

SUBJECT CODE NO:- P-8080
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Communication) Examination May/June 2017
EI-1 Global Positioning System
(Revised)

[Time : Three Hours]

[Max Marks :80]

Please check whether you have got the right question paper.

N.B

- i) Assume suitable data whenever necessary.
- ii) Answer any three questions from section A & section B.

Section A

- | | | | |
|-----|----|---|----|
| Q.1 | A | Explain the principle of operation of GPS. | 08 |
| | B | Discuss the orbital mechanics and satellite position determination. | 07 |
| Q.2 | A | Discuss the tracking problems in GPS system | 08 |
| | B | Explain any one satellite orbit and coordinate system. | 07 |
| Q.3 | A | Explain Ephemeris error in GPS system | 08 |
| | B | Draw and explain GPS signal structure | 07 |
| Q.4 | A | Explain position estimation with pseudo range measurements. | 08 |
| | B | What is spoofing and anti-spoofing? Explain | 07 |
| Q.5 | | Write short note on <u>(Any two)</u> | 10 |
| | a. | GPS navigation | |
| | b. | Code and carrier phase measurement | |
| | c. | Satellite and receiver clock error. | |

Section B

- | | | | |
|------|------|--|----|
| Q.6 | A | Discuss DGPS error. | 08 |
| | B | Draw and explain wide area augmentation system architecture. | 07 |
| Q.7 | A | Explain local area augmentation system concept. | 08 |
| | B | Discuss GPS modernization in detail. | 07 |
| Q.8 | A | Explain Galileo system. | 08 |
| | B | Discuss GPS application in Geophysics. | 07 |
| Q.9 | A | Explain GPS application in ground transportation. | 08 |
| | B | Discuss airborne GPS. | 07 |
| Q.10 | | Write short note on <u>(Any two)</u> | 10 |
| | i. | climate research using GPS | |
| | ii. | GPS application in surveying | |
| | iii. | GPS/INS | |

SUBJECT CODE NO:- P-8081
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (ECT/CE) Examination May/June 2017
El-1 Digital Signal Compressing
(Revised)

[Time : Three Hours]

[Max Marks :80]

Please check whether you have got the right question paper.

N.B

- i) Q.No.1 from and Q.No.6 are compulsory.
- ii) Solve any two questions from Q.No.2 to Q.NO.5.
- iii) Solve any two questions from Q.No.7 to Q.NO.10.

Section A

- | | | |
|-------|--|----|
| Q.1 | Attempt any two of the following | 10 |
| | a. What is need for compression? | |
| | b. Explain source coding techniques | |
| | c. What is Huffman coding? Explain detail. | |
| Q.2 A | Explain evolution of data compression & its application. | 08 |
| B | Explain scalar and vector quantization theory. | 07 |
| Q.3 A | What is difference between vector quantization and structure quantization? | 08 |
| B | Explain the Adaptive Huffman coding in detail. | 07 |
| Q.4 A | What is text compression? Explain dictionary techniques in text compression. | 08 |
| B | Explain evaluation techniques-error analysis for source coding techniques. | 07 |
| Q.5 | Write short note on (Any three) | 15 |
| | a. Rate distribution theory. | |
| | b. Taxonomy of compression techniques. | |
| | c. LZW family algorithm | |
| | d. Shannon- Fano coding. | |

Section B

- | | | |
|-------|---|----|
| Q.6 | Attempt any two of the following: | 10 |
| | a. Explain audio compression in detail. | |
| | b. Explain difference between DM, PCM & DPCM | |
| | c. Explain video compression techniques. | |
| Q.7 A | Explain frequency domain and filtering in Audio compression. | 08 |
| B | Explain optimal predictors and optimal quantization in image compression. | 07 |
| Q.8 A | Explain wavelet based compression in detail. | 08 |
| B | Explain sub band coding algorithm. | 07 |
| Q.9 A | Explain motion estimation and compensation technique for video compression. | 08 |
| B | Explain DVI real time compression in detail. | 07 |
| Q.10 | Write short note on (Any three) | 15 |
| | a. H.261 standard | |
| | b. JPE4 2000 standard | |
| | c. Contour based compression | |
| | d. Vocoders. | |

SUBJECT CODE NO:- P-8083
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Manufacturing Engg.) Examination May/June 2017
El-1 Product Design for Manufacturing
(Revised)

[Time : Three Hours]

[Max Marks :80]

Please check whether you have got the right question paper.

- N.B
- i) Attempt any three from each section.
 - ii) Figures to the right indicate full marks.
 - iii) Assume suitable data, if necessary and state them clearly.

Section A

- | | | |
|-----|---|----|
| Q.1 | Discuss the general design rules for manufacturability? | 13 |
| Q.2 | “Material selection plays a vital role in design” discuss. | 13 |
| Q.3 | Discuss the characteristics that should be considered while designing polymer component for manufacturing? | 13 |
| Q.4 | Discuss the characteristics that should be considered while designing brazing and soldering components for manufacturing? | 13 |
| Q.5 | Discuss the major phases in design& manufacturing? | 14 |

Section B

- | | | |
|------|---|----|
| Q.6 | Define design for Reliability, its concept, its methodology and applications in detail? | 13 |
| Q.7 | Define value analysis, its concept, its methodology and applications in detail? | 13 |
| Q.8 | Elaborate on important guidelines for designing electronic products which will lead towards direct cost reduction and will have higher-yield manufacturing? | 13 |
| Q.9 | Discuss the multi-criteria approach of evaluation of the manufacturability of a part design? | 13 |
| Q.10 | Write short notes on <u>any three</u> :- | |
| | (a) Methods of defining manufacturability index | 05 |
| | (b) Tolerance design | 05 |
| | (c) QFD benefits | 04 |
| | (d) System optimization | 04 |

SUBJECT CODE NO:- P-8084
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Manufacturing Engg.) Examination May/June 2017
El-1 Technology & Knowledge Mgt.
(Revised)

[Time : Three Hours]

[Max Marks :80]

Please check whether you have got the right question paper.

N.B

- i) Solve any three questions from each section.
- ii) Assume suitable data, if required.
- iii) Figures to the right indicate full marks.

Section A

- | | | |
|-----|---|----|
| Q.1 | State the importance of teamwork, communication in organization. How does it influence organizations? Discuss the main approaches to knowledge management strategy. | 13 |
| Q.2 | Discuss five P's of knowledge management in detail. | 13 |
| Q.3 | How to develop strategic knowledge community? Explain. How can Knowledge be diffused in an organization. | 13 |
| Q.4 | How does organizational learning help in the management of knowledge? Elaborate. | 13 |
| Q.5 | Write short note on <u>any two</u> :-
(i) Knowledge as asset
(ii) Virtual knowledge beam
(iii) Phases of knowledge development | 14 |

Section B

- | | | |
|-----|---|----|
| Q.6 | Knowledge culture enhancement programs are necessary for any organization. Discuss in detail. | 13 |
| Q.7 | Discuss knowledge management in public administration such as government agencies. Also list and describe the benefits of knowledge management System in organizational learning process. | 13 |
| Q.8 | Discuss regarding repository quality control in detail. Explain acquisition and downsizing integrated knowledge development. | 13 |
| Q.9 | Write short notes on <u>any two</u> :-
(i) Developing core knowledge structure
(ii) Maintaining the knowledge culture.
(iii) Performance management. | 14 |

SUBJECT CODE NO:- P-8085
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Manufacturing Engg.) Examination May/June 2017
EI-1 Reverse Engg. & Additive Manufacturing
(Revised)

[Time : Three Hours]

[Max Marks :80]

Please check whether you have got the right question paper.

N.B

- i) Attempt any three questions from each section.
- ii) Figures to the right indicate full marks.

Section A

- | | | | |
|-----|-----|---|----|
| Q.1 | (a) | Discuss the term "Rapid Manufacturing". | 08 |
| | (b) | Explain the role of reverse engineering in rapid product development. | 05 |
| Q.2 | (a) | Write a brief note on software applications in reverse engineering. | 08 |
| | (b) | How the data verification performed in reverse engineering? Explain. | 05 |
| Q.3 | (a) | What are contact and non-contact methods of reverse engineering? | 08 |
| | (b) | What is error analysis? | 05 |
| Q.4 | | Explain <u>any two</u> from the following:- | 14 |
| | (a) | Limitations of reverse engineering. | |
| | (b) | Rapid prototyping. | |
| | (c) | Legal issues in reverse engineering. | |
| | (d) | Surface modeling. | |

Section B

- | | | | |
|-----|-----|--|----|
| Q.5 | | Describe direct metal laser sintering (DMLS) process. Explain its applications, advantages, limitations and future trends. | 13 |
| Q.6 | (a) | Discuss the role of additive manufacturing in automotive industry applications. | 08 |
| | (b) | Differentiate between various additive manufacturing techniques. | 05 |
| Q.7 | (a) | Differentiate between direct and indirect tooling. | 08 |
| | (b) | What is meant by real-time embedded software? | 05 |
| Q.8 | | Write short note on <u>any two</u> of the following:- | 14 |
| | (a) | Recent developments in rapid manufacturing. | |
| | (b) | 3D-printing. | |
| | (c) | Selection of AM systems. | |
| | (d) | Process limitation RP technology. | |
| | (e) | Economics in additive manufacturing. | |

SUBJECT CODE NO:- P-8086
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (CSE/SE) Examination May/June 2017
El-1 Advanced Computer Architecture
(Revised)

[Time : Three Hours]

[Max Marks :80]

N.B Please check whether you have got the right question paper.

- N.B
- i) Solve any two questions from each section.
 - ii) Assume suitable data if necessary.

Section A

- | | | | |
|-----|---|--|----|
| Q.1 | A | What is scalable performance? Explain different metrics and measures for the same? | 10 |
| | B | Explain shared memory organization with neat diagram? | 10 |
| Q.2 | A | Describe instruction pipeline design in detail? | 10 |
| | B | Write short note on linear pipeline processors. | 10 |

- | | | | |
|-----|---|--|----|
| Q.3 | A | Explain SIMD array processor with block diagram. | 10 |
| | B | Describe the role of parallel algorithm for array processor. | 10 |

Section B

- | | | | |
|-----|---|--|----|
| Q.4 | A | Write short note on (Any two) | 20 |
| | B | <ul style="list-style-type: none">i. Multiprocessor structuresii. Synchronization mechanismiii. Message passing mechanism. | |

- | | | | |
|-----|---|---|----|
| Q.5 | A | Explain the application of vector processing? | 07 |
| | B | Explain vector processing principles | 07 |
| | C | How the performance of array processor is enhanced? | 06 |

- | | | | |
|-----|---|---|----|
| Q.6 | A | Explain VLIW architecture in detail? | 10 |
| | B | Explain different parallel processing models? | 10 |

SUBJECT CODE NO:- P-8087
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Comp.Sci.&Engg.) Examination May/June 2017
El-1 Remote Sensing
(Revised)

[Time : Three Hours]

[Max Marks :80]

Please check whether you have got the right question paper.

- N.B
- i) Attempt any two questions from each section.
 - ii) Assume suitable data, if necessary.

Section A

- | | | | |
|-----|-----|--|----|
| Q.1 | (a) | What is Remote Sensing? Discuss basic principle of Remote sensing. How remote sensing works? | 10 |
| | (b) | Enlist and discuss significant development stages of remote sensing? Compare Indian remote sensing with global program. | 10 |
| Q.2 | (a) | What do you mean by resolution of sensor? Classify the sensors according to resolution and explain different types of resolutions. | 12 |
| | (b) | Differentiate between (i) Airborne and space-borne platforms (ii) Sun-Synchronous and geo-stationary orbits. | 08 |
| Q.3 | (a) | Explain in detail multispectral scanners. | 10 |
| | (b) | Explain thermal and hyperspectral sensing concepts. | 10 |

Section B

- | | | | |
|-----|-----|--|----|
| Q.4 | (a) | Discuss different color models RGB, CMY and HSI in detail. | 10 |
| | (b) | What are different keys for spatial image representation? | 10 |
| Q.5 | (a) | How do you classify digital image? Explain the methods for classification of images. | 12 |
| | (b) | Explain in detail principal component analysis with reference to remote sensing. | 08 |
| Q.6 | (a) | Which are different sources of errors in remotely sensed data? Explain. | 08 |
| | (b) | What is confusion matrix? What is its use in remote sensing? | 08 |
| | (c) | Explain applications of remote sensing. | 04 |

SUBJECT CODE NO:- P-8088
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Digital Communication) Examination May/June 2017
El-1 Genetic Algorithm & Application
(Revised)

[Time : Three Hours]**[Max Marks :80]**

Please check whether you have got the right question paper.

- N.B
- i) Q.5 from section A and Q.10 from section B are compulsory.
 - ii) Solve any two questions from Q1 to Q4 from section A and Q6 to Q9 from section B.
 - iii) Assume suitable data if necessary.

Section A

- | | | | |
|-----|-----|---|----|
| Q.1 | (a) | Explain search space encoding. | 08 |
| | (b) | Discuss the various elements of genetic algorithm. | 07 |
| Q.2 | (a) | Discuss genetic modeling. | 08 |
| | (b) | Discuss the various traditional optimization techniques in brief. | 07 |
| Q.3 | (a) | Compare GA with traditional search methods. | 08 |
| | (b) | Explain fitness scaling. | 07 |
| Q.4 | (a) | Give the details of Genetic programming. | 08 |
| | (b) | Discuss diploidy and obedience in genetic algorithm. | 07 |
| Q.5 | | Write short note on:- | 10 |
| | | (i) Genetic algorithm in problem solving. | |
| | | (ii) G.A. micro operators | |
| | | (iii) GA in engineering. | |

Section B

- | | | | |
|------|-----|---|----|
| Q.6 | (a) | Explain the role of Genetic algorithm in theoretical foundations. | 08 |
| | (b) | Discuss low level operators of genetic algorithms. | 07 |
| Q.7 | (a) | Explain the computer implementation of genetic algorithm. | 08 |
| | (b) | Explain the knowledge based techniques used in Genetic algorithm. | 07 |
| Q.8 | (a) | Explain parallel processors. | 08 |
| | (b) | Explain composite laminates. | 07 |
| Q.9 | (a) | Discuss constraint based optimization. | 08 |
| | (b) | Discuss multilevel optimization. | 07 |
| Q.10 | | Write short note on(Any two) | 10 |
| | | (i) Real life problem solving using GA. | |
| | | (ii) Simulated annealing | |
| | | (iii) GA in scientific models. | |

SUBJECT CODE NO:- P-8089
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Digital Communication) Examination May/June 2017
El-1 Telecommu. Switching Systems
(Revised)

[Time : Three Hours]

[Max Marks :80]

Please check whether you have got the right question paper.

N.B

- i) Solve any two full questions from each section.
- ii) Assume satiable data (if necessary) .
- iii) Figures to the right indicate full marks.

Section A

- Q.1 a) With neat sketch explain large 3 stage ATM switch proposed by Chao. 07
b) Explain the basic structure of Batcher sorter network. Also, explain three phase contention resolution algorithm. 08
c) Explain different buffering strategies in ATM. 05
- Q.2 a) Explain in detail analog 3-stage matrix space switch. Mention the condition for non blocking. 08
b) Explain in detail multicast router switches. 07
c) Give the architecture of sunshine switch. 05
- Q.3 Write short notes on 20
- 1) MPLS switch
 - 2) Variable length packet switching.
 - 3) MEMS switch
 - 4) OBS & OPS
 - 5) ISDN

Section-B

- Q.4 a) Derive an expression to obtain the Erlang's second formula of delay system. 08
b) Explain three models of the loss system in brief. 06
c) Explain the basics of MEMS switches. How there are superior to other switches. 06
- Q.5 a) Explain in detail markov's B-P process representing the traffic. 06
b) Explain in detail of SS7 protocol stacks. 06
c) Explain in detail re-configurable ware lengths ADD/Drop MUX using MEMS. 08
- Q.6 Write short notes on 20
- 1) Conditions for non blotching Banyan networks.
 - 2) Wireless ATM
 - 3) I P route lookup
 - 4) Tandem cross points switches
 - 5) GMPLS

SUBJECT CODE NO:- P-8091
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Comp.Net.& Engg.) Examination May/June 2017
El-1 Grid Computing
(Revised)

[Time : Three Hours]

[Max Marks :80]

Please check whether you have got the right question paper.

N.B

i) Solve any two questions from each section.

Section A

- | | | |
|-----|--|----|
| Q.1 | a) Describe the layered protocol architecture for computational grids. | 10 |
| | b) Explain how resolution of grid takes place from parallel to distributed cluster computing and grid computing? | 10 |
| Q.2 | a) Explain Ganglia Grid monitoring system. | 10 |
| | b) Explain service data in open Grid services infrastructure in detail. | 10 |
| Q.3 | a) Explain open Grid services Architecture with a neat diagram. | 10 |
| | b) Write comparison between different Monitoring systems. | 10 |

Section-B

- | | | |
|-----|---|----|
| Q.4 | a) Discuss in detail about condor-G and condor support in Globus. | 10 |
| | b) Explain scheduling paradigms in detail. | 10 |
| Q.5 | a) Discuss in detail about service life cycle in OGSi. | 10 |
| | b) Explain data transport services with a neat diagram. | 10 |
| Q.6 | a) Explain PBS C portable Batch systems.) | 10 |
| | b) Explain web services with WSDL example. | 10 |

SUBJECT CODE NO:- P-8096
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (CAD/CAM) Examination May/June 2017
El-II Sheet Metal Modeling & Manuf.
(Revised)

[Time : Three Hours]**[Max Marks :80]**

Please check whether you have got the right question paper.

N.B

- i) Solve any three questions from each section.
- ii) Figures to the right indicate full marks.
- iii) Assume suitable data wherever required and state it clearly.

Section A

- | | | |
|-----|---|----|
| Q.1 | a) Elaborate the stages in sheet metal process designing. | 06 |
| | b) Explain various sheet metal features to be incorporated while designing. | 07 |
| Q.2 | a) With the help of suitable example explain the process plan for sheet metal working operation. | 07 |
| | b) Describe the concept of plastic stress-strain relations and its role in metal forming process. | 06 |
| Q.3 | a) Discuss various low alloy steels developed for formability. | 07 |
| | b) Explain the role of strain hardening coefficient in metal working operation. | 06 |
| Q.4 | a) Describe slip line field theory applied to metal forming. | 07 |
| | b) What is the role of lubricants? Enlist various lubricants for hot and cold working. | 06 |
| Q.5 | Write short note on the following (<u>any two</u>) | 14 |
| | a) Workability and residual stresses | |
| | b) Yielding criterion for ductile metals. | |
| | c) Unrolling cones and cylinders. | |

Section-B

- | | | |
|------|--|----|
| Q.6 | a) Explain the principle of working of hydraulic and pneumatic press. | 10 |
| | b) Explain various shearing operation. | 03 |
| Q.7 | a) Describe press control system in forging equipments. | 06 |
| | b) How force is calculated in case of bending operation? Derive an equation for bending force. | 07 |
| Q.8 | a) Describe the defects in formed parts. | 07 |
| | b) Elaborate the method of centre of pressure calculation. | 06 |
| Q.9 | a) With the help of neat sketch explain compound and combination die. | 10 |
| | a) Explain trimming, nibbling operations. | 03 |
| Q.10 | Write short note on the following (<u>any two</u>) | 14 |
| | a) Embossing and coining operation | |
| | b) Stock strip layout | |
| | b) Calculation of spring back effect in case of bending operation. | |

SUBJECT CODE NO:- P-8097
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (CAD/CAM) Examination May/June 2017
El-2 Product Life Cycle Management
(Revised)

[Time : Three Hours]

[Max Marks :80]

N.B Please check whether you have got the right question paper.

- i) assume suitable data wherever necessary and state it clearly.
- ii) Solve any three questions from each section.
- iii) Figures to the right indicate full marks.

Section A

- | | | |
|-----|---|----|
| Q.1 | Describe the following steps in product development and design from PLM context:
1) Consumer adoption process.
2) Drawing and design specification. | 13 |
| Q.2 | Why PLM is important? How customer can be involved in PLM process? | 13 |
| Q.3 | Sequentially list the various stages of adoption of a new product by customer. | 13 |
| Q.4 | With suitable case study from manufacturing industry, explain PLM strategy. | 14 |
| Q.5 | What are the components of PLM? Explain. | 13 |

Section-B

- | | | |
|------|---|----|
| Q.6 | Explain the purpose of product design, state the requirements of good design. | 14 |
| Q.7 | With a suitable case study explain the PLM in use. | 13 |
| Q.8 | What are the desirable features of a database management system Explain? | 13 |
| Q.9 | Describe the architecture of a database management system? | 13 |
| Q.10 | Explain multiple data definition and also discuss justification of PDM. | 13 |

SUBJECT CODE NO:- P-8099
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Mechanical-Heat Power) Examination May/June 2017
El-1 Fuels & Combustion
(Revised)

[Time : Three Hours]

[Max Marks :80]

Please check whether you have got the right question paper.

N.B

- 1) Solve any three question from each section
- 2) Use of steam table is allowed
- 3) Assume suitable data if required

Section A

- | | | |
|-----|--|----|
| Q.1 | a) Explain gross and net calorific values of fuels | 05 |
| | b) Explain proximate and ultimate analysis of fuels | 05 |
| | c) Write the steps for converting volumetric analysis into mass analysis | 04 |
| Q.2 | a) Describe the coking properties and caking Index of coals | 06 |
| | b) Explain different types of renewable solid fuels | 07 |
| Q.3 | a) Write note on "liquefaction of solid fuels" | 07 |
| | b) Explain flash and fire point of liquid fuels | 06 |
| Q.4 | During a boiler trial, the average volumetric analysis of dry flue gases obtained by Orsat apparatus is $\text{CO}_2 = 10\%$, $\text{CO} = 1.5\%$, $\text{O}_2 = 8\%$ and $\text{N}_2 = 80.5\%$ Analysis of coal is $\text{C} = 80\%$, $\text{H}_2 = 6\%$, $\text{O}_2 = 7\%$ and remaining in ash. determine (i) weight of dry flue gas per kg of fuel (II) weight of air supplied per kg of fuel (III) Excess air | 13 |

Section B

- | | | |
|-----|--|----|
| Q.5 | a) Explain the method of determination of calorific value of gaseous fuel by Boy's calorimeter | 08 |
| | b) What do mean by rich & lean gas | 05 |
| Q.6 | a) Explain CNG & LPG | 06 |
| | b) Describe composition and various properties of gaseous fuels | 07 |
| Q.7 | a) Explain any one technique for measurement of flame temperature | 07 |
| | b) Explain mechanism of combustion in detail | 07 |
| Q.8 | a) Write short note on "flame stabilization" | 07 |
| | b) Describe the classification and properties of premixed flames | 06 |

SUBJECT CODE NO:- P-8101
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Mechanical-Heat Power) Examination May/June 2017
El-1 Non-conventional Power Plant
(Revised)

[Time : Three Hours]

[Max Marks :80]

Please check whether you have got the right question paper.

N.B

- i) Solve any three question from each section
- ii) Assume suitable data if required

Section A

- | | | |
|-----|--|----|
| Q.1 | a) What is meant by renewable energy sources? Explain in reference to Indian context | 07 |
| | b) Define the terms | 06 |
| | i) Zenith angle | |
| | ii) Solar azimuth angle | |
| | iii) Incident angle | |
| Q.2 | a) State the advantages and disadvantages of concentrated collector over flat plate collector | 07 |
| | b) Write short notes on solar radiation on tilted surfaces | 06 |
| Q.3 | a) Briefly describe a silicon solar cell along with its constructional features | 06 |
| | b) What are the advantages of vertical axis machines over horizontal type? Describe a rotor for relatively low velocity wind | 07 |
| Q.4 | a) Describe the main considerations in selecting a site for wind generators | 07 |
| | b) Write short notes on | 07 |
| | i) Darrieus rotor | |
| | ii) Wind energy storage | |

Section B

- | | | |
|-----|---|----|
| Q.5 | a) Name the different biomass resources | 06 |
| | b) With a neat diagram explain the biomass gasification | 07 |
| Q.6 | a) Explain the process "photosynthesis" what are the conditions which are necessary for it | 07 |
| | b) How is geothermal energy generated inside the earth crust? In India where is geothermal energy available | 06 |
| Q.7 | a) What are the main advantages & disadvantages of bio-mass energy | 07 |
| | b) List the advantages and disadvantages of a tidal barrage scheme as a source of electrical power | 06 |
| Q.8 | Write short notes on (<u>any two</u>) | 14 |
| | 1) Biodiesel | |
| | 2) Wave energy | |
| | 3) Double flash system | |

SUBJECT CODE NO:- P-8103
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Electronics & Telecomm.) Examination May/June 2017
El-1 Advance Digital Image Processing
(Revised)

[Time : Three Hours]

[Max Marks :80]

Please check whether you have got the right question paper.

N.B

- i) Q 1 and Q 6 are compulsory
- ii) Solve any two question from Q.2, Q.3, Q.4 and Q.5 in section A
- iii) Solve any two question from Q.7, Q.8, Q.9 and Q.10 in section B
- iv) Figure to the right indicate full marks
- v) Assume suitable data wherever necessary and mention it clearly

Section A

Q.1	Write short notes on (<u>any two</u>)	10
	i) sampling & quantization	
	ii) Local pre-processing	
	iii) Edge relaxation	
Q.2	Explain pixel brightness transformations in detail	15
Q.3	Explain various edge models and explain multispectral image concept in detail	15
Q.4	Explain Edge based segmentation in detail	15
Q.5	Explain non liner filtering for image restoration in detail	15

Section B

Q.6	Write short notes on (<u>ant two</u>)	10
	i) Biomedical image processing application	
	ii) MPEG image compression	
	iii) Wavelet transform application in IP	
Q.7	Explain statistical pattern recognition in detail	15
Q.8	Explain syntactic pattern recognition in detail	15
Q.9	Explain morphological basic process opening and closing with various structuring elements in detail	15
Q.10	Explain morphological thinning & thickening process algorithm in detail	15

SUBJECT CODE NO:- P-8104
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Control System Engg.) Examination May/June 2017
El-1 Advance Drives & Controls
(Revised)

[Time : Three Hours]**[Max Marks :80]**

Please check whether you have got the right question paper.

N.B

- i) Solve any two question from each section
- ii) Assume suitable data if necessary
- iii) Mathematical treatment is required wherever necessary

Section A

- Q.1 a) Explain dual converter control scheme of D.C. separately excited motor with two fully controlled rectifiers 10
 b) A 2 pole separately excited D.C. motor has the ratings of 220v, 100A and 750rpm. Resistance of armature is 0.1 Ω . The motor has two field coils which are normally connected in parallel. It is used to drive a load whose torque is expressed as $T_L = 500 - 0.3 N$, N-M where N is the motor speed in rpm, speeds below and above rated are obtained by armature voltage control and by connecting the two field windings in series respectively.
 i) Calculate the motor armature current and speed when the armature voltage is reduced to 110V
 ii) Calculate the motor speed and current when field coils are connected in series
- Q.2 a) Explain with neat sketches speed torque curves of DC motors for various methods of speed control 10
 b) A 400 v star connected, 3-phase 6-pole, 50Hz inducting motor has the following parameters referred to the stator
 $R_s = R' = 1 \Omega$, $X_s = X' = 2 \Omega$
 For regenerative braking operation of this motor Determine:
 i) Maximum overhauling torque it can hold and range of speed for safe operation
 ii) Speed at which it will hold an overhauling load which a torque of 100 N-m
- Q.3 a) Explain regenerative braking & pegging or reverse voltage braking of an induction motor 10
 b) Explain self-controlled synchronous motor drive employing load computed thyristor inverter with closed loop speed control scheme 10

Section B

- Q.4 a) Explain on efficient unipolar and bipolar drive circuits for stepper motors 10
 b) Explain modes of operation of switched reluctance motor drive. show how the drive is operated in closed loop with outer speed loop and inner current control loop 10
- Q.5 a) Why a permanent magnet D.C motor suitable for pump drives is preferred for low power application? Give application of solar drives 10
 b) Explain, how the operation near the maximum power points is obtained in a solar powered pump drive using centrifugal pumps Draw the block diagram of D.C motor drive with chopper and MPPT 10
- Q.6 a) Explain Important feature of traction drives . explain PWM voltage source inverter squirrel cage induction motor drive with neat circuit diagram for D.C traction employing poly phase A.C motors 10
 b) Derive a relation between principle quantities in trapezoidal and quadrilateral speed limits curves in traction for an electrictrician. 10

SUBJECT CODE NO:- P-8105
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Control System Engg.) Examination May/June 2017
El-1 Digital Image Processing
(Revised)

[Time : Three Hours]

[Max Marks :80]

Please check whether you have got the right question paper.

- N.B i) Attempt any two questions from each section.
ii) Assume suitable data if necessary.

Section A

- | | | |
|-----|--|----|
| Q.1 | a) Explain fundamental steps in digital image processing. | 07 |
| | b) Explain in detail about types of Image digitizers. | 07 |
| | c) Discuss about film scanning. | 06 |
| Q.2 | a) Explain in detail about perspective Transformations. | 07 |
| | b) Explain operations involved in basic transformation. | 07 |
| | c) Explain camera model and its calibration. | 06 |
| Q.3 | a) Write a short note on discrete cosine transform. | 07 |
| | b) What are the properties of the Two-Dimensional Fourier Transform and explain in detail? | 07 |
| | c) Explain Hadamard Transform. | 06 |

Section B

- | | | |
|-----|---|----|
| Q.4 | a) What is difference in image restoration and image enhancement? Discuss image restoration and enhancement techniques. | 07 |
| | b) Explain spatial Filtering. | 07 |
| | c) Discuss color models. | 06 |
| Q.5 | a) Explain lossless and lossy compression. | 07 |
| | b) Explain techniques for video compression. | 07 |
| | c) Write short note on wiener filter. | 06 |
| Q.6 | a) Explain inverse filtering. | 07 |
| | b) What is Image segmentation? Discuss various approaches for image segmentation. | 07 |
| | c) Explain techniques of edge detection. | 06 |

SUBJECT CODE NO:- P-8106
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Embedded System) Examination May/June 2017
El-1 Image & Video Processing
(Revised)

[Time : Three Hours]

[Max Marks :80]

Please check whether you have got the right question paper.

- N.B
- i) Question number 1 and 5 are compulsory
 - ii) Solve any 2 questions from the remaining questions from each section
 - iii) figure to the right- indicates full marks
 - iv) Assume suitable data wherever necessary

Section A

- | | | |
|-----|--|----|
| Q.1 | a) Differentiate Linear and nonlinear filtering | 05 |
| | b) Explain lossless coding | 05 |
| Q.2 | a) Explain blur identification algorithm | 08 |
| | b) Explain motion models | 07 |
| Q.3 | a) Explain basic concept of multiscale image decomposition and wavelet | 08 |
| | b) Explain block truncation coding Algorithm | 07 |
| Q.4 | a) Explain computational model for early human vision | 08 |
| | b) Explain image statistics for segmentation | 07 |

Section B

- | | | |
|-----|---|----|
| Q.5 | a) Explain Halftoning | 05 |
| | b) Explain H.261 standard | 05 |
| Q.6 | a) Explain JPEG compression in detail | 08 |
| | b) Explain object based video coding | 07 |
| Q.7 | a) Explain human face recognition system | 08 |
| | b) Explain MPEG 1 standard | 07 |
| Q.8 | a) Explain video sampling & Interpolation | 08 |
| | b) Explain fingerprint classification | 07 |

SUBJECT CODE NO:- P-8107
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Embedded System) Examination May/June 2017
El-1 Artificial Intelligence
(Revised)

[Time: Three Hours]**[Max Marks :80]**

Please check whether you have got the right question paper.

- N.B
- i) Q.5 from Section-A and Q.10 from Section B are compulsory.
 - ii) Solve any two questions from Q.1 to Q.4 from Section –A and Q.6 to Q.9 from Section B
 - iii) Figures to the right indicate full marks

Section - A

- | | | |
|-----|--|----|
| Q.1 | a) What is Artificial Intelligence? Explain | 08 |
| | b) Discuss intelligent agents | 07 |
| Q.2 | a) Discuss informed search strategies | 08 |
| | b) Discuss constraint satisfaction problems (CSP) | 07 |
| Q.3 | a) Explain Beta pruning | 08 |
| | b) Discuss foundations of knowledge representation and reasoning | 07 |
| Q.4 | a) Discuss syntax and semantics for first order logic | 08 |
| | b) Discuss reasoning about knowledge | 07 |
| Q.5 | Write short notes on (<u>Any two</u>) | 10 |
| | i) DFS & BFS | |
| | ii) Minimax Algorithm | |
| | iii) Forward and backward chaining | |

Section – B

- | | | |
|------|--|----|
| Q.6 | a) What is ontology? Explain | 08 |
| | b) Discuss planning problem in Artificial Intelligence | 07 |
| Q.7 | a) Give the various forms of learning? Explain learning from observations. | 08 |
| | b) What is decision tree? Explain | 07 |
| Q.8 | a) Discuss statistical learning methods | 08 |
| | b) Draw and explain EM algorithm. | 07 |
| Q.9 | a) Discuss ANN applications | 08 |
| | b) Discuss reinforced learning | 07 |
| Q.10 | Write short note on (<u>Any two</u>) | 10 |
| | i) Genetic Algorithm | |
| | ii) Communication as action | |
| | iii) Ambiguity and disambiguation | |

SUBJECT CODE NO:- P-8108
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Embedded System) Examination May/June 2017
El-1 Advanced Computer Architecture
(Revised)

[Time : Three Hours]**[Max Marks :80]**

Please check whether you have got the right question paper.

N.B

i) Q.No.5 and Q.No.10 are compulsory.

ii) Solve any three in each section**Section A**

- Q.1 A Explain in brief general classification of parallel computer architectures based on following techniques 08
 i. Flynn's classification
 ii. Feng's classification
 B What re the various features of uniprocessor system which exploits the parallelism. 07
- Q.2 A State and explain the principle of scalability and different performance metrics associated with it. Explain 08
 in brief Amdahl's law for speed up performance
 B List the application of parallel processing explain any one in detail. 07
- Q.3 A With the help of the block diagram explain in detail branch prediction logic implemented in Pentium 08
 architecture.
 B Explain with suitable example various levels of pipelining. 07
- Q.4 A Discuss with suitable example the necessity of data routing and manipulation with respect to SIMD 15
 interconnection network. Also define data routing function for 3 cube network.
- Q.5 A Discuss any one parallel sorting algorithm for array processor 05
 B Compare static and dynamic networks. 05
- Section B**
- Q.6 A Explain in brief multiprocessing architecture of IBM power 4processor. 08
 B Discuss any two vector optimization functions implemented in vectorizing compilers. 07
- Q.7 A Explain implementation of following loop in conventional scalar processor and vector processor. 08
 Do 100 I= IN
 A (I) = B(I)+c(I)
 B (I) =2*A (I+1).
 B With suitable example discuss the efficiency of vector processing over scalar processing. 07
- Q.8 A State cache coherency problem in multiprocessor system. Describe the various states of MESI protocol. 08
 B Explain in brief desirable processor characteristic for multiprocessor architecture. 07
- Q.9 A Explain with suitable example shared memory programming 08
 B Discuss in brief latency hiding technique with respect to multithreaded architecture. 07
- Q.10 A Explain the features of any one parallel programming language. 05
 B Write a note on grid computing in detail. 05

SUBJECT CODE NO:- P-8109
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (W.R.E.) Examination May /June 2017
EI-1 Water Supply Systems
(Revised)

[Time: Three Hours]**[Max Marks : 80]**

- Please check whether you have got the right question paper.
- N.B
- 1) Question No.4 from Section A & Q. No.8 for Section B are compulsory.
 - 2) Solve any two questions from Q. No.1 to Q. No.3 from Section 'A' & Q. No.5 to Q. No.7 from Section 'B'
 - 3) Figures to right indicate full marks.
- Section A
- Q.1(a) Explain in short causes & effects of following impurities in water 07
 (i) Suspended impurities (ii) colloidal impurities (iii) Dissolved impurities
- (b) Explain importance & water quality analysis in selection and water treatment process 07
- Q.2 (a) Explain under drainage system in slow sand filter with neat sketch 07
 (b) Draw a neat sketch of clarifier and explain its working 07
- Q.3 (a) What is importance of soft water in daily life? How to remove hardness from water discuss 07
 (b) Compare slow sand filter & rapid sand filter 07
- Q.4 Write short notes on (any two) 12
 (a) Importance & fluoride in water
 (b) Chlorination of water
 (c) Water borne disease
- Section 'B'
- Q.5 (a) Write a short note on iron and manganese removal from water 07
 (b) Why aeration of water is done? What are its objectives 07
- Q.6 (a) What are factors which are considered in design of distribution system? 07
 (b) Draw a neat sketch of post Fire hydrant and explain its working 07
- Q.7 (a) What is adsorption and control of algae growth? 07
 (b) Explain Distillation process of water treatment? 07
- Q.8 Write short notes on (any two) 12
 (a) Water supply considerations
 (b) Layout of water distribution systems
 (c) Sources of water and its classifications.

SUBJECT CODE NO:- P-8112
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Mechanical) Examination May/June 2017
El-2 Machine Stress Analysis
(Revised)

[Time : Three Hours]

[Max Marks :80]

Please check whether you have got the right question paper.

N.B

- i. Solve any three questions from each section.
- ii. Assume suitable data, if necessary.
- iii. Use of design data book is permitted.
- iv. Figures to the right indicate full marks.

Section A

- Q.1 Drive the equations of compatibility in terms of polar coordinates for a two dimensional problem of stress 13
analysis.
- Q.2 The stress function $\phi = A \log r + Br^2 \log r + Cr^2 + D$ can be used to represent the stress distribution in a 13
hollow cylinder subjected to uniform pressure on the inner and outer surfaces, where A, B, C and D are
constants. The boundary conditions are $(\sigma_r) = -P_i$ at $r = a$ and $(\sigma_r) = +P_o$ at $r = b$ where $b > a$. Prove
that the stress components for $P_o = 0$ are: $\sigma_r = \frac{P_i a^2}{b^2 - a^2} \left(1 - \frac{b^2}{r^2} \right)$, $\sigma_\theta = \frac{P_i a^2}{b^2 - a^2} \left(1 + \frac{b^2}{r^2} \right)$. Where a and b are
the inner and outer radii of the hollow cylinder and P_i is the uniform internal pressure.
- Q.3 A beam of $5\text{cm} \times 10\text{cm}$ cross section and 1.5m length is fixed at one end and supported by a 0.75m long 13
wire of 5mm dia. At free end as shown in fig. 1. A load of 4500N acts at the mid-span of the beam. Calculate
support reactions at free end and fixed end, support moments at fixed end and deflection of the free end.
Take $E = 2 \times 10^5 \text{N/mm}^2$.

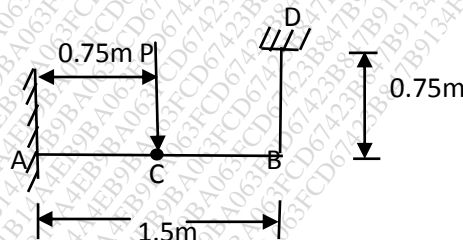


Fig.1

- Q.4 Derive the differential equations of equilibrium for a two dimensional problem in a rectangular coordinates. 13
- Q.5 Write short notes on any two 14
- a) Torsion of elliptical cross – section bar
 - b) Membrane analogy
 - c) Saint Venant's theory.

Section B

Q.6 Determine the shear Centre of the thin walled section shown in fig.2. The thickness t is constant. 13

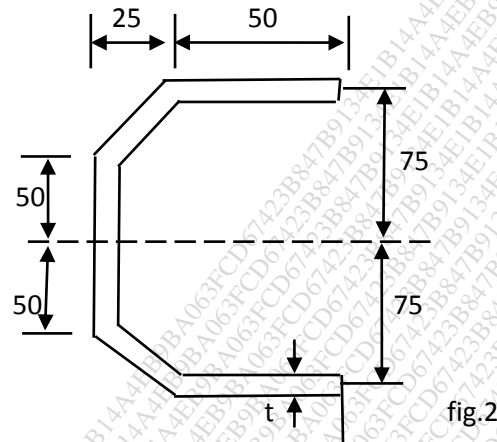


fig.2

Q.7 Discuss bending and deflections of beams subjected to unsymmetrical bending. 13

Q.8 Derive the expression for area of contact and pressure distribution between two cylindrical rollers subjected to compressive load. 13

Q.9 Discuss how the maximum strains, maximum and minimum stresses and maximum shear stress are obtained by using 13

- Four – element rosette and
- Delta – rosette

Q.10 Write short notes on any two 14

- Electrical strain gauges
- Optical strain gauges
- Torsion of thin walled hollow cross sections.

SUBJECT CODE NO:- P-8112
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Mechanical) Examination May/June 2017
El-2 Machine Stress Analysis
(Revised)

[Time : Three Hours]

[Max Marks :80]

Please check whether you have got the right question paper.

N.B

- i. Solve any three questions from each section.
- ii. Assume suitable data, if necessary.
- iii. Use of design data book is permitted.
- iv. Figures to the right indicate full marks.

Section A

- Q.1 Drive the equations of compatibility in terms of polar coordinates for a two dimensional problem of stress 13
analysis.
- Q.2 The stress function $\phi = A \log r + Br^2 \log r + Cr^2 + D$ can be used to represent the stress distribution in a 13
hollow cylinder subjected to uniform pressure on the inner and outer surfaces, where A, B, C and D are
constants. The boundary conditions are $(\sigma_r) = -P_i$ at $r = a$ and $(\sigma_r) = +P_o$ at $r = b$ where $b > a$. Prove
that the stress components for $P_o = 0$ are: $\sigma_r = \frac{P_i a^2}{b^2 - a^2} \left(1 - \frac{b^2}{r^2} \right)$, $\sigma_\theta = \frac{P_i a^2}{b^2 - a^2} \left(1 + \frac{b^2}{r^2} \right)$. Where a and b are
the inner and outer radii of the hollow cylinder and P_i is the uniform internal pressure.
- Q.3 A beam of $5\text{cm} \times 10\text{cm}$ cross section and 1.5m length is fixed at one end and supported by a 0.75m long 13
wire of 5mm dia. At free end as shown in fig. 1. A load of 4500N acts at the mid-span of the beam. Calculate
support reactions at free end and fixed end, support moments at fixed end and deflection of the free end.
Take $E = 2 \times 10^5 \text{N/mm}^2$.

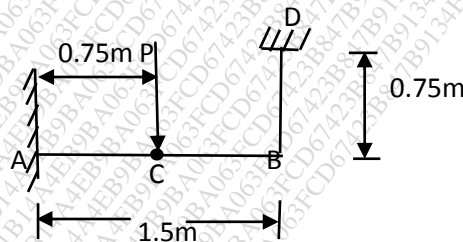


Fig.1

- Q.4 Derive the differential equations of equilibrium for a two dimensional problem in a rectangular coordinates. 13
- Q.5 Write short notes on any two 14
- a) Torsion of elliptical cross – section bar
 - b) Membrane analogy
 - c) Saint Venant's theory.

Section B

Q.6 Determine the shear Centre of the thin walled section shown in fig.2. The thickness t is constant. 13

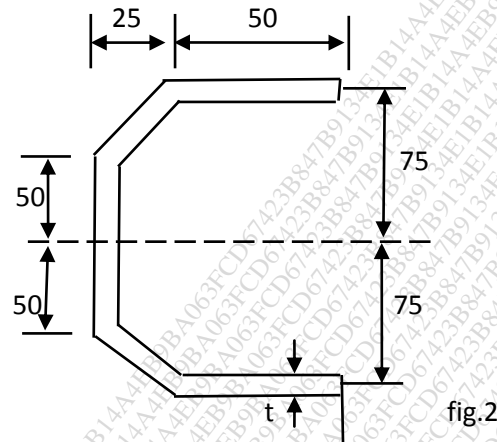


fig.2

Q.7 Discuss bending and deflections of beams subjected to unsymmetrical bending. 13

Q.8 Derive the expression for area of contact and pressure distribution between two cylindrical rollers subjected to compressive load. 13

Q.9 Discuss how the maximum strains, maximum and minimum stresses and maximum shear stress are obtained by using 13

- Four – element rosette and
- Delta – rosette

Q.10 Write short notes on any two 14

- Electrical strain gauges
- Optical strain gauges
- Torsion of thin walled hollow cross sections.

SUBJECT CODE NO:- P-8116
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Mechanical Design Engg.) Examination May/June 2017
EI-1 Reliability Engineering
(Revised)

[Time:ThreeHours]

[Max Marks :80]

Please check whether you have got the right question paper.

- N.B
- i) Q.No.1 & 6 are compulsory.
 - ii) Solve any two questions from remaining in each section.
 - iii) Assume suitable data, if required

Section A

- | | | |
|-----|---|----|
| Q.1 | Solve any two | 12 |
| | a) Explain the Exponential distribution | |
| | b) Explain the failure data analysis for discrete data for discrete data | |
| | c) Explain the life cycle models | |
| Q.2 | a) Explain the Bath tub care | 07 |
| | b) Explain the PDF & CDF | 07 |
| Q.3 | a) Explain the MTTF & MTBY | 07 |
| | b) Explain the identification failure distributions | 07 |
| Q.4 | Explain the FTA & FMECA & estimate the reliability of refrigerator using suitable reliability tools | 14 |
| Q.5 | a) Explain the stand by redundancy | 07 |
| | b) Explain the Weibull distribution & Binomial distribution. | 07 |

Section B

- | | | |
|------|---|----|
| Q.6 | Solve any two | 12 |
| | a) Explain the redundancy optimization | |
| | b) Explain the mixed configuration for complex system | |
| | c) Explain the MTTR | |
| Q.7 | a) Explain the Availability & maintainability | 07 |
| | b) Explain the design of Reliability | 07 |
| Q.8 | a) Explain the design of reliability I- beam | 07 |
| | b) Explain the strength and duly distribution | 07 |
| Q.9 | a) Explain the product testing | 07 |
| | b) Explain the burn in testing | 07 |
| Q.10 | a) Explain the accelerated life testing | 07 |
| | b) Explain the reliability growth | 07 |

SUBJECT CODE NO:- P-8114
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Mechanical) Examination May/June 2017
El-2 Advanced Heat Transfer
(Revised)

[Time : Three Hours]

[Max Marks :80]

Please check whether you have got the right question paper.

N.B

- I. Solve any three questions from each section.
- II. Use of non – programmable calculator is permitted.
- III. Use of heat transfer data book and steam table are permitted
- IV. Assume suitable data, if necessary.

Section A

- Q.1 a) State and explain different modes of heat transfer. 07
 b) A 240mm steam main, 210 meters long is covered with 50mm of high temperatures insulation (K = 0.092 W/m°C) and 40mm of low temperature insulation (K = 0.062 W/m°C). The inner and outer surface temperatures as measured are 390°C and 40°C rep. calculate 07
 I. The total heat loss per hour.
 II. The heat loss m^2 of pipe surface.
 III. The total heat loss per m^2 of outer surface.
 IV. The temperature between two layers of insulation
 Neglect heat conduction through pipe material.
- Q.2 a) Classify extended surfaces or fins. Explain any two types with neat diagram. 06
 b) The aluminium square fins (0.5mm × 0.5mm) of 1cm long provided on the surface of an electronic semi – conductor device to carry 46 mW of energy generated by the electronic device and the temperature at the surface of the devices should not exceed 80°C. the temperature of the surrounding medium is 40°C. K(aluminium)= 190 W/m-k, h=12.5 W/m²-k. find the number of fins required to carry out the above duty. Neglect the heat loss from the end of the fin. 07
- Q.3 a) Write short note on 'conduction shape factor'. 05
 b) A square plate of side L is fully insulated along the surfaces. The temperatures maintained at the edges are given as $T(0, y) = 100^\circ\text{C}$, $T(x, 0) = 100^\circ\text{C}$, $T(x, L) = 0^\circ\text{C}$, and $T(L, y) = 0^\circ\text{C}$. Find the expression for the steady state temperature distribution. 08
- Q.4 a) What you understand by lumped heat capacity system explain. 05
 b) An egg with mean diameter of 40mm and initially at 20°C is placed in boiling water pan for 4 minutes and found to be boiled to the consumer's taste. For how long should a similar egg for same consumer be boiled when taken from a refrigerator at 5°C. Take following properties for egg. $k = 10 \text{ W/m}^\circ\text{C}$, $\rho = 1200 \text{ kg/m}^3$, $c = 2 \text{ kJ/kg}^\circ\text{C}$, $h = 100 \text{ W/m}^2^\circ\text{C}$. 08
- Q.5 a) Explain with neat diagram thermal boundary layer. 05
 b) A thermocouple junction of spherical form is to be used to measure the temperature of a gas stream. $h = 400 \text{ W/m}^2^\circ\text{C}$, $k = 20 \text{ W/m}^\circ\text{C}$, $c = 400 \text{ J/kg}^\circ\text{C}$, $\rho = 8500 \text{ kg/m}^3$. calculate the following 08
 I. Junction diameter needed for the thermocouple to have thermal time constant of one second.
 II. Time required for the thermocouple junction to reach, 198°C if the junction is initially at 25°C and is placed in gas steam which is at 200°C.

Section B

- Q.6 a) Differentiate between forced and natural convection. 05
 b) Air at 20°C is flowing over a flat plate which is 200mm wide and 500mm long. The plate is maintained at 100°C. Find the heat loss per hour from the plate if the air is flowing parallel to 500mm side with $2m/sec$ velocity. What will be the effect on heat transfer, if the flow is parallel to 200mm side? The properties of air at 60°C are $\nu = 18.97 \times 10^{-6} m^2/sec$, $k = 0.025 W/m^\circ C$ and $Pr = 0.7$. 08
- Q.7 a) Explain briefly the physical mechanism of boiling. 06
 b) Differentiate between pool boiling and forced convection boiling. 07
- Q.8 a) Write note on 'design consideration of heat pipe'. 06
 b) Vertical flat plate in the form of fin is 600mm in height and is exposed to steam at atmospheric pressure. If surface of plate is maintained at 60°C calculate 08
 I. The film thickness at trailing edge of the film
 II. The overall heat transfer coefficient
 III. The heat transfer rate.
 Assume laminar flow condition & unit width of the plate.
- Q.9 a) Write note on 'Greenhouse effect'. 05
 b) Explain 'Radiation effect on temperature measurement'. 08
- Q.10 a) Explain 'Radiation exchange with emitting and absorbing gases'. 06
 b) Two large parallel plate with emissivity 0.3 and 0.8 exchanges heat. Find the percentage reduction when a polished aluminium shield of emissivity 0.04 is placed between them. Use method of electrical analogy. 07

SUBJECT CODE NO:- P-8117
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Mechanical Design Engg.) Examination May/June 2017
El-1 Advanced Material Science
(Revised)

[Time : Three Hours]

[Max Marks :80]

Please check whether you have got the right question paper.

N.B

- i) Q.No.1 and Question 6 are compulsory.
- ii) Solve *three* questions from each section.
- iii) Figure to the right indicates full marks.

Section A

- | | | | |
|-----|-----------------|--|----|
| Q.1 | a) | Discuss types and properties of gray cast iron. | 8 |
| | b) | Discuss classification and specification of steels. | 8 |
| Q.2 | a) | Explain various forms of carbon observed in ferrous metals with a note on its effect on mechanical properties. | 6 |
| | b) | How does Chromium and Nickel function in steel? | 6 |
| Q.3 | a) | Justify magnesium is less widely used as compared to aluminum. | 6 |
| | b) | Compare brass and bronze. | 6 |
| Q.4 | a) | Discuss de- zincification and season cracking. | 6 |
| | b) | Describe characteristics and applications of particulate reinforced composites. | 6 |
| Q.5 | Attempt any two | | 12 |
| | a) | Explain corrosion behavior of copper. | |
| | b) | Explain the need of composite materials. | |
| | c) | Tool steel. | |

Section B

- | | | | |
|------|-----------------|--|----|
| Q.6 | a) | Describe particulate reinforced composites with their applications. | 8 |
| | b) | What are whiskers? Discuss their properties with examples. | 8 |
| Q.7 | a) | Explain failure criteria of unidirectional fiber composites. | 6 |
| | b) | Discuss Rule-of –Mixtures composite materials. | 6 |
| Q.8 | a) | Discuss stress- strain relations for a lamina with any orientation. | 6 |
| | b) | Explain different failure theories used in composite materials. | 6 |
| Q.9 | a) | Discuss manufacturing of glass fiber and carbon fiber? | 6 |
| | b) | What are the properties of natural rubber? Why is natural rubber vulcanized? | 6 |
| Q.10 | Attempt any two | | 12 |
| | a) | Aramid fibers | |
| | b) | Write short note on fireclay refractories. | |
| | c) | Compare lamina with laminate. | |

SUBJECT CODE NO:- P-8118
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Mechanical Design Engg.) Examination May/June 2017
El-1 Experimental Stress Analysis
(Revised)

[Time : Three Hours]

[Max Marks :80]

- N.B
- “Please check whether you have got the right question paper”.
- i) Solve any three questions from each section.
 - ii) Question no.1 and 5 are compulsory
 - iii) Assume suitable additional data, if required and state the same clearly.
 - iv) Figures shown in right hand margin indicate full marks.

Section A

- | | | |
|-----|--|---|
| Q.1 | a) Derive the expression for the intensity of light for plane polariscope arrangement. | 7 |
| | b) Explain isoclinic fringe pattern and isochromatic fringe pattern. | 7 |
| Q.2 | a) What is meant by calibration of photoelastic material? Why it is necessary to calibrate the photoelastic material? How is calibration done? | 7 |
| | b) Explain the shear method. | 6 |
| Q.3 | a) Explain the procedure for determining the fractional fringe order using Tardy's method (No derivation is required) | 7 |
| | b) Explain the importance of slicing technique used in three dimensional photoelasticity. | 6 |
| Q.4 | a) Explain the used of holography in stress analysis. | 7 |
| | b) Explain analysis of stresses by using Birefringent coating. | 6 |

Section B

- | | | |
|-----|---|----|
| Q.5 | Following observations were made with a delta rosette mounted on a machine frame structure:
$\epsilon_A = 400$ Microstrains Tensile,
$\epsilon_B = 250$ Microstrains Compressive, and
$\epsilon_C = 100$ Microstrains Tensile.
Calculate magnitudes of principal strains and stresses and their directions, if $E = 2 \times 10^5$ N/mm ² and Poissons ratio=0.3 | 14 |
| Q.6 | a) Explain principle and working of an electrical resistance strain gauge and state various types of the same. | 7 |
| | b) Explain selection of strain gauges. | 6 |
| Q.7 | a) Explain balanced and unbalanced Wheatstone bridge. Derive the expression for the output voltage of unbalanced Wheatstone bridge. | 7 |
| | b) Discuss temperature compensation for Wheatstone bridge circuit. | 6 |
| Q.8 | a) Explain Model Analysis Technique. | 7 |
| | b) Explain Moire Fringe Method with its merits and demerits. | 6 |

SUBJECT CODE NO:- P-8120
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Electrical Power System) Examination May/June 2017
El-1 Energy Audit & Conservation
(Revised)

[Time : Three Hours]

[Max Marks :80]

Please check whether you have got the right question paper.

- N.B
- i) Answer any two full questions from each section.
 - ii) Assume suitable data if required.

Section A

- Q.1 a) With neat sketches, explain solar thermal technology & limitations of solar thermal technology 10
b) Derive an expression for Maximum Rotor efficiency of wind turbine? Also give expression related to impact of tower height of wind turbine. 10
- Q.2 a) Explain in details the net present value method? Calculate the net present value of project which have cash flow stream 10
Year → 1 2 3 4 5
Cash flow → 2,00,000 2,00,000 3,00,000 3,00,000 3,50,000
Total Investment is 1,000,000 at rate of 10%
b) Explain in detail the internal rate of return method; also give an example 10
- Q.3 a) Explain in detail Level of illumination for different areas? Describe energy efficient technology for Lighting System? 10
b) Explain the Principle of Variable frequency drive with neat Block Diagram. Also describe different methods for improving efficiency of the existing motors. 10

Section B

- Q.4 a) Explain in details, the concept of energy conservation in industrial and Agriculture sector 10
b) Explain in details, the concept of energy conservation in Transmission & Distribution. Also explain effective measures to reduce T&D losses. 10
- Q.5 a) Draw the data energy flow diagram & Explain about its components & inter links 10
b) Explain in details "Energy accounting" & its methods. 10
- Q.6 Write a short notes on each of following 20
i) Concept of Energy input to different load
ii) Storage feasibility
iii) Least Square method
iv) Instruments used for Energy audit

SUBJECT CODE NO:- P-8122
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Thermal Engg.) Examination May/June 2017
El-1 Cryogenics Engineering
(Revised)

[Time : Three Hours]**[Max Marks :80]**

Please check whether you have got the right question paper.

- N.B
- i) Answer three questions from each Section.
 - ii) Use of steam tables, refrigeration tables, charts, non-programmable calculator is allowed.
 - iii) Assume suitable data, if necessary.

Section A

- Q.1 a) What are different methods of production of low temperature? Explain their limitations in brief. 07
 b) Explain with schematic representation of Linde-double column process for manufacturing of Oxygen and Nitrogen. 07
- Q.2 a) Explain Thomson-Joules effect in connection with cryogenics 07
 b) Explain with neat sketch pre cooled Claude system used for liquefaction of hydrogen 06
- Q.3 For liquefaction of hydrogen using pre-cooled Linde process with nitrogen as the refrigerant, find the fraction of liquefaction (y). The ratio of refrigerant merit. Hydrogen is available at 1 atm, 300K and is separated at 1 atm. Assume a 5 K temperature difference of approach for the heat exchangers. The required enthalpy and entropy data for Para – hydrogen is given in table 1. 13
- Table 1: Enthalpy and entropy data for Para-hydrogen

Stream	Pressure (atm)	Temperature (K)	Enthalpy (J/g)	Entropy (j/kg)
1	1	300	4200	65
2	50	300	4222	48.7
4	50	70	1200	-
7	1	65	1350	-
8	1	295	4130	-
f	1	Satd.liquid	-520	16

- Q.4 a) Find the ideal work of separation of air at 300K and 1 atm into pure components at the same temperature and pressure. Assume that the mole fraction of nitrogen in air is 0.79 and that of oxygen is 0.21. 07
 b) Find the ideal work for separation of the air into two impure streams B and D at the same temperature and pressure. The mole fraction of nitrogen in the product streams in $X_B=0.90$ and $X_D=0.02$. The top nitrogen product rate, $D=25$ mol/s. 06

Section B

- Q.5 a) Discuss in detail the safety precautions and protection measures to be observed while handling of cryogenic fluids. 07
 b) Explain with neat sketch storage vessel used in transportation of liquid Helium 07
- Q.6 Explain the procedure to calculate the cool-down time for liquid Hydrogen 13
- Q.7 Explain in detail the effect of cryogenic temperature on electrical and magnetic properties. 13
- Q.8 Write note on application of cryogenic in field of (i) Aerospace industry 13
 (ii) Cryosurgery (iii) Preservation of food

2017

SUBJECT CODE NO:- P-8123
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Thermal Engg.) Examination May/June 2017
El-1 Tribology
(Revised)

[Time:ThreeHours]

[Max Marks :80]

“Please check whether you have got the right question paper”.

- N.B
- i) Assume suitable data wherever necessary.
 - ii) Solve any three questions from each section.
 - iii) Figures to the right indicate full marks.

Section A

- | | | |
|-----|--|----|
| Q.1 | Explain the Theory of wear & how to perform measurement of wear. | 14 |
| Q.2 | Explain types of wear & various factors affecting wear in detail | 13 |
| Q.3 | Explain in detail the physical & chemical properties of lubricants | 13 |
| Q.4 | Explain theory of friction & different methods of friction measurement. | 13 |
| Q.5 | Define tribology. Explain in detail tribology in design & tribology in industry. | 13 |

Section B

- | | | |
|------|--|----|
| Q.6 | Explain in detail film thickness measurement using modern techniques. | 14 |
| Q.7 | Discuss the use of transducers and instruments in tribology. | 13 |
| Q.8 | Explain in detail different tribology properties of metallic & ceramic coatings. | 13 |
| Q.9 | Explain with neat sketch Electron microscope. | 13 |
| Q.10 | Explain different surface modification processes. | 13 |

SUBJECT CODE NO:- P-8124
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Manuf. Processing Engg.) Examination May/June 2017
El-1 Composite & Smart Materials
(Revised)

[Time : Three Hours]

[Max Marks :80]

Please check whether you have got the right question paper.

- N.B
- i) Solve any three questions from each section
 - ii) Figure to right indicates marks
 - iii) Assume suitable data whenever required
 - iv) Draw figure whenever required

Section A

- | | | |
|-----|---|----|
| Q.1 | a) What is matrices in composite material? State the characteristics of matrices material | 07 |
| | b) With example explain sandwich construction. | 06 |
| Q.2 | a) With neat sketch and example explain hand layup technique | 07 |
| | b) What NDT methods are used for composite checking? Explain one type | 06 |
| Q.3 | a) Explain how the mechanical fastening is done for polymer composite | 07 |
| | b) Explain the role of CAD in manufacturing tooling fabrication equipment | 06 |
| Q.4 | Write short note on any two | 14 |
| | i) Design criteria of polymer composite | |
| | ii) Automobile applications | |
| | iii) Pultrusion | |

Section B

- | | | |
|-----|---|----|
| Q.5 | a) What are the features of smart materials and structures? Explain with example. | 07 |
| | b) Explain the role of PZT actuators in smart structures | 06 |
| Q.6 | What are the magnetorheological fluids (MR fluids) actuators? Describe the composition of a typical MR fluid.
Give two examples in which MR fluids are used. | 13 |
| Q.7 | Explain magnetic sensors and their applications in motion control system. | 13 |
| Q.8 | Write short note on any two | 14 |
| | i) Force actuators | |
| | ii) Sonic transducers | |
| | iii) Smart materials in automation and precision manufacturing equipment | |

SUBJECT CODE NO:- P-8125
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Manuf. Processing Engg.) Examination May/June 2017
EI-1 Advanced Foundry Technology
(Revised)

[Time : Three Hours]**[Max Marks :80]**

- N.B
- Q. No.1 from section A and Q. No. 5 from section B are compulsory.
 - Solve any two questions Q. no 2 to Q. No. 4 in section A & from Q. no 6 to Q. No. 8 in section B

Section A

- Q.1 Solve any three questions of the following 18
- What is solidification of pure metals and alloys?
 - What are the various component of the gating system?
 - What are the factors to be considered in casting design?
 - What are the different inspection and testing methods to evaluate the casting?
- Q.2 06
- Explain with neat sketch progressive and directional solidification
 - Explain the design of gating system. 05
- Q.3 06
- What are the salvaging methods of defective castings?
 - Explain the design of riser for its Shape, size and location. 05
- Q.4 06
- What are the factors to be considered for section of various types of furnaces used in foundry technology? 05
 - What are cooling stresses and hot spot in casting process? How to overcome it?

Section B

- Q.5 Solve any three questions of the following 18
- What are the heat treatment furnaces used in foundry?
 - How melting of grey cast iron in cupola and induction furnace done?
 - How melting and refining of steel done?
 - How mechanization of foundry is done? Give its advantages
- Q.6 06
- Explain gating and risering technique for gray cast iron.
 - What are the applications of malleable cast iron casting? 05
- Q.7 06
- What is inoculation of grey cast iron?
 - Explain melting malleabilization. 05
- Q.8 06
- Explain gating and risering of steel castings.
 - Explain the construction and operation of crucible and health furnace 05

SUBJECT CODE NO:- P-8128
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Automation) Examination May/June 2017
El-1 Automotive Electronics
(Revised)

[Time : Three Hours]

[Max Marks :80]

N.B Solve any three questions from section A and section B.

Section A

- | | | |
|-----|--|----|
| Q.1 | 1) Give the classification of automobile in details | 05 |
| | 2) Write about the various components of an electronic engine management system. | 08 |
| Q.2 | 1) With the help of a neat sketch explain the construction and operation of oxygen sensor used in vehicle. | 08 |
| | 2) Explain in detail the working of exhaust gas temperature sensor. | 05 |
| Q.3 | 1) What are the different electronic ignition systems? Explain any one with block diagram | 08 |
| | 2) Explain the working of fuel injection system with simplified diagram. | 05 |
| Q.4 | 1) What is meaning of engine. Give the classification of automotive engines in detail. | 07 |
| | 2) With the help of block diagram explain the working of knock sensor. | 06 |
| Q.5 | Write short notes on | |
| | 1) GPS Application in Automobile | 04 |
| | 2) Automotive actuators | 05 |
| | 3) Electronic spark timing control. | 05 |

Section B

- | | | |
|-----|---|----|
| Q.6 | 1) Explain in detail the throttle body injections system. | 08 |
| | 2) Define the following engine performance terms | 05 |
| | a) Torque | |
| | b) Power | |
| | c) Fuel consumption | |
| | d) Engine overall efficiency | |
| | e) Calibration | |
| Q.7 | 1) Briefly explain the concept of cruise control | 07 |
| | 2) Explain in detail the working of Braking control system. | 06 |

- Q.8 1) Briefly explain the anti-collision warning system. 07
 2) Explain in detail the term on-board diagnostics 06
- Q.9 1) Explain in detail the working of steering control system. 07
 2) What are the functions of dashboard diagnostics system. 06
- Q.10 Write note on
 1) Feedback carburetor system. 05
 2) Integrated engine control 05
 3) Security and warning system 04

SUBJECT CODE NO:- P-8130
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (C.S.& I.T.) Examination May/June 2017
El-1 Advanced Digital Communication
(Revised)

[Time : Three Hours]**[Max Marks :80]**

- N.B
- i. Solve two full questions from each section
 - ii. Assume suitable data (if necessary)
 - iii. Figures to the right indicate full marks

Section A

- | | | |
|-----|---|----|
| Q.1 | a) Explain the procedure of digital representation of analog information. Also, explain the terms channel, channel capacity, sampling and bandwidth | 10 |
| | b) Explain the various types of physical media used for transmission of digital information | 05 |
| | c) Explain the polynomial codes used for error detection purpose. | 05 |
| Q.2 | a) Explain the types of quantization schemes used in PCM. Also derive the expression for quantization error | 10 |
| | b) What do you mean by non-linear quantization? Explain A-law & μ -law companding schemes | 10 |
| Q.3 | Write short notes on | 20 |
| | i) Speech coding techniques | |
| | ii) Internet checksum | |
| | iii) Characterization of communication channels | |
| | iv) DPCM | |

Section B

- | | | |
|-----|---|----|
| Q.4 | a) What are the different digital modulation formats? What are their goals? Discuss in detail | 10 |
| | b) Explain correlative modulation scheme in detail | 10 |
| Q.5 | a) What do you mean by MSK modulation scheme? Explain the generation of a typical MSK wave for a given input binary data (assume suitable data) | 10 |
| | b) Compare the error probabilities of various digital modulation schemes. | 05 |
| | c) Analyze the m-ary modulation formats using Shannon's channel capacity theorem. | 05 |
| Q.6 | Write short notes on | 20 |
| | i) Zero forcing algorithm | |
| | ii) ISI & eye patterns | |
| | iii) Discrete PAM signal | |
| | iv) Bandwidth efficiency | |

SUBJECT CODE NO:- P-8137
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Manuf. Processing Engg.) Examination May/June 2017
Advanced Joining Processes
(Revised)

[Time:ThreeHours]

[Max Marks :80]

Please check whether you have got the right question paper.

- N.B
- i) Q.No.1 from section A and Q.No.5 from section B are compulsory.
 - ii) Attempt any two questions from Q.No.2 to Q.No.4 from section A and any two questions from Q. No. 6 to Q. No. 8 in section B.

Section A

- | | | |
|-----|---|----|
| Q.1 | Attempt any two:- | 12 |
| | a) What are the various methods to avoid distortion? | |
| | b) What is overlaying and surfacing? | |
| | c) What is Non-Destructive Technique for inspection of welds? Explain magnetic particle inspection. | |
| Q.2 | a) How welding to dissimilar metal is done? | 07 |
| | b) With neat sketch Explain friction welding. Give its applications. | 07 |
| Q.3 | a) What is Laser Beam welding? Give its applications | 07 |
| | b) Explain X-ray technique of inspection of weld. | 07 |
| Q.4 | a) Explain the Principle and working of Electron Beam welding. | 07 |
| | b) What is Nick-Break test of destructive technique of inspection of weld? | 07 |

Section B

- | | | |
|-----|--|----|
| Q.5 | Attempt any two:- | 12 |
| | a) What are the supplementary Symbols? How dimensions are given to the weld? | |
| | b) Explain the principle of sound weld design. | |
| | c) Explain quality Assurance versus quality control in welding. | |
| Q.6 | a) What is the need for representing the symbols? | 07 |
| | b) Explain allowable strength of weld under steady conditions. | 07 |
| Q.7 | a) What is weld quality and quality conflict? | 07 |
| | b) What are the discontinuities in the weld? Explain causes and remedial action. | 07 |
| Q.8 | a) What are the various welding positions? Explain giving examples. | 07 |
| | b) Explain weld joint design. | 07 |

SUBJECT CODE NO:- P-8139
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (CNE/CS&IT) Examination May/June 2017
Distributed Database
(Revised)

[Time : Three Hours]

[Max Marks :80]

Please check whether you have got the right question paper.

N.B i) Solve any two questions from each section

Section A

- | | | |
|-----|--|----|
| Q.1 | a) Explain why distributed database? | 10 |
| | b) Explain reference architecture for distributed databases? | 10 |
| Q.2 | a) Explain integrity constraints in distributed database? | 05 |
| | b) Explain criterion -3 and criterion -4 with suitable example? | 10 |
| | c) Explain vertical fragmentation relations? | 05 |
| Q.3 | a) Explain determination of semi-join programs in SDD-1 algorithm? | 10 |
| | b) Explain distributed transaction? | 10 |

Section B

- | | | |
|-----|---|----|
| Q.4 | a) Explain recovery in centralized system? | 10 |
| | b) Explain recovery in distributed transaction? | 10 |
| Q.5 | a) Explain concurrency control based on locking distributed databases | 10 |
| | b) Explain time stamps in distributed databases? | 10 |
| Q.6 | a) Explain distributed deadlocks methods? | 10 |
| | b) Explain 3-phase commitment protocol? | 10 |

SUBJECT CODE NO:- P-8141
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Software Engg.) Examination May/June 2017
Software Reliability
(Revised)

[Time : Three Hours]

[Max Marks :80]

- N.B Please check whether you have got the right question paper.
- i) Solve any two questions from each section.
 - ii) Assume suitable data if necessary & state it clearly.

Section A

- Q.1 a) What are black box based software reliability models? Mention any two models. 10
- b) Explain various architecture based software reliability prediction model. 10
- Q.2 a) Derive an expression for minimal path method for finding reliability of software. 10
- b) Explain multistate software reliability. 10
- Q.3 a) Derive an expression for parallel software reliability prediction model. 10
- b) Define standby system & find the Mean time to failure (MTTF) of two unit standby system. 10

Section B

- Q.4 a) What is model driven engineering? Explain its importance in software Engineering. 10
- b) Explain active redundancy, m out of n redundancy. 10
- Q.5 a) Explain multistate software reliability models? Explain the significance of multistage software reliability model. 10
- b) Explain importance of sensitivity analysis of multistate system. 10
- Q.6 a) Write short note on 20
- i) N-Modular Redundancy
 - ii) Triple Modular Redundancy

SUBJECT CODE NO:- P-8142
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (CAD/CAM) Examination May/June 2017
Computer Aided Analysis
(Revised)

[Time : Three Hours]

[Max Marks :80]

Please check whether you have got the right question paper.

N.B

i) Answer any Three questions from each section.

Section A

- | | | |
|-----|--|----|
| Q.1 | What is Computer Aided Analysis? Explain in detail. | 13 |
| Q.2 | Explain Explicit method in Finite different method. | 13 |
| Q.3 | Write about the overview of FEM. | 13 |
| Q.4 | What is weighted residual method? Explain. | 13 |
| Q.5 | Write short notes on any Two:-
a)Boundary Conditions
b)Pascal Triangle
c)Shape function | 14 |

Section B

- | | | |
|------|--|----|
| Q.6 | What are isoparametric elements? Explain in detail. | 13 |
| Q.7 | Explain the method of Computing element stiffness matrix. | 13 |
| Q.8 | What is HSDT? Explain in detail. | 13 |
| Q.9 | Write about the application of FEA to Fluid mechanics. | 13 |
| Q.10 | Write short notes on any two
a)Gauss Quadrature
b)Composite laminated plates
c) Rectangular elements. | 14 |

SUBJECT CODE NO:- P-8143
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Mechanical-Heat Power) Examination May/June 2017
Experimental Methods
(Revised)

[Time : Three Hours]

[Max Marks :80]

- N.B
1. Attempt three questions from each section
 2. Use of non-programmable calculator is allowed.
 3. Use suitable data, if necessary.

Section A

- Q.1 Why is an uncertainty analysis important in the preliminary stages of experiment planning? How it helps to reduce overall experimental uncertainty? 13
- Q.2 What is chauvinist's criteria? How it is applied? Describe 13
- Q.3 Describe the ionization gauge. How does it differ from the pirani gauge? What disadvantages does it have? 13
- Q.4 Write short note on any two 14
- a) Low pressure measurement
 - b) Guidelines for designing an experiment
 - c) Method of least square.

SECTION B

- Q.5 What is sonic nozzle? How is it used? What are the advantages and disadvantages? 13
- Q.6 Why does self-heating cause a problem with RTDS? Why is it lesser importance with thermistors? 13
- Q.7 What are the major elements of data acquisition and processing system? Describe 13
- Q.8 Write short note 14
- a) A/D and D/A conversion.
 - b) LDA (Laser Doppler Anemometer.)