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8E8071

8E8071

B.Tech. VIII Semester (Main&Back) Examination, April.2019
Mechanical Engineering
8ME1A Computer Integrated Manufacturing Systems

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.*

Unit - I

1. a) Explain the function of basic components of Numerical Control (NC) system.
- b) Explain, how computers play a vital role in manufacturing system. Support your answer with an industry manufacturing system.
- c) Explain the historic background of CIM/CAM. **(4+8+4=16)**

(OR)

1. Explain the following with a suitable example: **(4+4+4+4=16)**
 - a) Machine Control unit
 - b) Adaptive control of machining system
 - c) Production systems
 - d) Product cycle.

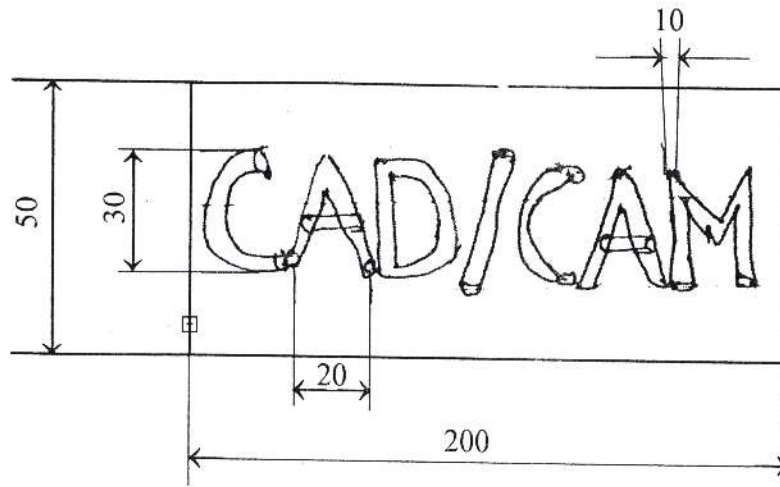
Unit - II

2. a) List down the m-codes with definitions and examples for turning in NC programming.

- b) Write a NC part program to engrave following letters on aluminium plate of size $200 \times 50 \times 10$ mm. The dimensions of letters are as shown below.

Tool material : HSS, Tool type milling cutter machine tool used-2 and half axis, vertical CNC milling machine (dia 3.175 mm) **(8+8=16)**

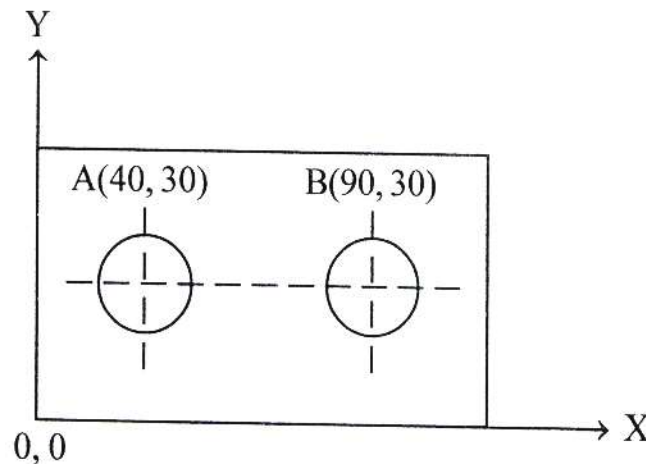
Controller-FANUC



(OR)

2. a) Write complete list of K codes with definitions and examples for milling in NC programming. **(8+8=16)**

b)



Write fixed block format and word address format considering point to point programming on the CNC drilling machine where two holes A and B of size 20mm to be drilled at 200 mm/min feed and 600rpm. Speed located at different position as shown in above figure.

Unit - III

3. Explain the following with example: **(6+10=16)**
- a) Part families in group technologies.
 - b) Traditional and retrieval process planning system.

(OR)

3. Explain the following with examples: **(8+8=16)**
- a) Computer generated time standards.
 - b) Group technology coding system.

Unit - IV

4. Explain the following with suitable examples. **(8+8=16)**
- a) Computer aided inventory management.
 - b) Non contact inspection methods.

(OR)

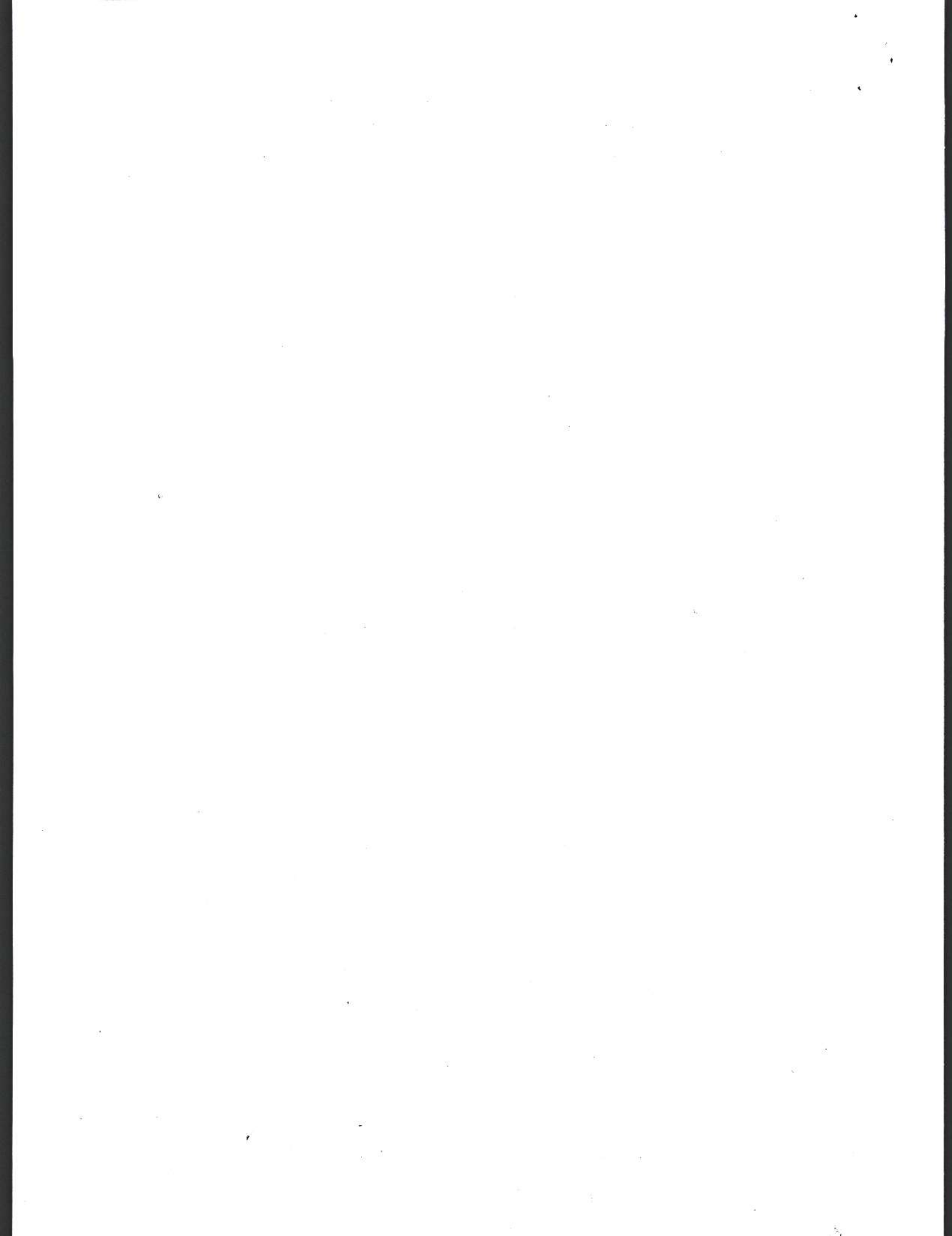
4. Explain the following with suitable examples. **(8+8=16)**
- a) Optical and non optical computer aided testing methods.
 - b) Manufacturing Resource Planning (MRP II).

Unit - V

5. Explain the following with suitable examples. **(8+8=16)**
- a) Computerized material Handling system at construction site.
 - b) Co-ordinate measuring Machines and its types.

(OR)

5. Explain the following with suitable examples. **(8+8=16)**
- a) Detailed diagram and process of automated storage and retrieval system.
 - b) Robotics application in Frig Manufacturing unit.



8E4049

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8E4049

B.Tech. VIII - Semester (Back) Examination, April-2019
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.

UNIT-I

1. a) Explain global energy scenario and justify the promotion of renewable energy sources with special reference to India. (8)
- b) Describe with the neat sketch the working of a flat plate collector. What are its applications? (8)

(OR)

1. a) Describe the principle of solar photovoltaic energy conversion and also write its advantages and disadvantages. (8)
- b) Discuss in brief the various photovoltaic applications. (8)

UNIT-II

2. a) Compare horizontal and vertical wind machines. (8)
- b) What do you understand by Betz limit? Derive the expression for the same. (8)

(OR)

2. Classify Wind Energy Conversion System (WECS) with its characteristics and applications. (16)

UNIT-III

3. Explain with the help of diagram the principle of closed cycle OTEC system. Discuss its advantages and limitations. (16)

(OR)

3. Describe with the help of diagram (any two): (2×8 = 16)
- Ocean wave energy conversion.
 - Tidal energy conversion.
 - Progressive wave energy.

UNIT-IV

4. a) Explain the working of a Geothermal Power Plant with neat sketch? What are the various considerations for site selection of a Geothermal Power Plant. (10)
- b) Discuss in brief Nuclear fission and fusion. (6)

(OR)

4. Write short notes on: (4×4 = 16)
- MHD
 - Formation of biomass
 - Photosynthesis
 - Biomass conversion processes.

UNIT-V

5. a) What is fuel cell? Describe the principle of working of H_2-O_2 cell also give their limitations. (8)
- b) List the various types of fuel cells and describe any one of them. (8)

(OR)

5. a) What are the various hydrogen production methods? Explain one of these methods. (8)
- b) Explain the Economics of Hydrogen? Write the merits and demerits of hydrogen. (8)

8E 8072

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8E 8072

B.Tech. VIII-Semester (Main & Back) Examination, April-2019
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.)*

Unit - I

1. Discuss in detail.

a) Fundamental rights.

b) Emergency provisions

(8+8=16)

(OR)

1. a) What do you mean by standard form of contracts? Explain in detail. (8)

b) Write short notes on :

i) Dispute settlement.

ii) Judicial approach to government contracts.

(4+4=8)

Unit - II

2. a) Write about enforcement of human rights in India including Supreme Court. (8)

b) Write in detail about Workmen's Compensation Act, 1923. (8)

(OR)

2. a) Write in brief about Industrial Employment standing orders Act, 1946. (8)

b) What do you mean by collective bargaining. Explain briefly. (8)

Unit - III

3. a) Write the scope and objective of Right to Information Act, 2005. (10)
b) Write short note on Rome Convention. (6)

(OR)

3. a) What are the various Cyber-Crimes described under the Information Technology Act, 2000. (8)
b) Discuss Official Secret Act, 1923 in brief. (8)

Unit - IV

4. a) What is the Trademark Act, 1999. Explain trademark registration process. (8)
b) What are the rights of a Patentee. (8)

(OR)

4. What is the meaning of Copyright. Discuss in detail Copyright Act, 1957. (16)

Unit - V

5. a) Define Company. Describe the various characteristics of a Company. (8)
b) Explain FEMA Act, 1999 in brief. (8)

(OR)

5. a) Write about the Prevention of Corruption Act, 1988 in detail. (8)
b) Discuss about the Election Commission of India. (8)
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B.Tech. VIII-Semester (Back) Examination, April-2019
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).

Unit - I

1. a) Explain the functional role of Production Manager in a Automobile and/or Chemical Industry. (5+4+7=16)
- b) Explain the short term and long term objective of forecasting demand.
- c) Determine the forecast demand for 7th month using weighted moving average method, from the following data in table, using weightage of month 4th, 5th and 6th respectively.

Month	1	2	3	4	5	6
Demand (Units)	120	130	110	140	110	130
Weight	-	-	-	0.2	0.3	0.5

(OR)

1. a) As a Production Manager in milk dairy product, what are strategic options you will decide to cope up for fluctuating demand of milk dairy products? (6+4+6=16)
- b) Explain the factors affect the productivity.
- c) The correlation coefficient between two variables X and Y is +0.6, $\sigma_x = 1.50$, $\sigma_y = 2.00$, $\bar{X} = 10$ and $\bar{Y} = 20$. Find the equation of two regression lines for X on Y and Y on X and values of regression coefficients a and b.

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Unit - II

2. a) Explain the different types of production systems, their features and example. (8+8=16)
- b) Explain factors affecting process planning and process design.

(OR)

2. a) Explain types of capacity planning and factors affecting determination of plant capacity. (8+8=16)
- b) A department works on 8 hours shift 250 days a year and has the usages data of a machine as given below:

Product	Annual demand (Units)	Processing time (Standard time in hours)
X	300	4.0
Y	400	6.0
Z	500	3.0

Determine the number of machines required.

Unit - III

3. a) Explain the objectives and levels of production planning. (6+5+5=16)
- b) Explain bill of Material and its importance in procurement and production planning.
- c) Explain Master production scheduling.

(OR)

3. a) Explain the different features of MRP I and MRP II systems. (6+5+5=16)
- b) Explain different functions of production planning department with respect to any product manufacturing industry.
- c) Explain the strategies used in effective aggregate production planning.

Unit - IV

4. a) Explain the term capacity control and priority control with respect to production control. **(6+10=16)**
- b) The following data is available for six jobs A, B, C, D, E and F which are to be processed on two work centres WC 1 and WC 2. The estimated processing times are given in hours for the six jobs at the two work centres. Sequence these jobs so that the total flow time to complete all the jobs and the total idle times are minimized.

Job	WC 1 (Hrs)	WC 2 (Hrs)
A	2	1
B	4	2.25
C	0.75	2.5
D	1.5	3.0
E	2.0	4.0
F	2.0	3.5

(OR)

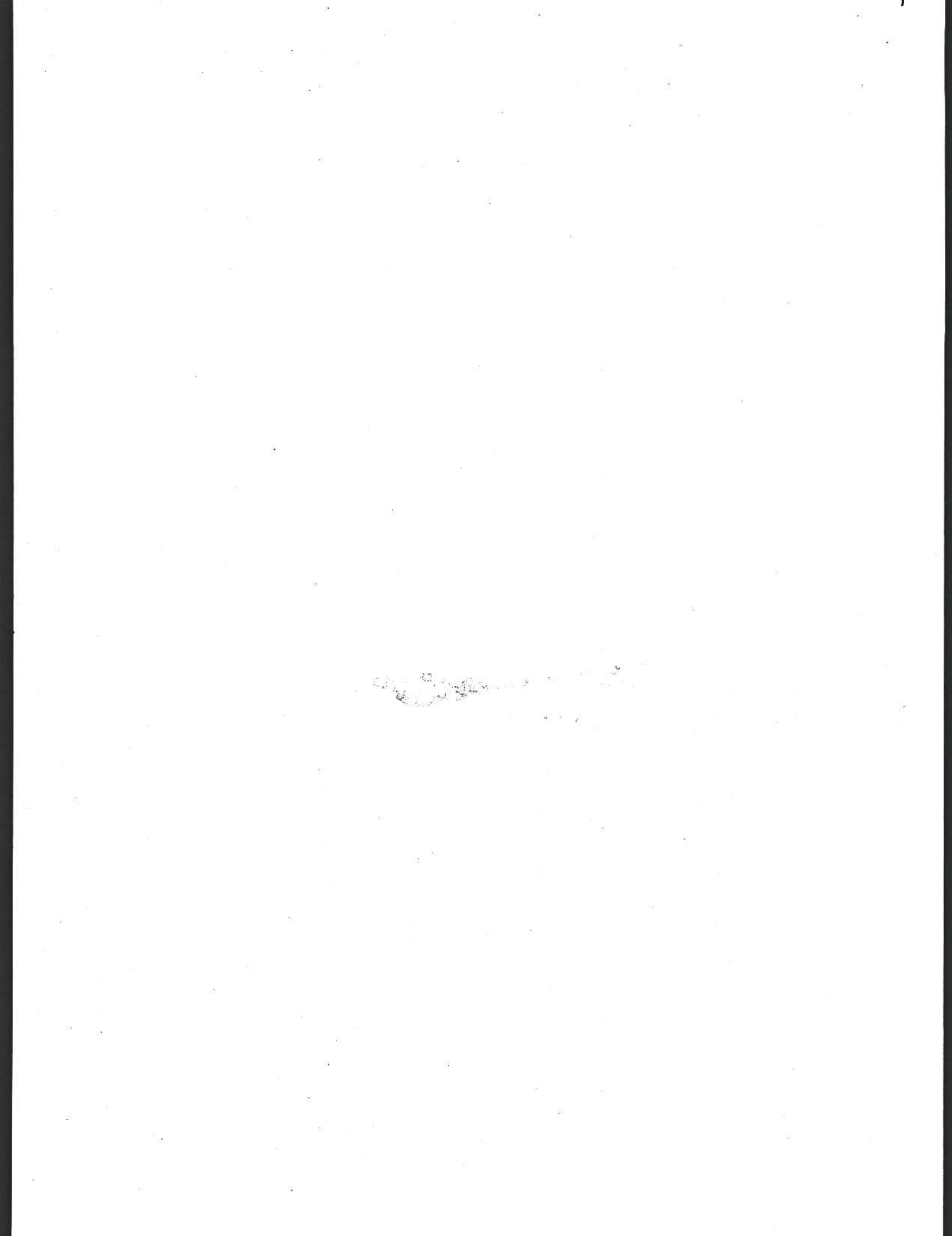
4. a) Explain in detail the techniques of production control in job-shop production, batch Production and Mass Production systems. **(10+6=16)**
- b) Explain the objectives of production scheduling.

Unit - V

5. a) Explain the functions of Material Manager keeping in view of mega unit of production. **(6+5+5=16)**
- b) Explain the different methods of physical stock control in a store.
- c) Name the selective inventory control systems and explain any two.

(OR)

5. a) Explain different cost elements associated to inventory. **(3)**
- b) Explain the term lead time and reorder point in reference to Inventory control. **(3)**
- c) An auto industry purchases spark plugs at the rate of Rs. 25 per piece. The annual consumption of spark plug is 18000 nos. If the ordering cost is Rs. 250 per order and carrying cost is 25% per annum. **(5+5=10)**
- i) What would be the economic order quantity (EOQ).
- ii) If the supplier of spark plugs offers a discount of 5% for order quantity of 3,000 Nos per order, do you accept the discount offer.



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	<div style="border: 1px solid black; display: inline-block; padding: 5px; margin: 0 auto;">8E4051</div> <p style="margin: 10px 0;">B.Tech. VIII Semester (Back) Examination, April-2019</p> <p style="margin: 0 0 10px 0;">Mechanical Engineering</p> <p style="margin: 0 0 10px 0;">8ME3(O) Gas Turbines & Gas Power Plant</p> <p style="margin: 0 0 10px 0;">Common with ME(O), MH</p>	

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.

UNIT - I

1. a) What is the purpose of adding heat Exchanger ? Draw the schematic diagram of a simple cycle with heat exchanger & Explain briefly with P-V and T-S diagram. (8)
- b) Explain the effect of intercooling ,reheating and heat recovery heat exchanger on net work output and efficiency (thermal) of a simple gas turbine cycle. (8)

(OR)

1. a) Derive the expression for specific work output and efficiency of a simple cycle with intercooler, heat exchanger and reheat. Draw their trends as a function of pressure ratio. (8)
- b) In gas turbine the pressure ratio to which air at 15°C is compressed to 6. The same is then heated to maximum temperature 750°C. First in a heat exchanger then in combustion chamber .It is then expanded in two stages such the expansion work is maximum. The air is reheated to 750°C. after the first stage. Determine the cycle thermal efficiency, Work ratio W_n / W_t and net work per kg of air. (8)

UNIT - II

2. a) What is the concept of polytropic Efficiency and why it is employed ? (8)
- b) Explain all the factors, liable for deviation of actual cycle from ideal cycle in a gas turbine plant. (8)

(OR)

2. Explain the following: (16)
 - i) Pressure and flow losses
 - ii) Mechanical losses
 - iii) Loss due to incomplete combustion
 - iv) Effect of variable sp.heat.

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UNIT - III

3. a) Describe with the sketch, working of turbojet engine and explain its thermodynamic cycle on T-S Diagram. (8)
- b) What are the various propulsive devices used for aircraft propulsion? Explain each of them in brief. (8)

(OR)

3. a) Define propulsive efficiency of a turbojet engine. Derive an expression for the same and prove that it cannot be 100%. (8)
- b) Explain the working of turbofan engine with the help of neat diagram. (8)

UNIT - IV

4. a) What are the requirements of a good combustion chamber for a gas turbine Engine. Explain it in detail. (8)
- b) With neat sketch explain the combustion chamber geometry bringing out the various zones that play a part in the process of combustion. (8)

(OR)

4. a) Mention the various practical problems in the operation of a combustion chamber. (8)
- b) Derive the expression for degree of reaction in axial flow gas turbine with the help of velocity triangles. (8)

UNIT - V

5. Write short notes on: (16)
- i) Free piston engine plant.
 - ii) Gas turbine materials.
 - iii) Gas turbine blading and fuels.
 - iv) Advantages of gas turbine power plant.

(OR)

5. a) What are the methods for improving load performance of gas turbine. (8)
- b) Describe the following terms:- (8)
- i) Part load efficiency.
 - ii) Air flow rate.
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8E 8073	Roll No. _____	[Total No. of Pages : 3]
	8E 8073	
	B.Tech. VIII Semester (Main&Back) Examination, April - 2019 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.

Unit - I

1. a) Define 'depreciation' and explain its significance. (4)
- b) The annual peak load on a 30 MW power station is 25 MW. The power station supplies load having maximum demands of 10 MW, 8.5 MW, 5 MW and 4.5 MW. The annual load factor is 0.45. Find:

i) Average load	ii) Energy supplied per year
iii) Diversity factor	iv) Demand factor. (4×3)

(OR)

1. a) How 'load duration curve' is obtained from 'load' curve? (6)
- b) A power station has a maximum demand of 15 MW, a load factor of 0.7, a plant capacity factor of 0.525 and a plant use factor of 0.85. Find:
 - i) The daily energy produced.
 - ii) The reserve capacity of the plant.
 - iii) The maximum energy that could be produced daily if the plant operating schedule is fully loaded when in operation. (4+3+3)

Unit - II

2. a) Describe the various factors which determine the location of a steam power station. (8)
- b) Explain the effect of variations of steam condition on thermal efficiency of steam power plant. (8)

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(OR)

2. a) What is condenser? Name the different types of condenser. Describe the operation of Surface condenser. (8)
- b) State the advantages and disadvantages of a steam power station as compared to hydroelectric power station and nuclear power station. (8)

Unit - III

3. a) Draw and explain the layout of diesel power plant. (8)
- b) Explain the main components of a hydro electric power plant. (8)

(OR)

3. a) What are the advantages and disadvantages of very high specific speed turbine runners? (8)
- b) Discuss the advantages and disadvantages of a diesel engine. (8)

Unit - IV

4. a) Explain the Blade Element theory. (8)
- b) Differentiate between horizontal axis and vertical axis wind machines. (8)

(OR)

4. a) What is the Betz limit? Explain the significance of Betz limit with the help of Axial momentum theorem. (10)
- b) What is the present Scenario of wind energy in India? Also explain future prospectus of wind energy potential in India? (6)

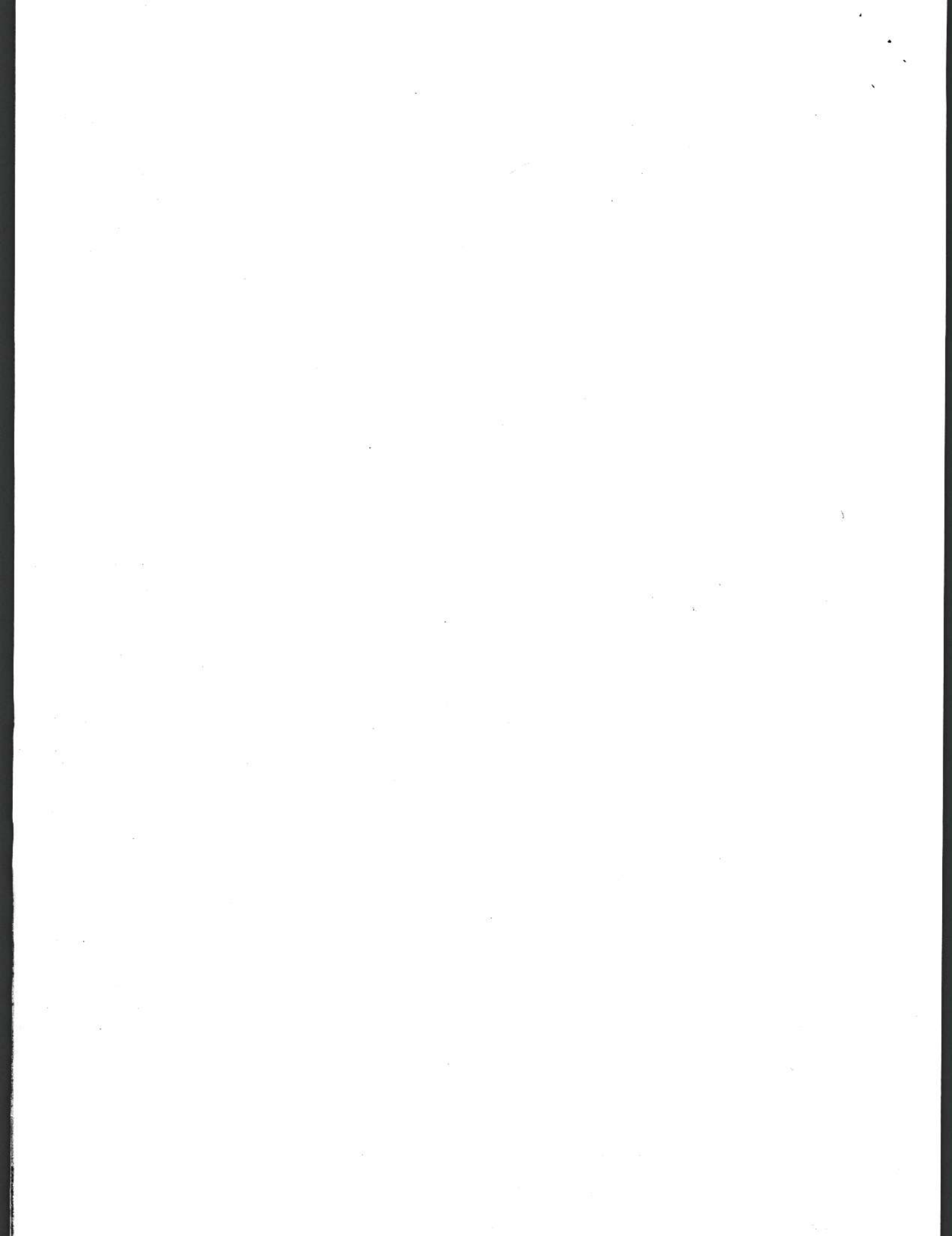
Unit - V

5. a) Define following terms and explain their significance
- i) Sun's Declination angle
 - ii) Hour angle
 - iii) Sun's altitude angle
- (8)

- b) What is the selective coating? Also explain its importance in Flat plate collector? (8)

(OR)

5. a) Explain the working principle of solar photovoltaic system. (8)
- b) Finding at what time (clock time) is the solar noon in a place whose local meridian is $L_{loc} = 110^{\circ} 28'' E$, and standard meridian is $L_{st} = 120E$, on July 21? (8)
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8E 8074**8E 8074**

B.Tech. VIII-Semester (Main & Back) Examination, April-2019
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).

Unit - I

1. a) What is the importance of new product for growth of the enterprise? (08)
- b) What are the demands development team? (08)

(OR)

1. "A new product plays a significant role for growth of an enterprise". Classify this statement with suitable example. Also describe various stages involve in the new product development process. (16)

Unit - II

2. How will you establish target specification? Give the concept of need identification and analysis for new product. (16)

(OR)

2. a) What is need analysis? How it is completed. (08)
- b) Briefly explain the engineering statement of problem. (08)

Unit - III

3. a) Discuss in detail concept generation. (08)
- b) Explain Brain storming process of idea generation. What is inversion process? (08)

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(OR)

3. What do you mean by 'fear of criticism' and 'psychological set' in case of new product? Explain with suitable example regarding establishing the engineering specification of product? (16)

Unit - IV

4. a) What do you mean by subsystem specification. Give compatibility in case of detailed design? (08)
- b) Write briefly on: (4+4=8)
- i) Component design
 - ii) Design for manufacturing

(OR)

4. a) If you are a design engineer then specify the role of ergonomics and aesthetics while developing a new product (08)
- b) Discuss any Two: (4+4=8)
- i) Simplification in design
 - ii) Standardization in design
 - iii) Modular design

Unit - V

5. Using suitable example explain: (8+8=16)
- a) Project task matrix
 - b) Project scheduling

(OR)

5. a) Discuss new product launch strategy. (08)
- b) Briefly explain the organization of design team. (08)
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8E4052**8E4052**

B.Tech. VIII - Semester (Back) Examination, April-2019
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.

UNIT-I

1. a) Explain the objectives of Maintenance Engineering. (8)
- b) Describe Break down Maintenance and Time Based Maintenance. (8)

(OR)

1. a) Differentiate between cost of maintenance and cost of equipment. (8)
- b) Describe briefly : (8)
 - i) Block replacement
 - ii) Maintenance Policies

UNIT-II

2. a) Explain various equipments used in predictive maintenance. (8)
- b) Explain Computerized maintenance and Total productive Maintenance. (8)

(OR)

2. a) Explain Ultrasonic Testing with neat sketch. (8)
- b) Explain various methods of condition monitoring. (8)

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UNIT-III

3. a) Describe briefly failure data analysis with suitable examples. (8)
b) Describe briefly MTTF and MTBF (8)

(OR)

3. a) Explain Bath Tub Curve with neat sketch explaining all the terms on it. (8)
b) Describe the use of Weibull chart for assessing characteristics. (8)

UNIT-IV

4. a) Describe series, parallel and mixed configuration. (8)
b) Describe use of Pareto analysis. (8)

(OR)

4. a) Write various reliability improvement techniques. (8)
b) What is redundant and how element redundancy is better? Discuss briefly. (8)

UNIT-V

5. Describe : (16)
a) ABC analysis
b) XYZ analysis
c) VED analysis.

(OR)

5. a) Describe how spare cost can be optimized. (8)
b) Explain different factors which influence cost of spares. (8)
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