-2) + 3x(n) + 3.6x(n-1) + 0.6x(n-2). \quad (20 \text{ marks})$$

Or

6. (a) Derive the system function of an All pass filter. Sketch it's magnitude response, phase response and pole zero plot. (10 marks)
 (b) Obtain the lattice realization for the following system :

$$H(z) = \frac{\left(1 + \frac{3}{2}z^{-1} + \frac{1}{2}z^{-2}\right)}{\left(1 + \frac{1}{4}z^{-1} + \frac{1}{2}z^{-2}\right)}.$$

(10 marks)

Unit IV

7. (a) Describe the design steps for analog Chebyshev low-pass filter. (10 marks)
 (b) Apply impulse invariant method and find $H(z)$ for $H(s) = \frac{s+a}{(s+a)^2 + b^2}$. (10 marks)

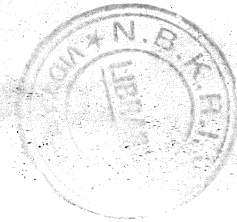
Or

8. (a) Determine $H(z)$ that results when the bilinear transformation is applied to :

$$H_a(s) = \frac{s^2 + 4.525}{s^2 + 0.692s + 0.504}. \quad (10 \text{ marks})$$

- (b) Prove that :

$$\Omega_c = \frac{\Omega_p}{\left(10^{0.1\alpha_p} - 1\right)^{\frac{1}{2N}}} = \frac{\Omega_s}{\left(10^{0.1\alpha_s} - 1\right)^{\frac{1}{2N}}}. \quad (10 \text{ marks})$$



Unit V

9. Design an ideal differentiator with frequency response :

$H(e^{j\omega}) = j\omega; -\pi \leq \omega \leq \pi$. Using (a) Rectangular window ; (b) Hamming window with $N = 8$. Plot frequency responses.

(20 marks)

Or

10. (a) What is the principle of designing FIR filter using frequency sampling method ? What are its advantages and disadvantages ?

(10 marks)

(b) What is windowing ? Why is it necessary ? Compare all the windows.

(10 marks)

FOUR YEAR B.TECH. DEGREE EXAMINATION, JANUARY 2013

Fourth Year Examination

First Semester

Computer Science and Engineering

ARTIFICIAL INTELLIGENCE

(Revised Regulations w.e.f. 2004-2005)



Time : Three Hours

Maximum : 100 Marks

Answer any five questions, choosing one question from each unit.

All questions carry equal marks.

Unit I

1. (a) Define Artificial Intelligence. Also list some of the task domains of Artificial Intelligence.
- (b) Compare and contrast the differences between depth-first search and breadth-first search techniques.

Or

2. (a) Describe the problem characteristics.
- (b) Describe the Best-first-search technique.

Unit II

3. (a) Describe the approaches to knowledge representation.
- (b) Explain how facts are represented in predicate logic. Give at least five example illustrations.

Or

4. (a) Describe the resolution algorithm in predicate logic.
- (b) Describe the concept of natural deduction.

Unit III

5. (a) Describe the concept of symbolic reasoning. Also explain the concept of dependency-directed back tracking.
- (b) Describe about Justification-based truth maintenance systems.

Or

6. (a) Describe the concept of logic-based truth maintenance systems.
- (b) Describe about Dempster-Shafer theory.

Turn over

Unit IV

7. (a) Write semantic nets for the following sentences :
- (i) John gave a book to many.
 - (ii) John is taller than Bill.
 - (iii) John's height is 72 inches which is 2 inches greater than Bill's height.
 - (iv) Every dog has bitten a mail carrier.
- (b) Describe the concept of conceptual dependency. Also construct conceptual dependencies for the above sentences.

Or

8. (a) Explain the concept of scripts. Also write script for the following sentence :
- Rama went to college to write an Examination.
- (b) Describe the concept of CYC.

Unit V

9. (a) Describe the min max search procedure.
- (b) Describe the concept of iterative deepening.
- Or*
10. (a) Describe the architecture of Expert systems. Also write the applications of Expert systems.
- (b) Describe about augmented transition networks.

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

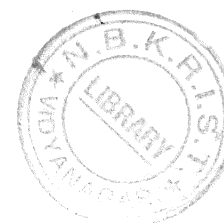
Fourth Year Examination

First Semester

Computer Science and Engineering

MULTIMEDIA SYSTEMS

[W.e. from Academic Year 2011-2012]



Time : Three Hours

Maximum : 60 Marks

*Answer any five questions, choosing one question from each unit.
All questions carry equal marks.*

Unit I

1. (a) Explain about the requirements and constraints of the quality of service. (6 marks)
- (b) Explain about quality aware service model. (6 marks)

Or

2. (a) Explain about the real time requirements of multimedia systems. (6 marks)
- (b) Explain about rate control and error control. (6 marks)

Unit II

3. (a) Explain about the Buffer Management techniques. (6 marks)
- (b) Explain about the multimedia file system. (6 marks)

Or

4. (a) Explain about the system model and multimedia disk scheduling. (6 marks)
- (b) Explain about the UNIX - based system architectures. (6 marks)

Unit III

5. (a) Explain in detail about the FDDI. (6 marks)
- (b) Explain about the early multimedia transport protocols. (6 marks)

Or

6. (a) Explain about the DQDB and orwell. (6 marks)
- (b) Explain about the IPV4 and IPV6. (6 marks)

Turn over

Unit IV

7. (a) Explain the dimensions of CSCW with its architecture. (6 marks)
(b) Explain about reference elements for synchronization and its types. (6 marks)

Or

8. (a) Explain about the session management with its architecture. (6 marks)
(b) Define Synchronization and explain about different object synchronization models. (6 marks)

Unit V

9. (a) Explain about the synthetic synchronization. (6 marks)
(b) Explain about existing classification methods for synchronization. (6 marks)

Or

10. (a) Explain about the Firefly based synchronization. (6 marks)
(b) Explain about the Axis based synchronization. (6 marks)

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

Fourth Year Examination

First Semester

Computer Science and Engineering

MULTIMEDIA SYSTEMS

[W.e. from Academic Year 2011-2012]



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FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

Fourth Year Examination

First Semester

Information Technology

WEB TECHNOLOGIES

(With effect from the academic year 2011-12)

[Common to IT/CSE Branches]



Time : Three Hours

Maximum : 60 Marks

*Answer any five questions, choosing one question from each Unit.
All questions carry equal marks.*

Unit I

1. Write short notes on :

- (a) TCP/IP. (4 marks)
- (b) DNS. (4 marks)
- (c) MIME (4 marks)

Or

2. Write about :

- (a) URL. (4 marks)
- (b) HTTP Request Message. (4 marks)
- (c) Cache control. (4 marks)

Unit II

3. Explain the following XHTML elements :—

- (a) Hyper Linking. (3 marks)
- (b) Lists. (3 marks)
- (c) Meta Elements. (3 marks)
- (d) Internal Linking. (3 marks)

Or

4. Design a registration form by using all form elements and validate the any one field by using event handler.

(12 marks)

Turn over

Unit III

5. Explain the following Java Script functions concepts :—

- (a) Function Definition. (3 marks)
- (b) Random Image Generator. (3 marks)
- (c) Java Script Global functions. (3 marks)
- (d) Recursion. (3 marks)

Or

6. (a) Explain the following DOM concepts :—

- (i) Finding and highlighting an element. (4 marks)
- (ii) Creating and inserting an element. (4 marks)
- (b) Explain the Java script Date object concepts. (4 marks)

Unit IV

7. (a) Explain the Servlet life cycle. (4 marks)
- (b) Write short notes on :
- (i) Session tracking. (4 marks)
 - (ii) Cookies. (4 marks)

Or

8. (a) Write about the advantages and disadvantages of the server side scripting languages. Differentiate with client side scripting ? (5 marks)
- (b) Differentiate DOM and SAX. (7 marks)

Unit V

9. (a) How to display XML documents in browsers ? (6 marks)
- (b) Explain JSP scripting elements with suitable examples. (6 marks)

Or

10. (a) Discuss the difference between CGI and Servlets. (4 marks)
- (b) Write a JSP program to demonstrate Java Bean. (8 marks)

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

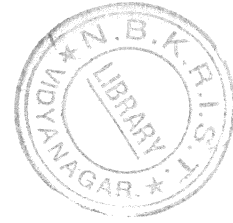
Fourth Year Examination

First Semester

Civil Engineering

SOLID WASTE MANAGEMENT

(With effect from the Academic Year 2012-13)



Time : Three Hours

Maximum : 60 Marks

*Answer any five questions, choosing one question from each unit.
All questions carry equal marks.*

Unit I

1. (a) Explain about quantities of solid waste produced in a society. (6 marks)
- (b) Briefly discuss about challenges and opportunities in solid waste management. (6 marks)

Or

2. (a) Discuss about sources and classification of solid wastes ? (6 marks)
- (b) What are the factors influencing generation of solid wastes ? (6 marks)

Unit II

3. Explain about onsite handling methods used to residential and commercial sources. (12 marks)

Or

4. Give a detailed notes about frequency of collection equipment and labour requirement in solid waste management.

Unit III

5. Give a clear explanation about processing techniques used in solid waste management. (12 marks)

Or

6. Give a clear explanation about recovery systems used in solid waste management. (12 marks)

Unit IV

7. (a) Explain about sanitary landfilling method used in solid waste disposal. (6 marks)
- (b) How do you control gas and leachate production in landfilling method. (6 marks)

Or

8. What is GIS ? How it is applied in land fill disposal studies. (12 marks)

Turn over

Unit V

9. List out the hazardous wastes and how they are disposed without causing any harmfully to the society.

(12 marks)

Or

10. Give some examples of Industrial solid wastes and discuss about the methods used for disposal.

(12 marks)

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FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

Fourth Year Examination

First Semester

Civil Engineering

ADVANCED HIGHWAY ENGINEERING

(With effect from the Academic Year 2011-12)



Time : Three Hours

Maximum : 60 Marks

*Answer any five questions, choosing one question from each unit.
All questions carry equal marks.*

Unit I

1. Explain the equipment used for earthwork. (12 marks)

Or

2. Explain about the design of highway lighting systems. (12 marks)

Unit II

3. Explain the various methods used for soil stabilized roads. (12 marks)

Or

4. What is the need and design approach of low cost roads ? Explain soil treated roads. (12 marks)

Unit III

5. Explain the design procedure and construction of hill roads. (12 marks)

Or

6. What are the points to be considered in the alignment of hill road ? Discuss. (12 marks)

Unit IV

7. Explain about the cost analyzation of highways. (12 marks)

Or

8. Explain about the planning plantation of trees and care of trees. (12 marks)

Unit V

9. Discuss about the different statistical methods of quality control. (12 marks)

Or

10. Explain the importance and process control of quality control in highway engineering. (12 marks)

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

Fourth Year Examination

First Semester

Civil Engineering

MANAGERIAL ECONOMICS AND ACCOUNTANCY

(With effect from the Academic Year 2011-12)

Time : Three Hours

Maximum : 60 Marks

Answer any **three** questions from each part, choosing not more **one** question from each unit.

All questions will carries equal marks.

Answer Part A and Part B in **separate** answer books.

Part A [Managerial Economics]

Unit I

1. Discuss the role of Economics in decision-making. (10 marks)

Or

2. What is Elasticity of Demand ? Discuss the various types of Elasticity of Demand. (10 marks)

Unit II

3. (a) Define the production function. What are the types of it ? (5 marks)

- (b) Explain Cobb-Douglas Production function. (5 marks)

Or

4. From the following information, calculate the BEP in units and BEP in sales value and also margin of safety.

Selling price per unit = Rs. 250 : Fixed Cost = Rs. 12,000

Variable cost per unit = Rs. 200 : Units produced and sold = 500 p.a.

(10 marks)

Unit III

5. Explain the features of monopolistic competition. (10 marks)

Or

6. How does pricing under monopoly differ from that of perfect competition ? (10 marks)

Turn over

Part B [Accountancy]**Unit IV**

7. Explain the basic accounting principles. (10 marks)

Or

8. From the following Trial Balance, prepare Trading and Profit and Loss Account for the year ending 31st Dec., 2011 and also Balance Sheet as on that date :—

<i>Particulars</i>	<i>Debit</i>	<i>Credit</i>
	(Rs.)	(Rs.)
Purchases/Sales ...	2,75,000	5,20,000
Returns inward/outwards ...	15,000	9,000
Carriage inward ...	12,400	—
Wages and Salaries ...	58,600	—
Audit fee ...	1,200	—
Trade expenses ...	2,200	—
Rent received ...		13,000
Insurance ...	2,000	—
Debtors/Creditors ...	1,10,000	62,100
Bills receivable ...	3,300	—
Commission ...	15,000	3,200
Printing and Advertising ...	5,500	—
Opening stock ...	36,000	—
Cash Balance ...	39,600	—
Bank loan ...	—	20,000
Interest on Bank loan ...	1,500	—
Capital ...	—	2,50,000
Fixed Assets ...	3,00,000	—
Total	<u>8,77,300</u>	<u>8,77,300</u>

Adjustments :

- (a) Stock on 31.12.2011 Rs. 60,000.
- (b) Depreciate fixed assets by 10%.
- (c) Interest on Bank loan @ 15% P.A.
- (d) Rent received in advance Rs. 1,000.



(10 marks)

Unit V

- 9. (a) Define Cost Accounting. Give main features of Cost Accounting. (5 marks)
- (b) Explain the nature and scope of Cost Accounting. (5 marks)

Or

- 10. Describe Budget and explain the budget classification. (10 marks)

Unit VI

- 11. Describe the functions of finance. In what ways, are these functions related to possible finance objectives of a Company ?

(10 marks)

Or

- 12. Discuss the important considerations that influence the magnitude of receivables requirements and inventory requirements of a firm.

(10 marks)

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

Fourth Year Examination

First Semester

Civil Engineering

CONCRETE TECHNOLOGY

(With effect from the academic year 2011-12)

Time : Three Hours

Maximum : 60 Marks



Answer any five questions, choosing one question from each unit.

All questions carry equal marks.

IS 10262-1982 is permitted to use.

Unit I

1. (a) Write the oxide composition. Limits of ordinary Portland cement and explain their necessity. (6 marks)
- (b) Explain sulphate resisting cement and Portland slag cement. (6 marks)

Or

2. What are the various additives used in concrete and how does it affect the properties of concrete ? (12 marks)

Unit II

3. (a) Bring out the detailed classification of Aggregates and explain one of them briefly. (6 marks)
- (b) What is alkali aggregate reaction ? Describe the test for procedure to evaluate the same. (6 marks)

Or

4. (a) Explain which factors effecting the workability of concrete. (6 marks)
- (b) Explain briefly about segregation and bleeding. (6 marks)

Unit III

5. (a) Explain the factors affecting modulus of elasticity of concrete. (6 marks)
- (b) List and various type of chemical attacks on concrete and to reduce. (6 marks)

Or

Turn over

6. (a) How does permeability affect the durability of concrete ? (6 marks)
(b) Explain advantages of air entrained concrete over OPC concrete. (6 marks)

Unit IV

7. Explain various laboratory test performing to find strength of a concrete. (12 marks)

Or

8. List and various methods of curing and differentiate steam curing and high pressure steam curing. (12 marks)

Unit V

9. (a) What are the factors considering the preparation of design mix ? (6 marks)
(b) Differentiate ACI method and IS method for design mix. (6 marks)

Or

10. Design a concrete mix for the following data :

Characteristic compressive strength = 25 Mpa

Maximum size of coarse aggregate = 20 mm

Specific gravity of coarse aggregate = 2.78

Specific gravity of fine aggregate = 2.64

Sand confirming to zone = III

Specific gravity of cement = 3.15

Workability of 0.8 is required for the mix.

(12 marks)

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

Fourth Year Examination

First Semester

Civil Engineering

IRRIGATION AND HYDRAULIC STRUCTURES

(With effect from the academic year 2011-2012)

Time : Three Hours

Maximum : 60 Marks

Answer any five questions, choosing one question from each unit.

All questions carry equal marks.

Use of Khosla's curves is permitted.

Any data found missing, may suitably be assumed.

Unit I

1. (a) What are the methods of irrigation ? Write brief notes on each of them. (6 marks)
- (b) Define duty and delta. Also derive the relation between them. (6 marks)

Or

2. (a) Discuss functions of irrigation water. (6 marks)
- (b) The discharge at an outlet is $0.2 \text{ m}^3/\text{sec}$. Average losses from outlet to field are 10 % of water flowing through the outlet. If kor period and kor depth for wheat and rice are 3 weeks, 120 mm. and 2 weeks, 250 mm, calculate how much area can be irrigated for each crop. (6 marks)

Unit II

3. (a) Compare Kennedy's and Lacey's theories for the design of irrigation channel. (6 marks)
- (b) Design a irrigation channel by Kennedy's theory to carry a discharge of $15 \text{ m}^3/\text{sec}$., using the values of $N = 0.0225$, critical velocity ratio (m) = 1.0 and bed slope is 1 in 5000. (6 marks)

Or

4. (a) What is water logging ? Explain causes, effects and remedial measures of water logging. (6 marks)
- (b) What do you understand by balancing depth ? Derive an expression for the same. (6 marks)

Unit III

5. (a) Explain with the help of a diagram, the various components parts, along with their functions of a diversion head works. (6 marks)
- (b) Discuss in brief various causes of failure of weirs and their remedies. (6 marks)

Or

Turn over

6. (a) Discuss Khosla's theory for the design of weirs on permeable foundation. (6 marks)
(b) What are the factors to be considered in location of diversion head works. (6 marks)

Unit IV

7. (a) Describe in brief various modes of failure of a gravity dam. (6 marks)
(b) What is an elementary profile? Derive the equations for the base width of elementary profile. (6 marks)

Or

8. What do you understand by gravity dam? Explain various forces that act on a gravity dam with the help of a neat sketch.

(12 marks)

Unit V

9. (a) Define spillway gates. Discuss various types of spillway gates. What are their relative merits and demerits?

(6 marks)

- (b) Explain in detail hydraulic design of energy dissipaters. (6 marks)

Or

10. (a) What are the design principles of ogee spillway? (6 marks)

- (b) How spillway are classified? Describe briefly the different types of spillways. (6 marks)

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

Fourth Year Examination

First Semester

Civil Engineering

ENVIRONMENTAL ENGINEERING—II

(With effect from the academic year 2011-2012)

Time : Three Hours

Maximum : 60 Marks

*Answer any five questions, choosing one question from each unit.
All questions carry equal marks.
Assume suitable data, wherever necessary.*

Unit I

1. (a) Explain about "Systems of sanitation". (6 marks)
- (b) What is storm flow ? And what are the factors effecting storm flow ? (6 marks)

Or

2. (a) What do you mean by "sewer appurtenances" ? Explain any one in detail, with neat sketch. (6 marks)
- (b) Define self-cleaning velocity and non-scouring velocity in sewer design. And also mention about hydraulic formulae used in design of sewers. (6 marks)

Unit II

3. (a) Define BOD. How do you estimate BOD of the sample in the laboratory ? And what are its limitations ? (8 marks)
- (b) What is population equivalent and explain in detail ? (4 marks)

Or

4. (a) Design a grit chamber for a flow of 36 MLD. Assume suitable data. (6 marks)
- (b) Design a primary settling tank for a population of 50,000. Assume suitable data. (6 marks)

Unit III

5. (a) What is biological treatment ? And what are the factors affecting biological treatment ? (6 marks)
- (b) With a flow diagram, explain about activated sludge treatment. (6 marks)

Or

Turn over

6. Give a brief explanation about :

- (i) Stabilization pond.
- (ii) Oxidation ditch.

(6 + 6 = 12 marks)

Unit IV

7. Explain the following :—

- (i) Sludge condition.
- (ii) Sludge dewatering.

(6 + 6 = 12 marks)

Or

8. Explain the following :—

- (i) Removal of nitrogen.
- (ii) Removal of heavy metals.

(6 + 6 = 12 marks)

Unit V

9. (a) Derive the equation for oxygen sag curve.

(6 marks)

(b) What are the zones of pollution in stream sanitation ?

(6 marks)

Or

10. (a) Explain in detail about working and constructional details of septic tank.

(6 marks)

(b) Also explain about septic tank effluent disposal systems.

(6 marks)

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

Fourth Year Examination

First Semester

Civil Engineering

FINITE ELEMENT ANALYSIS

(With effect from the Academic Year 2011–2012)

Time : Three Hours

Maximum : 60 Marks

*Answer any five questions, choosing one question from each unit.
All questions will carry equal marks.
Assume suitable data, if required.*

Unit I

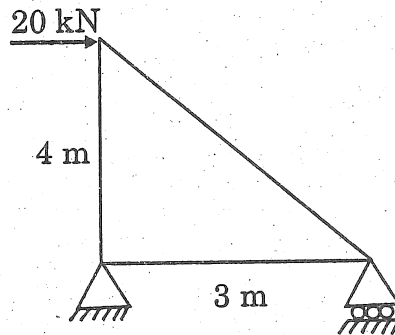
1. (a) What are the advantages and limitations of finite element analysis? (6 marks)
 - (b) Explain the stepwise procedure of analyzing a continuum using finite element technique? (6 marks)
- Or*
2. (a) Explain different types of elements and their applications. (6 marks)
 - (b) Discuss on the requirements of shape functions obtain the shape functions for a two noded beam element. (6 marks)

Unit II

3. Derive the element stiffness matrix for truss element and beam element. (12 marks)
- Or*
4. Determine the consistent load vector for a propped cantilever of span 10 m carrying a point load of 100 kN at 4 m from fixed end along with a UDL of intensity 20 kN/m throughout. Divide the beam into two elements. (12 marks)

Unit III

5. Find the nodal displacement, stresses and forces in the members of the truss shown in figure. Take $E = 200 \text{ GPa}$ and the area of each member is 400 mm^2 .



(12 marks)

Or

Turn over

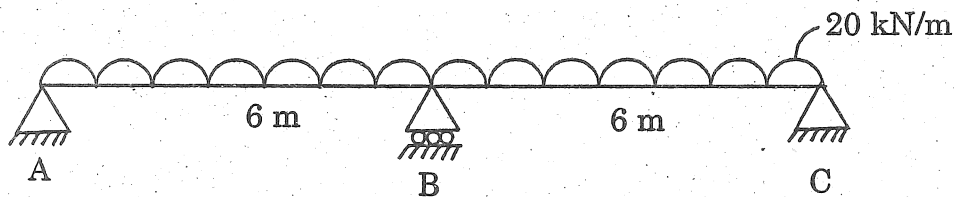
6. Explain the following terms :

- Direction cosines.
- Element stiffness matrix.
- Global stiffness matrix.
- Local and Global co-ordinate systems.

(12 marks)

Unit IV

7. Analyze the beam shown in figure, using FEM technique.



(12 marks)

Or

8. Explain the following :

- Plane stress.
- Plane strain.
- Nodal load matrix.
- Beam element stiffness matrix.

(12 marks)

Unit V

9. Write short notes on :

- Isoparametric elements.
- Co-ordinate transformation.
- Higher order elements.
- Mesh refinement.

(12 marks)

Or

10. Briefly explain the structure of a Finite element analysis program and write the some of the standard finite element Analysis packages.

(12 marks)

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

Fourth Year Examination

First Semester

Electronics and Communication Engineering

DIGITAL IMAGE PROCESSING

(With effect from the academic year 2011-2012)

Time : Three Hours

Maximum : 60 Marks

Answer any five questions, choosing one question from each unit.
All questions carry equal marks.

Unit I

1. (a) Explain various fundamental steps in image processing.
- (b) Explain in detail about digital image processing applications.

Or

2. (a) Explain the following :
 - (i) Distance Measures.
 - (ii) Adjacency.
 - (iii) Neighbours of Pixel.
- (b) Consider image segment shown :

	3	1	2	1	(q)
	2	2	0	2	
	1	2	1	1	
(p)	1	0	1	2	

Let $V = \{0, 1\}$ and compute the lengths of the shortest 4-, 8- and m -path between p and q .

Unit II

3. Define 2 D Fourier transform and its inverse. State and prove at least five properties of 2 D Fourier transform.

Or

4. Explain about the following :
 - (a) Walsh transform.
 - (b) Hadamard transform.
 - (c) Discrete cosine transform.

Turn over

Unit III

5. (a) What is a Histogram ? Explain about Histogram equalisation.
- (b) Explain image smoothing by using spatial domain filters.

Or

6. Explain image smoothing and sharpening using frequency domain filters.

Unit IV

7. Explain the image restoration by using inverse filtering and Wiener filtering methods.

Or

8. Explain model of the image degradation process. Discuss restoration of image in the presence of noise by using spatial filtering.

Unit V

9. (a) Explain fidelity criteria used for assessment of image.
- (b) Draw the block diagram of image compression system and explain each block.

Or

10. Explain the following :

- (a) Boundary Detection Techniques.
- (b) Boundary descriptors.

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

Fourth Year Examination

First Semester

Electronics and Communication Engineering

SATELLITE COMMUNICATIONS

(With effect from the academic year 2011–2012)

Time : Three Hours

Maximum : 60 Marks

*Answer any five questions, choosing one question from each unit.
All questions will carry equal marks.*

Unit I

1. (a) Write a short notes on brief history of satellite communications. (6 marks)
- (b) Define all orbital Elements. (6 marks)

Or

2. (a) Differentiate the following orbits :
 - (i) LEO. (ii) MEO.
 - (iii) GTO. (iv) GEO. (4 marks)
- (b) Explain orbital effects in communications systems performance. (8 marks)

Unit II

3. Describe the following :
 - (a) Attitude Control System.
 - (b) Orbit Control System.
 - (c) Power Systems. (12 marks)

Or

4. (a) Explain main types of antennas used on satellites. (7 marks)
- (b) Explain single conversion transponder used in satellites. (5 marks)

Unit III

5. (a) Derive the Friss transmission equation. (5 marks)
- (b) A satellite in GEO orbit is at a distance of 39,000 km from an earth station. The required flux density at the satellite to saturate one transponder at a frequency of 14.3 GHz is -90 dBW/m^2 . The earth station has a transmitting antenna with a gain of 52 dB at 14.3 GHz. Find :
 - (i) The EIRP of the earth station.
 - (ii) The output power of ES transmitter. (7 marks)

Or

Turn over

6. Explain following :

- (a) C/N Ratio.
- (b) E/T Ratio.
- (c) Noise Temperature.
- (d) Noise figure.
- (e) Antenna gain.
- (f) Flux Density.

(12 marks)

Unit IV

7. Explain in detail about TDMA.

(12 marks)

Or

8. Explain in detail about CDMA.

(12 marks)

Unit V

9. (a) Explain why up-link frequency is greater than down-link frequency. With neat diagram explain about process of up conversion and down conversion. (7 marks)

(b) Draw the block diagram of the Earth Station Equipment. (5 marks)

Or

10. Explain the following :

- (a) Design of Large antennas.
- (b) Tracking Antennas.
- (c) Small Earth Station Antennas.

(12 marks)

(5 × 12 = 60 marks)

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

Fourth Year Examination

First Semester

Electronics and Communication Engineering

EC 08 74—TELECOMMUNICATION SWITCHING NETWORKS

(Under SSAC Regulations w.e.f. 2011-12)

Time : Three Hours

Maximum : 60 Marks

*Answer any five questions, choosing one question from each unit.
All questions carry equal marks.*

Unit I

1. (a) Draw the block diagram of SONET multiplexing and explain each block. (6 marks)
- (b) Explain the principle of time division multiplexing. Compare it with frequency division multiplexing. (6 marks)

Or

2. (a) Compare space division switches and time division switches. (6 marks)
- (b) Explain how end to end digital connectivity is achieved with ISDN network. Draw the diagram indicating the architecture of ISDN and explain. (6 marks)

Unit II

3. (a) What is the unit of traffic ? Explain how traffic is measured. (6 marks)
- (b) On average, during the busy hour, a company makes 120 outgoing calls of average duration 2 minutes. It receives 200 incoming calls of average duration 3 minutes. Find the outgoing traffic, incoming traffic and the total traffic. (6 marks)

Or

4. (a) In a telephone system the average call duration is 2 minutes. A call has already lasted for 4 minutes. What is the probability that the call will last at least another 4 minutes ? What is the probability that the call will end within the next 4 minutes ? (6 marks)
- (b) Write a short note on loss systems in tandem and traffic tables. (6 marks)

Turn over

Unit III

5. (a) Draw the block diagram of a two stage switching network and explain. (6 marks)
(b) What are various types of gradings and explain them. (6 marks)

Or

6. (a) Explain the principle of sectionalized switching networks. (6 marks)
(b) What is use of expansion ? Explain. (6 marks)

Unit IV

7. (a) What is routing in packet networks ? How are they classified ? (6 marks)
(b) Explain the principle of flooding and deflection routing in specialized routing. (6 marks)

Or

8. (a) What is the role of virtual paths in ATM networks ? Explain with a diagram. (6 marks)
(b) Explain the steps of the Bellman-Ford algorithm for shortest path routing. (6 marks)

Unit V

9. (a) Explain the concept of bandwidth broker and traffic conditioner in differential services. (6 marks)
(b) In the overlay model, the server network operates an independent control plane from the client networks. Elaborate this. (6 marks)

Or

10. (a) Discuss the concept of survivability in MPLS. (6 marks)
(b) What is the need for different reservation styles in RSVP (Reservation Protocol) ? (6 marks)

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

Fourth Year Examination

First Semester

Electronics and Communication Engineering

OPTICAL COMMUNICATIONS

(With effect from the academic year 2011-2012)



Time : Three Hours

Maximum : 60 Marks

*Answer any five questions, choosing one question from each unit.
All questions carry equal marks.*

Unit I

1. (a) Explain step index and graded index fibers with relevant expressions for refractive index. (6 marks)
- (b) Explain Total Internal Reflection, Acceptance Angle and Numerical Aperture. (6 marks)

Or

2. (a) Explain linear and non-linear scattering losses. (6 marks)
- (b) Write about intrinsic and extrinsic fiber sensors. (6 marks)

Unit II

3. (a) Explain different laser structures with neat diagrams. (6 marks)
- (b) Explain surface emitter and edge emitter LEDs. (6 marks)

Or

4. (a) Write about reflection and partition fiber noise. (6 marks)
- (b) Explain LED coupling to a single mode fiber. (6 marks)

Unit III

5. Explain in detail phototransistors and photo darlington receiver transistor operation. (12 marks)

Or

6. (a) Write about Quantum Efficiency and Responsivity of photodiodes. (6 marks)
- (b) A photodiode has a quantum efficiency of 65 % when photons of energy 1.5×10^{-19} J are incident upon it. (i) At what wavelength is the photodiode operating ? (ii) Calculate the incident optical power required to obtain a photocurrent of $2.5 \mu\text{A}$. (6 marks)

Turn over

Unit IV

7. Explain in detail different fiber amplifiers with neat diagrams. (12 marks)

Or

8. Explain in detail semiconductor laser amplifiers and its performance characteristics with relevant expressions.

(12 marks)

Unit V

9. (a) Explain intrinsic and extrinsic fiber sensors. (6 marks)

(b) Write different applications of optical fiber communication in telephones and telemetry.

(6 marks)

Or

10. Explain different components of optical fiber communication system in detail. (12 marks)

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

Fourth Year Examination

First Semester

Electronics and Communication Engineering

EC 08 72—RADAR ENGINEERING

(Under SSAC Regulations w.e.f. 2011-12)



Time : Three Hours

Maximum : 60 Marks

*Answer any five questions, choosing one question from each unit.
All questions carry equal marks.*

Unit I

1. (a) With a neat block diagram, explain the operating principle of a radar. (6 marks)
- (b) Derive the radar range equation. Explain the importance of various parameters used in the radar range equation. (6 marks)

Or

2. (a) A military radar operates at 5 GHz with 2.5 MW power output. If the antenna diameter is 5 m, the receiver bandwidth is 1.6 MHz and has a 12 dB noise figure, what is the maximum detection range of 1 m² target. (6 marks)
- (b) Discuss various applications of radar. (6 marks)

Unit II

3. (a) With a neat sketch, explain the principle of a TWT. Compare the performance of TWT with CFA. (6 marks)
- (b) What is a mixer ? What is its purpose in a superheterodyne receiver ? Distinguish between balanced mixer and image recovery mixer. (6 marks)

Or

4. (a) What is a plan position indicator ? Compare this with A scope. (6 marks)
- (b) Distinguish between branch type duplexer and balanced duplexer. What are the advantages of solid state duplexer ? (6 marks)

Turn over

Unit III

5. (a) What is a CW Radar ? What are its limitations? How are they overcome in a FM CW radar ? Explain clearly. (6 marks)
- (b) Draw a neat block diagram of a MTI Radar. Explain the purpose of each block clearly. (6 marks)

Or

6. (a) Define blind speed. Explain how the blind speed problem can be minimized by using delay line cancellers. (6 marks)
- (b) Write a short note on conical scanning. (6 marks)

Unit IV

7. (a) What is a loop antenna ? Obtain the expression for the far field strength due to a loop antenna. What are its applications in Radio Direction Finding (RDF) ? (6 marks)
- (b) What is VHF Omni Range ? What is its purpose ? What are its applications ? (6 marks)

Or

8. (a) Write a short note on LF/MF four course radio range. (6 marks)
- (b) Explain clearly what happens to direction finding due to changes in ionosphere and changes in polarization. (6 marks)

Unit V

9. (a) What are hyperbolic systems for navigation ? Explain the operating principle of DME. (6 marks)
- (b) What is tactical air navigation ? Discuss the salient features of TACAN. (6 marks)

Or

10. (a) Explain the features of DECCA navigation system. (6 marks)
- (b) Compare LORAN-A and LORAN-C. (6 marks)

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

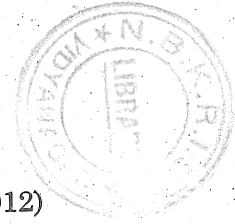
Fourth Year Examination

First Semester

Electrical and Electronics Engineering

HIGH VOLTAGE ENGINEERING

(With effect from the academic year 2011-2012)



Time : Three Hours

Maximum : 60 Marks

*Answer any five questions, choosing one question from each unit.
All questions carry equal marks.*

Unit I

1. Explain with neat sketches Cockroft-Walton voltage multiplier circuit. Explain clearly its operation when the circuit is (i) unloaded ; (ii) loaded. (12 marks)

Or

2. Draw Chubb-Fortescue circuit for measurement of peak value of AC voltages and discuss its advantages over other methods. (12 marks)

Unit II

3. (a) Explain clearly the procedure for measurement of (i) Impulse ; (ii) a.c. high voltages using sphere gap. (6 marks)
- (b) Explain with neat diagram how rod gaps can be used for measurement of high voltages. Compare its performance with a sphere gap. (6 marks)

Or

4. (a) Explain with neat diagram the principle of operation of an electrostatic voltmeter. Discuss its advantages and limitations for high voltage measurements. (8 marks)
- (b) What is Rogowski coil ? Explain its principle of operation with a neat sketch. (4 marks)

Unit III

5. List out various tests to be carried out on insulators and give a detailed account of each test. (12 marks)

Or

Turn over

6. Explain the following tests on a power transformer in detail (i) Partial discharge test ; (ii) Impulse test.

(12 marks)

Unit IV

7. (a) Define "Complex permittivity". What are the factors that govern the quantities "relative permittivity" and "loss factor".

(6 marks)

- (b) Explain the high voltage schering bridge for "tan δ " and capacitance measurement of insulators.

(6 marks)

Or

8. (a) Discuss the method of balanced detection for locating partial discharges in electrical equipment.

(6 marks)

- (b) Describe how a fault in a long cable can be detected and located using partial discharge technique.

(6 marks)

Unit V

9. (a) Explain the mechanism of development of anode and cathode streamers and explain how these lead to breakdown.

(8 marks)

- (b) State and explain Paschen's law.

(4 marks)

Or

10. (a) Explain intrinsic breakdown in solid dielectrics.

(6 marks)

- (b) Explain cavity breakdown in liquid dielectric.

(6 marks)

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

Fourth Year Examination

First Semester

Electrical and Electronics Engineering

COMPUTER METHODS IN POWER SYSTEM ANALYSIS

(With effect from the academic year 2011-2012)

Time : Three Hours

Maximum : 60 Marks

*Answer any five questions, choosing one question from each unit.**All questions carry equal marks.***Unit I**

1. (a) Explain the short circuit currents and the reactance of synchronous machine. (6 marks)
- (b) A generator connected through a 5 cycle circuit to breaker to a transformer is rated 100 MVA, 18 kV, with reactances of $X_d'' = 19\%$, $X_d' = 26\%$ and $X_d = 130\%$. It is operating at no load and rated voltage when a three-phase short circuit occurs between the breaker and the transformer. Find (i) the sustained short-circuit current in the breaker ; (ii) the initial symmetrical r.m.s. current in the breaker ; (iii) the maximum possible dc component of the short-circuit current in the breaker.

(6 marks)

Or

2. (a) Explain current limiting reactors of symmetrical faults. (6 marks)
- (b) A generating station has two alternators of 2500 kVA and 5000 kVA and reactances are 8 % and 6 % respectively. The circuit breakers are rated at 150 MVA. Due to increase in system load it is intended to extend the system by a supply from the grid via a transformer of 10 MVA rating and 7.5 % reactance. If the system of voltage is 3,300 volts, find the reactance necessary to protect the switch gear.

(6 marks)

Unit II

3. (a) Define the symmetrical components and state their advantages in fault calculations. (4 marks)
- (b) A 100 MVA, 18 kV turbo generator having $X_1 = X_2 = 20\%$ and $X_0 = 5\%$, is about to be connected to a power system. The generator has current limiting reactor of 0.162Ω in the neutral. Before the generator is connected to the system, its voltage is adjusted to 16 kV when a double line to ground fault developed at terminals b and c. Find the initial symmetrical r.m.s. current in the ground and in line b.

(8 marks)

Or

Turn over

4. (a) Explain the sequence impedances of transmission lines. (5 marks)
- (b) A 15 MVA, 6.9 kV star connected generator has $X_1 = 0.25$ p.u., $X_2 = 0.25$ p.u. and $X_0 = 0.08$ p.u. respectively. A reactor of 6 % reactance based on the rating of the generator is placed between neutral and ground. A line to line fault occurs at the terminals of the generator current, it is operating at rated voltage. Find the fault current and line voltages.

(7 marks)

Unit III

5. (a) Define static load flow studies. How do you formulate Y_{bus} . (5 marks)
- (b) Draw the flow chart for load flow solution by the NR method using Y_{bus} . (7 marks)

Or

6. Obtain the mathematical model for fast decoupled method of load flow analysis and state the assumption made in this method.

(12 marks)

Unit IV

7. (a) Starting from first principles, derive the swing equation of a synchronous machine. Define inertia constant.

(6 marks)

- (b) A synchronous generator of reactance 1.2 p.u. is connected to an infinite bus-bar $|V| = 1.0$ p.u. through transformers and line of total reactance of 0.6 p.u. the generator no load voltage is 1.2 p.u. and its inertia constant $H = 4$ MW-S/MVA. $R = 0$, $f = 50$ Hz. Calculate the frequency of natural oscillations if the generator is loaded (i) 50 % and (ii) 80 % of its max power limit.

(6 marks)

Or

8. (a) Explain the power angle diagram. (6 marks)
- (b) Explain the classification of stability studies. (6 marks)

Unit V

9. (a) Derive the expression for critical clearing angle. (6 marks)
- (b) What is equal area criterion ? Discuss its application and limitation in the study of power system stability.

(6 marks)

Or

10. With the help of equal area criterion method explain transient stability phenomenon when there is a sudden increase in the input to generator indicate accelerating and decelerating areas in the figure.

(12 marks)

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

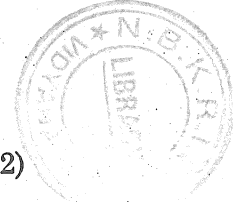
Fourth Year Examination

First Semester

Electrical and Electronics Engineering

SWITCH GEAR AND PROTECTION

(With effect from the academic year 2011-2012)



Time : Three Hours

Maximum : 60 Marks

*Answer any five questions, choosing one question from each unit.
All questions carry equal marks.*

Unit I

1. (a) Explain the causes of over voltages in a power system. (4 marks)
- (b) What is a surge absorber ? Explain the principle of surge absorber protection for a rotating machine. (8 marks)

Or

2. (a) Explain how a lightning arrester is selected for the protection of a power transformer. (6 marks)
- (b) Explain the importance of volt-time curves in power system studies. (6 marks)

Unit II

3. Explain the construction and principle of arc interruption in air blast circuit breaker. (12 marks)

Or

4. (a) Define :
 - (i) Restriking voltage.
 - (ii) Recovery voltage.
 - (iii) RRRV of a circuit breaker.(6 marks)
- (b) Derive an expression for restriking voltage across the contacts of a circuit breaker when a three-phase fault takes place. (6 marks)

Unit III

5. (a) Derive an expression for operating torque of a directional relay. (6 marks)
- (b) Explain the operating characteristics of a directional over current relay. (6 marks)

Or

Turn over

6. (a) Explain the functions of a protective relay in a power system. (6 marks)
(b) What is the significance of plug setting multiplier and time setting multiplier in an IDMT relay? (6 marks)

Unit IV

7. (a) Explain the three stepped protective scheme of an impedance relay. (6 marks)
(b) What are the advantages of static relays over electromagnetic relays? (6 marks)

Or

8. Explain static distance relays in detail. (12 marks)

Unit V

9. Explain differential protection of transformers with neat sketches. (12 marks)

Or

10. Describe the translay relay protective scheme for the protection of feeders. (12 marks)

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER. 2012

Fourth Year Examination

First Semester

Electrical and Electronics Engineering

POWER SEMICONDUCTOR DRIVES

(With effect from the Academic Year 2011-2012)

Time : Three Hours

Maximum : 60 Marks

*Answer any five questions, choosing one question from each unit.
All questions will carries equal marks.*

Unit I

1. (a) Explain the advantages and disadvantages of an electric drives over the mechanical drives. (6 marks)
- (b) Draw the block diagram of an electric drive and explain its functions of each block. (6 marks)

Or

2. (a) Explain the four-quadrant of an electric drive with speed-torque conventions with an example. (6 marks)
- (b) Explain the components of load torques, nature and classification of load torques. (6 marks)

Unit II

3. (a) What is the necessity of closed loop speed control ? Explain the closed loop torque control of an electric drive with a block diagram. (6 marks)
- (b) Explain briefly the following methods of braking of a D.C. motor (i) plugging ; (ii) dynamic braking. (6 marks)

Or

4. (a) Explain the 1- ϕ fully controlled rectifier with continuous and discontinuous mode of operation with out put voltage wave forms. (6 marks)
- (b) A 220 V, 750 r.p.m. 120 A separately excited d.c. motor has an armature resistance of 0.04 Ω . It is fed from a single-phase fully controlled rectifier with an a.c voltage source 230V, 50 Hz. Assuming continuous conduction. Determine (1) firing angle for rated motor torque and speed 600 r.p.m. (2) motor speed for $\alpha = 130^\circ$ and rated torque. (6 marks)

Turn over

Unit III

5. (a) Explain any four speed control methods of induction motor. (6 marks)
- (b) A 440 V, 3-phase, 50 Hz, 6- pole, 945 r.p.m. delta connected induction motor has following parameter referred to the stator : $R_s = 2.0 \Omega$, $R_r' = 20 \Omega$, $X_s = 3\Omega$, $X_r' = 4\Omega$ when driving a fan load at rated voltage it runs at rated speed. The motor speed is controlled by stator voltage control. Determine (i) motor terminal voltage, current and torque at 800 r.p.m. ; (ii) motor speed, current and torque for the terminal voltage of 2.80 V. (6 marks)

Or

6. (a) Discuss the following braking methods used for 3-phase induction motor (i) regenerative braking ; and (ii) dynamic braking. (6 marks)
- (b) Derive the expression for developed torque of induction motor and show that developed torque is a function of slip. (6 marks)

Unit IV

7. (a) Explain the starting methods of synchronous motor drives. (6 marks)
- (b) Draw the block diagram of a closed loop synchronous motor fed from VSI and explain briefly. (6 marks)

Or

8. (a) Explain variable frequency control of synchronous motor drives. (6 marks)
- (b) Explain the operation of self-controlled synchronous motor drive employing load commutated thyristor inverter. (6 marks)

Unit V

9. (a) Explain the various losses in electrical drive system. (6 marks)
- (b) Explain various methods of improving power factor of an electrical drive. (6 marks)

Or

10. (a) Write short notes on (i) maintenance of motors ; (ii) energy efficient operation of drives. (6 marks)
- (b) Explain brief about the use of efficient motors and variable speed drives for energy conversion of electrical drive. (6 marks)

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

Fourth Year Examination

First Semester

Electrical and Electronics Engineering

COMPUTER ORGANIZATION

(Common to EEE/ECE/EICI Branches)



Time : Three Hours

Maximum : 60 Marks

*Answer any five questions, choosing one question from each unit.
All questions carry equal marks.*

Unit I

1. Describe in detail about the basic operational concept of different units in a computer.

Or.

2. (a) Discuss about different instruction formats with examples.
(b) Explain the concept of pushdown stack and its operation.

Unit II

3. (a) Compare the instruction set of a stack computer and micro-computers with examples.
(b) Discuss briefly the sequencing of control signals.

Or

4. Explain in detail about the fundamentals and different components in a CPU.

Unit III

5. (a) Explain the working process of a micro-program sequencer.
(b) Discuss about micro-programme with examples.

Or

6. (a) Discuss the concept of perfecting a micro-instruction.
(b) Explain in detail the emulation of micro-instructions.

Unit IV

7. (a) Describe about multiple module memories and their interleaving.
(b) Explain the concept of addressing I/O devices with examples.

Or

Turn over

8. Write a short note on the following :—

- (i) Cache memories.
- (ii) Virtual memories.
- (iii) Semiconductor RAM memories.
- (iv) Semiconductor ROM memories.

Unit V

9. (a) Describe the process of Linkers and Loaders.
(b) Discuss about computer peripherals and their interfacing.

Or

10. (a) Explain about the concept of operating systems.
(b) Discuss briefly about software translators with examples.

FOUR YEAR B.TECH. DEGREE EXAMINATION, JANUARY 2013

Fourth Year Examination

First Semester

Mechanical Engineering

 **TOOL DESIGN (SI UNITS)**

(Revised Regulations with effect from 2004-2005)

[Common to Industrial and Production Engineering]

Time : Three Hours

Maximum : 100 Marks

Answer any five questions, choosing one question from each unit.

All questions carry equal marks.

Draw sketches wherever necessary.

Unit I

1. (a) Explain why "studying the mechanism of metal cutting" is important in understanding cutting operations. (10 marks)

- (b) Write a detail note on specific energy in cutting. (10 marks)

Or

2. (a) Explain the following (i) Chip breakers ; (ii) Types of chips. (10 marks)

- (b) Explain the signature of a single point cutting tool with neat sketch. (10 marks)

Unit II

3. (a) Explain the following (i) Cutting fluids ; (ii) Types of tool wear. (10 marks)

- (b) Explain the factors affecting the tool wear. (10 marks)

Or

- 4 (a) What is Taylor's tool life equation and explain how the tool life is specified. (10 marks)

- (b) Explain any two methods of measuring chip-tool interface temperature. (10 marks)

Unit III

- 5 (a) Explain the requirements of cutting tool materials. (10 marks)

- (b) Advantages, Diamonds and CBN tools as cutting tools for high speed machining. (10 marks)

Or

6. (a) Define the term broaching and explain the applications of broaching. (10 marks)

- (b) What is the need for indexable inserts ? Explain with a neat sketch. (10 marks)

Turn over

Unit IV

7. (a) Explain the causes of failure of Dies in metal working operations. (10 marks)
(b) Classification of presses according to (i) Action ; (ii) Frame. (10 marks)

Or

8. (a) Explain the various costs associated with machining operations. (10 marks)
(b) What is optimum cutting speed for minimum cost in turning ? Discuss in detail. (10 marks)

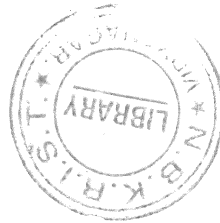
Unit V

9. (a) Explain the need for jigs and fixtures in high speed machining. (10 marks)
(b) Explain 3-2-1 principle of location. (10 marks)

Or

10. Write a note on the following :

- (i) Types of clamping devices.
(ii) Fixtures for Turning and Milling.



(10 × 2 = 20 marks)

FOUR YEAR B.TECH. (SSAC) DEGREE EXAMINATION, NOVEMBER 2012

Fourth Year Examination

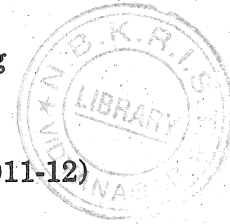
First Semester

Computer Science and Engineering

DATA MINING

(With Effect from the Academic Year 2011-12)

[Common to CSE/IT branches]



Time : Three Hours

Maximum : 60 Marks

*Answer any five questions, choosing one question from each unit.
All questions carry equal marks.*

Unit I

1. (a) Explain Data Mining Functionalities. (6 marks)
- (b) Explain Data Mining Task Primitives. (6 marks)

Or

2. (a) Explain Data warehouse architecture. (6 marks)
- (b) Write comparison between OLTP and OLAP systems ? (6 marks)

Unit II

3. Write about Descriptive data summarization in detail. (12 marks)

Or

4. What is Data Cleaning ? Explain the basic methods for data cleaning in detail. (12 marks)

Unit III

5. (a) Explain in detail BUC Algorithm for the computation of iceberg cubes. (6 marks)
- (b) Explain Market Basket Analysis with example. (6 marks)

Or

6. Explain the road map for the materialization of different kind of cubes. (12 marks)

Unit IV

7. Explain different types of data in Cluster Analysis. (12 marks)

Or

Turn over

8. (a) Explain in detail about Outlier Analysis.
(b) Explain Hierarchical Clustering.

(6 marks)

(6 marks)

Unit V

9. Explain in detail Outlier Analysis.

(12 marks)

Or

10. (a) Describe about cluster analysis.

(6 marks)

- (b) Describe about Density based clustering methods.

(6 marks)

