Code No. 2295 / A

FACULTY OF ENGINEERING

B.E. 4/4 (EE / Inst. / M/P) II – Semester (Main) Examination, April / May 2013

Subject: Intellectual Property Rights (Elective – II)

Time: 3 Hours **Max.Marks: 75**

Note: Answer all questions from Part – A and any five questions from Part – B.

PART – A (25 Marks)

1.	Define intellectual property.	(2)
2.	Explain the meaning of industrial property.	(3)
3.	What is a product patent?	(2)
4.	Explain the contents of complete specification.	(3)
5.	What are the essential conditions for registration of an industrial design?	(2)
6.	What amounts to piracy of a registered design?	(3)
7.	What is the purpose of protecting trademarks?	(2)
8.	What is passing-off in relation to a trademark?	(3)
9.	Explain broadcast reproduction right.	(2)
10.	How can the intellectual property in a computer programme be protected?	(3)

PART – B (5x10 = 50 Marks)

11.	Explain the salient features of the TRIPS agreement.	(10)
12.	What are the essential conditions for patenting an invention?	(10)
13.	Explain the rights and duties of proprietors of a registered design.	(10)
14.	Discuss the procedure to register a trademark.	(10)
15.	Explain the subject matter of Copyright Protection in India.	(10)
16.	What amounts to infringement of a copyright? Are there any exceptions thereto?	(10)
17.	Write short notes on: a) Compulsory licensing b) WIPO.	(10)

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Code No. 2328

FACULTY OF ENGINEERING

B.E. 4/4 (M/P) II – Semester (Main) Examination, April / May 2013

Subject: Mechtronics (Elective – II)

Time: 3 Hours **Max.Marks: 75**

Note: Answer all questions from Part – A and any five questions from Part – B.

PART – A (25 Marks)

1. Differentiate between mechanization and automation. (3)
2. Discuss the elements of mechatronic system with flow chart. (2)
3. Compare the use of hydraulic and pneumatic circuits in mechatronics. (3)
4. Distinguish between NPN transistor and PNP transistor. (2)
5. What is adaptive control? Explain. (3)
6. Explain PLC programming for simple circuit. (3)
7. Differentiate between general purpose and special purpose machine tools. (2)
8. Explain digital to analog and analog to digital conversions. (2)
9. Explain how temperature is measured using mechatronics measurement system. (3)
10. Sketch a hydropneumatic circuit and explain. (2)

PART – B (5x10 = 50 Marks)

11. Discuss various drive mechanisms used in mechatronics. Sketch and explain magazine feeding devices, orienting device and sorting device. (5+5)

12. Differentiate between AC servo motors, DC servo motors and stepper motors. Explain the use of electrical actuators. (6+4)

13. Discuss the merits and demerits of fluid power control. Sketch and explain an electro-hydraulic servo control system for a typical application. (4+6)

14. Discuss the use of various electronic devices in a mechatronics system. Explain the systems response. (6+4)

15. How design of mechatronics systems is significantly different from conventional systems? Explain. (10)

16. How is the interfacing between electrical and electronic devices with mechanical systems achieved? Explain. (10)

17. Write short notes on:
    a) Flexible manufacturing systems (3)
    b) Electro mechanical servo control (3)
    c) Modern CNC machines. (4)

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Code No. 2325

FACULTY OF ENGINEERING

B.E. 4/4 (Mech./ Prod.) II-Semester **(Main)** Examination, April / May 2013

Subject : **Artificial Intelligence and Expert Systems**
(Elective-II)

Time : 3 Hours Max. Marks: 75

Note: Answer **all** questions of Part - A and answer any **five** questions from Part-B.

PART – A (25 Marks)

1.	Define physical symbol system.	(2)
2.	What is Heuristic search?	(2)
3.	What is the role of knowledge?	(2)
4.	List key issues in knowledge representation.	(3)
5.	What is fuzzy logic?	(2)
6.	List components of a planning system.	(3)
7.	What is conceptual parsing?	(2)
8.	What are expert system shells?	(3)
9.	Describe personal robots.	(3)
10.	Explain cognitive aspects approach.	(3)

PART – B (5x10=50 Marks)

11.(a)	Describe behaviour and biology.	(5)
(b)	Describe various aspects of intelligence.	(5)
12.	Describe modes of perception. And memory mechanism.	(10)
13.	Describe the minimax search procedure with an example.	(10)
14.	Describe representation of knowledge using rules.	(10)
15.	Describe the elements, features of expert systems? Where the expert systems are suitable ? Explain.	(10)
16.	Write the following : (a) Learning systems (b) Factory vision systems	(10)
17.	Write briefly the following: (a) Measuring intelligence (b) Problem solving (c) Picture processing	(10)

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Code No. 2327

FACULTY OF ENGINEERING

B.E. 4/4 (Mech. / Prod.) II-Semester **(Main)** Examination, April / May 2013

Subject : **Manufacturing Systems and Simulations**
(Elective-II)

Time : 3 Hours Max. Marks: 75

Note: Answer **all** questions of Part - A and answer any **five** questions from Part-B.

PART – A (25 Marks)

Describe the following :

1. Classifications of manufacturing systems.

2. Managerial information flow in manufacturing systems.

3. Computerized production scheduling.

4. Flexible manufacturing systems.

5. Distinguish between continuous and discrete systems.

6. What are different types of simulations?

7. Compare Analog and Hybrid computers.

8. Mention the various characteristics of queuing systems.

9. List different types of simulations software.

10. What is meant by event scanning?

PART – B (5x10=50 Marks)

11.(a) Discuss various types of decision making procedures.
(b) With the help of a neat diagrams explain the various steps in a simulation study.

12.(a) Explain the principles of computer integrated manufacturing.
(b) Discuss about computer based production management systems.

13.(a) Compare and contrast between various types of system simulation.
(b) Explain Cob Web model of simulation.

14.(a) Briefly explain about various types of continuous system simulation languages.
(b) Explain characteristics and classification of queuing models.

15.(a) Discuss the features of SIMSCRIPT simulation language.
(b) What are the various simulation algorithms used in GPPS? Explain them briefly.

16.(a) What are various transformational and procedural aspects of manufacturing? Explain them.
(b) Discuss various automatic inspection and testing methods.

17. Write short notes on any **two** of the following :
(a) Distributed log model
(b) Classification of queuing models
(c) Features of GPSS

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Code No. 2330

FACULTY OF ENGINEERING

B.E. 4/4 (M/P) II-Semester (Main) Examination, April / May 2013

Subject : Nano Materials and Technology
(Elective - II)

Time : 3 Hours **Max. Marks: 75**

Note: Answer all questions of Part - A and answer any five questions from Part-B.

PART – A (25 Marks)

1. What are limitations of Nano technology?
2. What are challenges in Nano technology?
3. What are the properties of Si based materials?
4. What is Nano tribology?
5. What you mean by zero dimensional Nano structure?
6. What are the different types of Nano tubes?
7. What are MEMS?
8. What is Lithography?
9. What are the properties of metal ceramics ?
10. What are the applications of Nano biomaterials?

PART – B (5x10=50 Marks)

11.(a) What is Nano scale? Explain the properties of Nano scale and enumerate the advantages of Nano technology.
(b) Explain the proximal probe technologies.

12.(a) Describe the properties and applications of Ge based on ferro electric materials.
(b) Explain characterization using AFM approach.

13. Describe basic and MEMS fabrication techniques and their applications.

14.(a) Describe synthesis and characterization of Nano particles.
(b) Describe the synthesis, characterization and principles involved in Nano Tubes.

15.(a) Synthesis and characterization of Nano wires? Explain.
(b) What are all special Nano materials and their advantages and disadvantages?

16.(a) Describe the characterization of metal polymer and polymer ceramics.
(b) What are the applications and limitation's of Nano biomaterials?

17. Write short notes on the following:
(a) Scanning probe Microscope
(b) FFM
(c) Biocompatibility

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Code No. 2331

FACULTY OF ENGINEERING

B.E. 4/4 (M/P) II-Semester (Main) Examination, April / May 2013

Subject : Power Plant Engineering
(Elective - II)

Time : 3 Hours **Max. Marks: 75**

Note: Answer all questions of Part - A and answer any five questions from Part-B.

PART – A (25 Marks)

1. What is the importance of thermal power plants in the national power grid? (3)
2. Arrange bituminous coal, lignite, peat and anthracite in the increasing order of their heat values. (3)
3. How is coal stored and handled in severe winter under freezing conditions? (2)
4. What do you understand by draught? How are draughts classified? (2)
5. What do you understand by governing of a gas turbine power plant? (2)
6. Define hydrology, hydrograph, flow duration curve and run off with reference to hydro electric power plants. (2)
7. What are the problems of health hazard from nuclear radiations? (3)
8. What are the basic components of a nuclear reactor? (4)
9. What are the fixed costs and variable costs of a power station? (2)
10. What are the methods to control the pollution of atmosphere from power plant? (2)

PART – B (5x10=50 Marks)

11. (a) What is the importance of thermal power development in the country? Describe its development in India in the last 50 years. (5)
    (b) Explain briefly the working of different circuits of a thermal power plant. (5)

12. (a) Explain with a simple sketch the central or bin system of pulverized coal handling in a thermal power plant. (5)
    (b) What are the advantages and disadvantages of pulverized fuel firing system? (5)

13. (a) Explain briefly the proximate analysis and ultimate analysis in the testing of coal. (5)
    (b) What are the major troubles caused by impurities in the feed water on the boiler? (5)

14. (a) With a neat sketch, explain the working of a closed cycle gas turbine power plant? (5)
    (b) What are the methods of improving the thermal efficiency of a gas turbine power plant? (5)

15. (a) With a simple sketch, explain the hydrological cycle. (3)
    (b) Draw a neat diagram of storage type hydro electric power plant and describe the function of each component used in the plant. (7)

16. (a) With a neat sketch, explain the construction and working of a boiling water reactor (BWR) nuclear power plant. (5)
    (b) What are the problems associated with nuclear waste? How are they disposed? (5)

17. (a) Explain the pollution of air and water caused by thermal power plants. (5)
    (b) Define the terms connected load, maximum demand, demand factor, load factor and plant use factor with respect to power plants.

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Code No. 2326

FACULTY OF ENGINEERING

B.E. 4/4 (M/P) II-Semester (Main) Examination, April / May 2013

Subject : Machine Tool Design
(Elective - II)

Time : 3 Hours **Max. Marks: 75**

Note: Answer all questions of Part - A and answer any five questions from Part-B.

PART – A (25 Marks)

1. How the machine power is calculated?
2. Differentiate between special purpose machines with conventional machines.
3. What is range ratio and how can it be fixed in a machine tool?
4. Why involute profits is used on gear teeth?
5. What are the advantages of rolling guide ways?
6. What materials are used for beds and columns of machine tools?
7. What are the methods used to improve rigidity of machine tool structures?
8. What is the effect of bearing clearance on the rigidity of machine tool spindle?
9. Sketch spindle arrangement for lathe machine.
10. What are the advantages of dove tail guide ways?

PART – B (5x10=50 Marks)

11.(a) How the machine tools are classified and explain their applications?
(b) Draw the kinematic structure of screw cutting machine.

12.(a) Sketch and explain the construction and working of NC machine.
(b) Differentiate between in-line and rotary transfer machines.

13.(a) Draw optimum ray diagram for 9-speed gear box and mention the methods of calculating number of teeth on gears.
(b) Sketch and explain the construction and working of Norton gear box used for feed gear box.

14.(a) What are the various stepless drives used in machine tools mention their applications?
(b) What are the various strengthening mechanisms used for machine tool beds and columns?

15.(a) Derive on equation on to find overall compliance of machine tool structure.
(b) What re the various methods used to adjust clearness in guide ways?

16.(a) What is the effect of bearing clearances on the overall rigidity of machine tool spindle?
(b) What are the various controls used for machine tools and explain their relative advantages?

17. Answer the following:
(a) Direction control rare
(b) Hydro static bearings
(c) Design of columns

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