

THIAGARAJAR POLYTECHNIC COLLEGE, SALEM

(Autonomous)

Reg. No.

April 2019 Examinations

DIPLOMA IN MECHANICAL ENGINEERING AND

DIPLOMA IN PRODUCTION ENGINEERING

Industrial Engineering and Management

Year/Sem: III / VI (EVEN-III)

Max. Marks : 75

Time : 3 hr.

PART-A

(5 x 2 = 10 Marks)

Note: (i) Answer any FIVE questions out of which question No.8 is compulsory.

(ii) All questions carry equal marks.

- 1 Define Plant layout.
- 2 What is Productivity?
- 3 List the types of inspection.
- 4 What is ERP?
- 5 What is working capital?
- 6 What is the use of p chart?
- 7 What is motivation
- 8 What is Standard of living?

PART-B

(5 x 3 = 15 Marks)

Note: (i) Answer any FIVE questions out of which question No. 16 is compulsory.

(ii) All questions carry equal marks.

- 9 List the differences between Preventive Maintenance and Break down Maintenance.
- 10 Explain the employees rating factor.
- 11 What are the factors that are considered for Make or Buy Decision?
- 12 Explain the importance of JIT.
- 13 List any three objectives of good stock control system.
- 14 Explain the Pre-determined Motion Time System.
- 15 List any three benefits of ISO to the organization.
- 16 Explain the 5S concept.

PART-C

(5 x 10 = 50 Marks)

Note: (i) Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.

(ii) All divisions carry equal marks.

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|----|---|---|----|
| 17 | A | Explain the process layout and product layout. | 10 |
| | | (OR) | |
| | B | i) Explain the importance of industrial safety. | 5 |
| | | ii) Explain the Collective bargaining and Mediation. | 5 |
| 18 | A | Explain the basic procedure for conduct of method study. | 10 |
| | | (OR) | |
| | B | Explain the following techniques of work measurement. | |
| | | i) Synthesis from standard data | 5 |
| | | ii) Analytical estimating | 5 |
| 19 | A | Compare the mass production, batch production and job order production. | 10 |
| | | (OR) | |
| | B | Explain the step by step procedure of constructing X and R charts. | 10 |
| 20 | A | State the principles of management as enumerated by Henry Fayal. Explain. | 10 |
| | | (OR) | |
| | B | i) Explain the Emerson Efficiency plan of payment by Results. | 5 |
| | | ii) Explain the Line and staff organization. | 5 |
| 21 | A | Compare Preference shares, Equity shares and debentures. | 10 |
| | | (OR) | |
| | B | i) Explain ABC analysis of inventory. | 5 |
| | | ii) Explain the Economic Order Quantity. | 5 |

PART-A**(5 x 2 = 10 Marks)****Note: (i) Answer any FIVE questions out of which question No.8 is compulsory.****(ii) All questions carry equal marks.**

- 1 List any two Operating system software and Application software.
- 2 List the benefits of Graphics standards.
- 3 Define coding structure and list the types of coding structures.
- 4 What are canned cycles?
- 5 List the steps in Rapid prototyping.
- 6 Define "Robot".
- 7 Define "Concurrent Engineering" and state its use.
- 8 Define "Quality Function Deployment" and state its benefits.

PART-B**(5 x 3 = 15 Marks)****Note: (i) Answer any FIVE questions out of which question No. 16 is compulsory.****(ii) All questions carry equal marks.**

- 9 List the benefits of CAD.
- 10 State the advantages of FEM.
- 11 Explain MICLASS system of coding.
- 12 What is ERP? List its advantages.
- 13 Define Machine Zero, Work zero and Tool zero.
- 14 List the benefits of FMS.
- 15 List the factors to add value to a product.
- 16 List the Advantages of Design for Manufacture and Assembly.

PART-C**(5 x 10 = 50 Marks)****Note: (i) Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.****(ii) All divisions carry equal marks.**

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|----|---|---|----|
| 17 | A | i) Explain Shigley's design process. | 5 |
| | | ii) Explain derivation of scaling matrix in two dimensional scaling. | 5 |
| | | (OR) | |
| | B | Explain solid modeling by CSG using Boolean operators with an example. | 10 |
| 18 | A | Explain computer Integrated production management system with the help of simple block diagram. | 10 |
| | | (OR) | |
| | B | Explain Shop Floor Control system. | 10 |
| 19 | A | i) Explain the procedure for CNC Part Programming. | 5 |
| | | ii) With an example explain the "Mirroring" feature used in CNC Machining centres. | 5 |
| | | (OR) | |
| | B | Explain 3D printing with simple schematic sketches. Also state its applications. | 10 |
| 20 | A | Explain the working principle of AGV's. | 10 |
| | | (OR) | |
| | B | i) Explain the types of Robot Programming. | 5 |
| | | ii) Explain the use of Robots for welding. | 5 |
| 21 | A | Explain House of Quality and state its advantages. | 10 |
| | | (OR) | |
| | B | i) Explain the new product development process. | 5 |
| | | ii) Explain Augmented reality and state its applications. | 5 |

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PART-A**(5 x 2 = 10 Marks)****Note: (i) Answer any FIVE questions out of which question No.8 is compulsory.****(ii) All questions carry equal marks.**

- 1 Mention the materials used for cylinder head.
- 2 List the various stages of combustion in C.I. engines.
- 3 Define: octane number.
- 4 List the types of fuel filter.
- 5 List the types of gears used in the final drive.
- 6 Define: Camber.
- 7 What are the causes of tyre wear?
- 8 What is the purpose of an ignition system?

PART-B**(5 x 3 = 15 Marks)****Note: (i) Answer any FIVE questions out of which question No. 16 is compulsory.****(ii) All questions carry equal marks.**

- 9 What is the function of oil pan?
- 10 Write the commonly used oil additives.
- 11 Name the circuits used in a Solex carburetor.
- 12 List the different types of nozzles used in diesel engines. Sketch any one.
- 13 Briefly explain any one type of axle housing.
- 14 Explain the necessity of power steering.
- 15 Compare the disc and drum types of brakes.
- 16 Name the different pollution control techniques.

PART-C**(5 x 10 = 50 Marks)****Note: (i) Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.****(ii) All divisions carry equal marks.**

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|----|---|---|----|
| 17 | A | Explain the method of controlling of expansion in pistons. | 10 |
| | | (OR) | |
| | B | Explain the working of a pump assisted cooling system with a neat sketch. | 10 |
| 18 | A | List the types of air cleaners. With a neat sketch, explain the oil bath type air cleaner. | 10 |
| | | (OR) | |
| | B | Explain the construction and operation of pneumatic governor. | 10 |
| 19 | A | Explain the working of single plate clutch with the help of a neat sketch. | 10 |
| | | (OR) | |
| | B | Describe the working of self locking differential. | 10 |
| 20 | A | With a neat sketch, explain the following | |
| | | i) Leaf spring | 5 |
| | | ii) Torsion bar | 5 |
| | | (OR) | |
| | B | Discuss with the help of suitable sketch, the construction of disc wheel and list its advantages. | 10 |
| 21 | A | Describe different methods of battery ratings. | 10 |
| | | (OR) | |
| | B | With a neat sketch, explain the following | |
| | | i) Windscreen wiper | 5 |
| | | ii) Catalytic converter | 5 |
