

8E4052

Roll No. _____

Total No of Pages: **3****8E4052****B. Tech. VIII Sem. (Back) Exam., April – May 2018****Mechanical Engineering****8ME4.1 (O) Reliability and Maintenance Engineering****Time: 3 Hours****Maximum Marks: 80
Min. Passing Marks: 26***Instructions to Candidates:*

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

1. NIL2. NIL**UNIT-I**

Q.1 (a) What are the factors which adversely affect maintenance system in an organization? [8]

(b) Write various objective and functions of maintenance management. [8]

OR

Q.1 (a) What is corrective maintenance? When and why it is done? [8]

(b) Describe briefly: [8]

(i) Block replacement

(ii) Maintenance policies

UNIT-II

- Q.2 (a) What is predictive maintenance? How it is helpful in minimizing breakdown?
How it differs from preventive maintenance? [12]
- (b) What do you mean by NDT? Explain briefly. [4]

OR

- Q.2 Write short notes on following: [4×4=16]
- (a) Ultrasonic testing
 - (b) Vibration analysis
 - (c) Oil analysis
 - (d) Radiographic testing

UNIT-III

- Q.3 (a) Write difference between MTTF and MTBF with suitable examples. [8]
- (b) Define reliability and explain its various parameters. [8]

OR

- Q.3 The failure rates of 3 components are 0.065×10^{-3} , 0.018×10^{-3} and 0.96×10^{-3} per hour.
Evaluate the failure rate, MTTF of a system and the reliability at 500 hours of these components which are connected in parallel. [16]

UNIT-IV

- Q.4 (a) Write various reliability improvement techniques. [8]
- (b) What is redundant? How element redundancy is better? Discuss. [8]

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OR

Q.4 Discuss the K-out of m stand by system and find out MTTF of this system. [16]

UNIT-V

Q.5 (a) What are the different factors which influence cost of spares? Discuss. [8]

(b) What do you mean by cost reduction? Discuss various techniques of cost reduction. [8]

OR

Q.5 Write short notes on the following:-

(a) ABC Analysis [4]

(b) FSN Analysis [4]

(c) XYZ Analysis [4]

(d) VED Analysis [4]

8E4051	Roll No. _____	Total No of Pages: 3
8E4051 B. Tech. VIII Sem. (Back) Exam., April – May 2018 Mechanical Engineering 8ME3 (O) Gas Turbines & Gas Power Plant		

Time: 3 Hours

Maximum Marks: 80
Min. Passing Marks: 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

1. NIL

2. NIL

UNIT-I

- Q.1 (a) Compare open cycle gas turbine and closed cycle gas turbine. Why closed cycle gas turbine is not used for aircraft propulsion? [8]
- (b) What is the application of gas turbine? Discuss in detail. [8]

OR

- Q.1 (a) Explain effects of reheating gases on work output and efficiency of a gas power cycle with the help of T – P diagram. [8]
- (b) A gas turbine plant works between temperature limits of 300°K and 900°K. The pressure limits are 1 bar and 4 bars. Estimate the thermal efficiency of plant and the shaft power available for external load in kW. Assume mass rate of flow of air to the compressor as 1600kg / min. [8]

UNIT-II

- Q.2 (a) Explain losses due to incomplete combustion in gas turbine combustor. How does better combustion helps in reducing global warming? [8]
- (b) Clearly mention the difference between actual gas turbine cycle and theoretical gas turbine cycle. [8]

OR

- Q.2 (a) Describe in detail with neat sketch working of Rocket Engine. [8]
- (b) Explain the concept of combined cycle. May we call this binary vapor cycle? If η_1 and η_2 are the effectiveness of the two cycles, what would be the overall efficiency? [8]

UNIT-III

- Q.3 (a) Explain the working and construction of Ramjet engine with the help of suitable diagram. [8]
- (b) What is the role of 'intake' in turbojet engine? Define 'intake efficiency' and derive expression for pressure ratio across the intake section. [8]

OR

- Q.3 (a) Write short note on advantages and disadvantages of turbojet engine. [8]
- (b) What is meant by thrust? Derive expression for thrust equation for general propulsive system. [8]

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UNIT-IV

- Q.4 (a) Describe with a neat sketch the 'CAN' type of gas turbine combustion chamber and explain its working. [8]
- (b) Write a note on difficulties associated with the use of cheap fuels in gas turbine and their solution. [8]

OR

- Q.4 (a) Determine the condition of maximum efficiency of a 50% reaction turbine. [8]
- (b) Discuss the combustion process with the help of block diagram. [8]

UNIT-V

- Q.5 (a) What are the different fields where use of diesel power plant is essential? [8]
- (b) List the advantages and disadvantages of Diesel power plant over steam power plant. [8]

OR

- Q.5 (a) Draw layout of steam power plant. What are the factors to be considered while selecting the site for plant? [8]
- (b) Write short note on layout of diesel power plant. [8]
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8E4050

Roll No. _____

Total No of Pages: 4**8E4050****B. Tech. VIII Sem. (Back) Exam., April – May 2018****Mechanical Engineering****8ME2 (O) Operations Management****Time: 3 Hours****Maximum Marks: 80****Min. Passing Marks: 26***Instructions to Candidates:*

*Attempt any **five** questions, selecting **one** question from each unit. All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

Units of quantities used/calculated must be stated clearly.

1. NIL2. NIL**UNIT-I**

Q.1 (a) Explain in details scope and objectives of operation management with suitable example. [8]

(b) Describe the various techniques of demand forecasting. [8]

OR

Q.1 (a) What is the role of operation manager in operation management? [6]

(b) Find the exponential smoothed forecasts with trend correction for the sales data in column (2) of table. Assume [10]

initial trend, $\lambda_0 = -2.00$,

initial average $\mu_0 = 500$, $\alpha = 0.1$

Period (1)	Sales (2)
0	-
1	515
2	505
3	480
4	510
5	525
6	550

UNIT-II

Q.2 (a) Differentiate mass, batch and job shop production planning with suitable examples. [8]

(b) Describe production analysis and its aspects according to the current market. [8]

OR

Q.2 (a) Write the steps of capacity planning process. [8]

(b) Explain capacity alternatives. [8]

UNIT-III

Q.3 (a) Define Aggregate planning and discuss various aggregate capacity planning strategies. [8]

(b) Describe the objectives and functions of production planning. [8]

OR

- Q.3 (a) What is materials requirement planning? What are the inputs and outputs required by the MRP processing logic? [6]
- (b) What is meant by "Main power planning"? Describe the various factors affecting it? Discuss the objectives and requirements of manpower planning. [10]

UNIT-IV

- Q.4 (a) Explain the various techniques of loading and scheduling. [8]
- (b) What are the functions of dispatching? [8]

OR

- Q.4 (a) What are the objectives and function of production control? [8]
- (b) Explain the various control procedures. [8]

UNIT-V

- Q.5 (a) What are the advantage and disadvantage of proper inventory management? [6]
- (b) (i) Calculate the E.O.Q. in units and total variable cost for the following items, assuming an ordering cost of ₹5 and a holding cost of 10%

Item	Annual Demand	Unit Price (₹)
A	800 units	0.02
B	400 units	1.00
C	392 units	8.00
D	13,800 units	0.20

- (ii) For the above problem, compute EOQ in rupees as well as in years of supply. Also calculate the EOQ frequency each of the four items. [10]

OR

Q.5 (a) Discuss objectives and functions of material management. [8]

- (b) A company uses ₹10,000 worth of an item during the year. The ordering costs are ₹25 per order and carrying charges are 12.5% of the average inventory value.

Find the economic order quantity, numbers of orders per year, time period per order and the total cost. [8]

8E4049

Roll No. _____

Total No of Pages: 4**8E4049****B. Tech. VIII Sem. (Back) Exam., April – May 2018****Mechanical Engineering****8ME1 (O) Renewable Energy Technology****Time: 3 Hours****Maximum Marks: 80
Min. Passing Marks: 26***Instructions to Candidates:*

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

1. NIL _____2. NIL _____**UNIT-I**

- Q.1 (a) What are the reasons for variation in solar radiation reaching the earth than received at the outside of the atmosphere? [4]
- (b) Explain the principle of conversion of solar energy into heat. [4]
- (c) What are the instruments required for setting up a solar energy measurement laboratory? Describe with neat sketch working of a radiation measuring instrument. [8]

OR

- Q.1 (a) How solar air collectors are classified? What are the main applications of a drier? [4]
- (b) What is the principal of collection of solar energy used in a non convective solar pond? [4]
- (c) What are the main applications of a solar pond? Describe briefly with examples? [4]
- (d) What is the principle of photovoltaic conversion of solar energy? Give advantages, disadvantages and type of solar cells. [4]

UNIT-II

- Q.2 (a) Briefly describe the thermal power generation system. [8]
- (b) Describe wind energy and its characteristics, what are the factors that influence wind? [8]

OR

- Q.2 (a) Explain the factors influencing wind current. What are the reasons for high wind velocity in coastal areas? What is the direction of wind current in the coastal area? [8]
- (b) What is wind energy conversion system (WECS), its classification, characteristics and applications? [8]

UNIT-III

- Q.3 (a) What are the sources of ocean energy? What is the principle of ocean thermal energy conversion system (OTEC). Describe closed cycle OTEC system. [8]
- (b) Explain with sketches the various method of tidal power generation. What are the limitations of each method? [8]

OR

- Q.3 (a) Write short note on: [8]
- (i) Ocean wave energy conversion
- (ii) Tidal energy conversion
- (b) List wave energy conversion devices. Describe one of them with specifications. [8]

UNIT-IV

- Q.4 (a) What is geothermal energy? What are the sources of geothermal energy? What types of site selection is done for that? [8]
- (b) How biomass conversion takes place? Explain biomass conversion processes briefly. [8]

OR

- Q.4 (a) What is the principle of MHD power generation? How MHD system is classified? Describe MHD open cycle system. [8]
- (b) Explain following: [8]
- (i) Photo synthesis
- (ii) Chemical constituents and physiochemical characteristics of biomass

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UNIT-V

- Q.5 (a) Explain the principle of the working of a silicon solar cell used for power generation. [8]
- (b) What is a thermodynamic and electrochemical principle of fuel cell? Describe basic design of fuel cell. [8]

OR

- Q.5 (a) Describe the principle of chemical fuel cell. [8]
- (b) How the hydrogen is produced for power generation. Describe the economy of the hydrogen power. [8]
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8E8074	Roll No. _____	Total No of Pages: 3
	8E8074	
	B. Tech. VIII Sem. (Main / Back) Exam., April – May 2018	
	Mechanical Engineering	
	8ME4.1A Product Development and Launching	

Time: 3 Hours

Maximum Marks: 80
Min. Passing Marks: 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

1. NIL

2. NIL

UNIT-I

Q.1 (a) 'A new product plays a significant role for the growth of an organization'

Explain this statement with suitable example. [8]

(b) What do you understand by product life cycle (PLC)? Explain its various phases. [8]

OR

Q.1 (a) Write down Generic product development process for market pull products. [12]

(b) What do you mean by 'fear of criticism'? [4]

UNIT-II

Q.2 (a) What do you mean by target marketing? Explain the all activities of target marketing. [8]

(b) Explain Benchmarking with the help of a step by step approach. [8]

OR

Q.2 Explain economic existence of need. What are the problem faced in establishing economic existence of need. Explain briefly. [16]

UNIT-III

Q.3 Write short note on – [4×4=16]

(i) Creating thinking process

(ii) Generation of alternatives

(iii) Concept selection

(iv) Concept feasibility

OR

Q.3 (a) Explain various Road Blocks to creativity. [8]

(b) What do you mean by creativity? Explain the steps of creative process. [8]

UNIT-IV

Q.4 (a) Write down various processes of detailed design of subsystem. [8]

(b) What are the principal requirement of good product design? [8]

OR

Q.4 (a) Describe in detail the process of reviewing a product design from manufacturing point of view. [12]

(b) Explain compatibility. [4]

UNIT-V

Q.5 Write brief note on – [8×2=16]

(i) Project Execution

(ii) Project Evaluation

OR

Q.5 (a) What is the difference between functional organization, Project organization and Hybrid organization? [8]

(b) Explain the various stages of product launch cycle in detail. [8]

8E8073

Roll No. _____

Total No of Pages: 4

8E8073**B. Tech. VIII Sem. (Main / Back) Exam., April – May 2018****Mechanical Engineering
8ME3A Power Generation****Time: 3 Hours****Maximum Marks: 80
Min. Passing Marks: 26***Instructions to Candidates:*

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

1. NIL2. NIL**UNIT-I**

Q.1 (a) Enumerate various types of loads? What are the significance of load curves?

Explain with diagrams.

[8]

(b) What are the considerations on which the location of power plant depends? [8]

OR

Q.1 (a) Briefly explain the factors which should be considered while designing a power plant. [6]

(b) A base load power station and standby power station share a common load as follows- [10]

Base load station annual report = 180×10^6 KWh

Base load station capacity = 42 MW

Max demand on base station = 36 MW

Stand by station capacity = 22 MW

Stand by annual output = 17×10^6 KWh

Max demand (peak load) on stand by station = 18 MW

Determine the following for both the stations-

- (i) Power factor
- (ii) Capacity for the plant

UNIT-II

- Q.2 (a) Give the general layout of modern steam power plant and explain it briefly. [8]
- (b) What factors should be taken into consideration while selecting the site for steam power plant. [8]

OR

- Q.2 (a) What are the effects of variation of steam condition on thermal efficiency of power plant? [8]
- (b) State the advantages and disadvantages of steam power station as compared to hydroelectric power station and nuclear power station. [8]

UNIT-III

- Q.3 (a) What are the advantages and disadvantages of diesel power plants, state its applications in different fields. [8]
- (b) Explain the typical layout of a hydro electric power plant with neat sketch. [8]

OR

- Q.3 (a) What do you mean by combined gas turbine cycles? Explain briefly combined gas turbine with diesel power plants. [8]
- (b) Discuss the difference between Kaplan, Francis and pelton turbines and state the types of power plant they are suitable for. [8]

UNIT-IV

- Q.4 (a) What are the advantages of wind power? Explain the environment factor associated with wind power generation. [8]
- (b) What are the components of wind electric generating power plants, explain with neat sketch. [8]

OR

- Q.4 (a) Give classification of aero generators. Explain its types with neat sketch. Which is more suitable arrangement? [8]
- (b) Write short note on-
- (i) Characteristics of good wind power site [4]
- (ii) Methods of wind measurement [4]

UNIT-V

- Q.5 (a) Describe with the neat sketch, the working of a solar power plant. What are its salient features? [8]
- (b) Write short note on-
- (i) Selective coating [4]
- (ii) P-V materials [4]

OR

Q.5 (a) Explain energy through solar radiation. What are the instruments used to measure solar radiation? [8]

(b) Write short note on-

(i) Economics of solar photovoltaic's [4]

(ii) Optical design of solar concentrators [4]

8E8072

Roll No. _____

Total No of Pages: **3****8E8072****B. Tech. VIII Sem. (Main / Back) Exam., April – May 2018****Mechanical Engineering
8ME2A Laws for Engineers****Time: 3 Hours****Maximum Marks: 80
Min. Passing Marks: 26***Instructions to Candidates:*

*Attempt any **five** questions, selecting **one** question from **each** unit. All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

Units of quantities used/calculated must be stated clearly.

1. NIL _____2. NIL _____**UNIT-I**

Q.1 What are Fundamental Rights? Explain the types of Fundamental Rights. [16]

OR

Q.1 What are you understand by a government contract? Explain types of government contracts. [16]

UNIT-II

Q.2 (a) What are the Human Rights? What is the importance of Human Rights? Explain the need of Human Rights for the citizen of a country? [8]

(b) Write a short note on collective Bargaining? [8]

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OR

- Q.2 (a) What are Labour Laws? Explain in brief [8]
- (b) Write down the objectives and importance of Industrial Disputes Act 1947. [8]

UNIT-III

- Q.3 What is Intellectual Property Rights? Explain types of Intellectual Property Rights? [16]

OR

- Q.3 (a) What are cyber crimes? Write the procedure to tackle cyber crimes? [8]
- (b) Explain the TRIPs Agreement. [8]

UNIT-IV

- Q.4 (a) Distinguish between Trade mark and property mark? [8]
- (b) Explain the copyright law in India? Explain in detail about the copyright Act 1957? [8]

OR

- Q.4 (a) Write about the Rights and Obligations of a patentee? [8]
- (b) Explain laws under Patents Act, 1970? [8]

UNIT-V

- Q.5 (a) What are the objectives of the Companies Act 1956? [8]

(b) Write a short note on:

(i) FEMA 1999

(ii) Prevention of corruption Act, 1988

[4×2=8]

OR

Q.5 Explain Role, direction and control vested in Election commission. Write down the

electoral rights of a candidate?

[16]

8E8071

Roll No. _____

Total No of Pages: **3**

8E8071

B. Tech. VIII Sem. (Main / Back) Exam., April – May 2018
Mechanical Engineering
8ME1A Computer Integrated Manufacturing System

Time: 3 Hours

Maximum Marks: 80
Min. Passing Marks: 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

1. NIL

2. NIL

UNIT-I

Q.1 (a) What do you understand about CIM and what are Benefits of CIM. [8]

(b) Explain the product cycle and its various production processes. [8]

OR

Q.1 (a) Explain the following: - [4×2=8]

(i) NC coordinate system.

(ii) Motion Control system.

(b) Explain the NC procedure. [8]

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UNIT-II

Q.2 Write the complete APT program for the part shown in fig – 1. The postprocessor call statement is MACHIN/MILL. The inside and outside tolerances on the circular approx. should be 0.001 inches. The end mill is 1 inch in diameter. Speed and feed should be 400 rpm and 3.0 in./min respectively. [16]

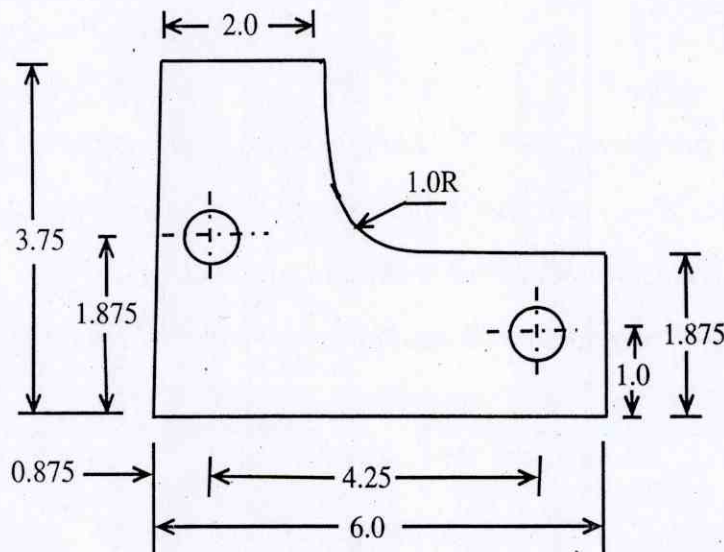


Fig. -1

OR

- Q.2 (a) Explain the various types of NC part programming languages. [8]
- (b) Explain Adaptive control system. What are the benefits of adaptive control systems? [8]

UNIT-III

- Q.3 (a) Explain the automated process planning and its various process planning. [8]
- (b) Explain briefly the computer generated time standards. [8]

OR

- Q.3 (a) Explain Group Technology machine cells. What are the types of Group technology machine cells? [8]
- (b) Briefly explain the part families in Group Technology. [8]

UNIT-IV

- Q.4 (a) Explain the MRP II and its various steps. [8]
- (b) Explain the shop floor control system and what are its functions. [8]

OR

- Q.4 (a) Explain computer process monitoring. [8]
- (b) Explain various process control strategies. [8]

UNIT-V

- Q.5 (a) Discuss Automated Guided vehicles (AGV) and its types. [8]
- (b) Discuss Robot application in CIM. [8]

OR

- Q.5 (a) Discuss Automated storage and Retrieval system. [8]
- (b) Explain coordinate measuring machine and its types. [8]
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