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B. Tech. (Computer Science & Engineering)
8th Semester (G-Scheme) Examination, May-2024

QUALITY ENGINEERING

Paper-PEC-ME-410-G/OEC-ME-410-G

Time allowed : 3 hours]

[Maximum marks : 75

Note : Question No. 1 is compulsory. Attempt total five questions selecting one question from each Unit. All questions carry equal marks.

1. Explain the following terms: 6×2.5
- (a) Quality function
 - (b) Hypergeometric distribution
 - (c) ISO : 9000
 - (d) JIT
 - (e) Frequency Distribution
 - (f) 5's approach

Unit-I

2. What do you meant by Quality? Explain the importance of Quality in Industry. Also explain quality characteristics. 15
3. Explain the concept of TQC and its implementation in details. 15

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[P.T.O.]

Unit-II

4. Explain the Statistical tools in Quality Control. 15
5. Explain the Binomial, Poisson and Normal Distribution with practical examples on the basics of sampling distribution. 15

Unit-III

6. What is Inspection system? Explain different forms of Inspection. 15
7. What is Standardization? Explain the need for Standardization. Also explain the history of ISO: 2000 series standard. 15

Unit-IV

8. What are basic concepts of TQM? Mention and explain the application of TQM in Industry. Also explain the role of senior management in TQM. 15
9. Explain the following terms: $2 \times 7.5 = 15$
- (a) Kaizen
 - (b) Relevance of TQM
 - (c) Kaizen

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B. Tech. 8th Semester (Mechanical Engineering)

G-Scheme Examination, May-2024

INDUSTRIAL AUTOMATION

Paper-PCC-ME-402G

Time allowed : 3 hours]

[Maximum marks : 75

Note : Question one will have six parts and each part is of 2.5 marks total of 15 marks and remaining questions are of 15 marks. The students have to attempt five questions in total, first being compulsory and selecting one from each unit.

Short Questions :

2.5×6=15

- (a) Need of Industrial automation.
- (b) What are the elements of automated system?
- (c) What is group technology?
- (d) Name various types of sensors.
- (e) What is main difference between active and passive devices?
- (f) What is use of AI in mechanical industries?

Unit-I

Discuss the various automation Strategies. 15

Name the various elements used in Control System for controlling the production line. Also briefly explain the same. 15

Unit-II

4. Give classification and overview of manufacturing systems and describe FMS and its Planning and Implementation.
5. Explain Process Industries versus Discrete Manufacturing Industries and Continuous versus Discrete Control.

Unit-III

6. Discuss the various pneumatic amplifiers used in industries.
7. What do you mean by die casting ? How die casting manufacturing can be done faster using pneumatic circuit?

Unit-IV

8. Discuss the elements used in Modern Tools Artificial neural networks.
9. Explain the application of robots for industrial automation.

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**B. Tech. 8th Semester Mechanical Engineering
G-Scheme Examination, May-2024**

PLANT MAINTENANCE ENGINEERING

Paper-PEC-ME-404-G

Time allowed : 3 hours]

[Maximum marks : 75

Note : Attempt five questions. Question no. one is compulsory and attempt one question from each of the four units.

1. Discuss the following : 2.5×6
- (a) Utility and service function
 - (b) Time based maintenance
 - (c) Directing in plant engineering
 - (d) Steps in facility location study
 - (e) Features of spare parts management
 - (f) Levels of standardization

Unit-I

2. (a) Discuss the awareness of maintenance and plant engineering. Also discuss the maintenance objectives. 8
- (b) Define maintenance planning function in detail. 7
3. (a) Discuss the functions and responsibilities of a plant manager. 8
- (b) Discuss advantages and drawbacks of decentralization in plant engineering. 7

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Unit-II

4. (a) Describe failure based maintenance in detail with the help of a neat diagram. 7
- (b) Discuss the detailed classification of maintenance systems. 8
5. (a) What is contractual maintenance? Explain in detail. 7
- (b) Discuss the characteristics of maintenance strategy. 7

Unit-III

6. (a) Discuss various types of plant layout with their advantages and disadvantages. 8
- (b) Describe the objectives of good facility planning. 7
7. (a) Discuss the principles of facility layout. 8
- (b) Explain the flow patterns to facilities assembly lines. 7

Unit-IV

8. Discuss the functions of spare parts management. Also 15

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B. Tech. (Mechanical Engineering) 8th Semester

(G-Scheme) Examination, May-2024

POWER PLANT ENGINEERING

Paper-PEC-ME-412G

Time allowed : 3 hours]

[Maximum marks : 75

Note : Question No. 1 is compulsory and attempt five questions in total selecting at least one question from each section.

1. (i) Explain a wet dust collector. 6×2.5=15
- (ii) What is function of moderator in nuclear power plant?
- (iii) On what factors does the unit size of power plant depends?
- (iv) What is surge tank?
- (v) Draw T-S diagram of Gas turbine cycle.
- (vi) Write full form of OTEC.

Section-A

2. Differentiate between renewable and non-renewable sources of energy. Discuss the criteria for selection of plant. 15
3. With the help of simple diagram, explain the essential features of hydro power plant. 15

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(2)

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Section-B

4. What is the principal of an electrostatic precipitator? With the help of neat diagram, explain an electrostatic precipitator. 15
5. Discuss the advantages of combined cycle power generation. Why is it so important in the present-day energy scenario? 15

Section-C

6. What is a CANDU type reactor? Explain with the help of neat sketch its main features. 15
7. A 60 MW turbo-generator set has an overall efficiency of 25%. The calorific value of coal used is 24MJ/kg. Estimate the consumption of coal per kWh and also per day of 24 h if load factor is 30%. 15

Section-D

8. Write short notes on : 15
- (a) Wind power plants
 - (b) Solar energy collectors
9. Explain the MHD power generation principle in detail. 15

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B. Tech. 8th Semester Mechanical Engineering

G-Scheme Examination, May-2024

AUTOMOBILE ENGINEERING

Paper-PEC-ME-420-G

Time allowed : 3 hours]

[Maximum marks : 75

Note : Attempt five questions in total, first question is compulsory and attempt one from each section.

1. Explain the following :

- (a) Panhard rod
- (b) Need of Suspension
- (c) Tyre aspect ratio
- (d) Vehicle lightning system
- (e) Slip joint
- (f) Freewheel unit

6×2.5=15

Section-I

- 2. (a) Discuss and differentiate between four wheel drive and all wheel drive with neat sketch. 10
- (b) With neat sketch discuss working of electromagnetic clutch. 5
- 3. (a) Discuss principle of clutch. Describe working of diaphragm spring clutch. 10
- (b) Describe roll control and pitch control system. 5

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Section-II

4. (a) With neat sketch discuss epi-cyclic gear box. Explain working of automatic transmission.
- (b) Discuss plunging ball type constant velocity joint.
5. (a) Why differential is needed in a four wheel automobile? Discuss working of limited slip differential.
- (b) Why under drive is needed in transmission?

Section-III

6. (a) Why good suspension system is needed? Discuss working of double wishbone suspension system.
- (b) Why negative camber is needed in cars?
7. (a) Discuss working of re-circulating ball type steering system.
- (b) Describe function of using watt's linkage in automobiles.

Section-IV

8. What are Power assisted brakes? Discuss factor affecting brake performance.
9. What is the purpose of lead acid batteries? Discuss maintenance procedure of batteries.