

Sai Nath University

Assignment For Diploma in Mechanical Engineering 5th Sem.

The Assignment will consist of two parts, A and B. Part A will have 5 short answer questions(40-60 words) of 4 marks each. Part B will have 2 long answer questions of 10 marks each

All questions are compulsory.

These Assignments should be completed and submitted in written form by the student to his/her respective Faculty/ Examiners. Assignment Submission Dates are:

➤ Session-2019

List Of Suggested Questions

The list of suggested questions are for students to practice. Although optional, we recommend that students solve these questions, as they will help them in preparing for exams as well as in clearing the important concepts of the subject.

List of Practical and suggested practical's

The list of practical's should be done by the students in their Lab Sessions. These are the basic practical's, which each student should be able to do himself independently. While the list of suggested practicals are optional, but it is recommended that students should perform those practical so as to have a thorough knowledge of the subject

Education Delivery Schedule (EDS)

As per University Semester scheme, the minimum contact hours of each paper has been Divided into two hours theory and practical class.

The faculty will maintain this attendance paper wise for his/her batch.

Subject Code**Subject Name****DEME****THEORY OF MACHINES****DEME****REFRIGERATION AND AIR CONDITIONING****DEME****EMPLOYABILITY SKILLS – I****DEME****ENVIRONMENTAL EDUCATION****DEME****CNC MACHINES AND AUTOMATION****DEME****WORKSHOP TECHNOLOGY - III****DEME****WORKSHOP PRACTICE - III****DEME****COMPUTER AIDED DRAFTING**



SAI NATH UNIVERSITY

Cover page of Assignment

ID NUMBER

NAME

COURSE Diploma Engineering LE.....

STREAM Mechanical.....

SEM 5th

SUBJECT CODE

SUBJECT NAME

Assignments will be completed by the Student in his/her own handwriting.

DEME
[THEORY OF MACHINES]
Part A

1. Explain vibration and its effects. Also explain in detail the various types of vibration.
2. Write short notes on any two of the following : (a) Flat and V Belt Drives (b) Lower and Higher Pairs (c) Flywheel and Governor.
3. Explain in detail the principle and working of a Watt governor.
4. Explain the difference between the turning moment diagram of a 4-stroke and a 2-stroke I.C. engine with suitable sketches, Also derive the expression for coefficient of fluctuation of speed.
5. A spur gear has a module of 2 mm and its pitch line velocity is 0.6283 m/s. If the number of teeth of this spur gear is 30, find the speed of the gear. Also determine its circular pitch.

PartB

1. Derive the expression for the velocity of a belt at which maximum power is transmitted.
2. Explain any four of the following terms : (a) Sliding pair and Turning pair (b) Degrees of freedom (c) Kinematic chain (d) Angular acceleration (e) Angular momentum.
3. Define free vibrations and forced vibrations. What are the causes and effects of vibrations ?
4. what are the different types of governors ? Explain the working of Porter governor.
5. Derive an expression for the length of a belt in a cross belt drive.

DEME

[REFRIGERATION AND AIR CONDITIONING]

Part A

- (1)- Draw reversed Carnot cycle on p-V and T-s diagrams and indicate the name of all processes.
- (2)- Draw a simple vapour compression system and explain its working by clearly describing the function of each of its components.
- (3) Define the term Subcooling. What is the effect of subcooling on compressor work, refrigerating effect and COP ? What are the practical difficulties in achieving subcooling in a refrigeration system ?
- (4) -Give a neat sketch of different elements of a centrifugal compressor and describe the function of each.
- (5)- What functions are fulfilled by a capillary tube in a refrigeration system ? How does it work ?.

Part B

- (1)- What is the function of an evaporator ? Which types of evaporators are used in refrigeration systems ? Describe in brief.
- (2)- Describe the problem of ozone layer depletion and global warming in brief. What is the contribution of refrigerants to these problems ?
- (3) Define the following terms : (i) Dew point temperature (ii) Relative humidity (iii) Wet bulb depression
- (4) Draw the psychrometric chart and show the different constant property lines on it.
- (5) Write short notes on the following : (i) Multistage refrigeration system (ii) Freeze drying (iii) Marine refrigeration

DEME

[EMPLOYABILITY SKILLS – I]

Part A

- Q.1 What is 'Noise' in communication ? What factors in the organizational environment cause noise ?.
- Q.2 Describe the impact of Internet and the World Wide Web with special emphasis on their utility in Aerospace Engineering.
- Q.3 What advantages does oral presentation have over written presentation ? Describe some of the situations that require oral presentation.
- Q.4 Write down the guidelines for the effective use of an e-mail.
- Q.5 What is the difference between a Resume and Curriculum Vitae ? Write down your own CV.

Part B

- Q.1. How will you make your PowerPoint presentation effective ? Justify your answer with suitable examples.
- Q.2 Do you think it is easier to prepare and make a presentation in a team than individually ? Why ? Why not ?
- Q3. Write down a technical article on the 'Importance of Soft-skill Training' in Engineering Education.
- Q4. What is Group Discussion (GD) ? What is the importance of GD in recruitment process ? Write in brief the strategies for an effective GD, with the help of suitable examples.
- Q5. Write an essay on any one of the following : (a) No one can hurt you without your permission (b) You too can be a super achiever (c) Cities like cats reveal at night

DEME
[ENVIRONMENTAL EDUCATION]
Part A

Q.1 Discuss the different layers of atmosphere.

Q.2 Discuss the different direct and indirect values of biodiversity.

Q.3 Discuss the biotic and abiotic components of environment with examples.

Q.4 Explain in detail the effects of emission on environment due to transportation.

Q.5 Define sustainable development. Discuss the different measures for sustainable development.

Part B

Q.1 Discuss the major air pollutants with their sources and effects on human health.

Q.2 Discuss recycling and utilization of waste in detail, with suitable examples.

Q3. (a) Enlist the major greenhouse gases with — 1 their sources.

(b) Discuss the impact of greenhouse effect on environment.

Q4. (a) Define renewable and non-renewable energy resources with examples.

(b) Explain solar energy with its advantages and limitations.

Q5. Write short notes on any two of the following :

(a) Acid Rain

(b) World Food Problems

(c) Water Pollution and Sources

(d) BOD

DEME

[CNC MACHINES AND AUTOMATION]

Part A

Q(1) How is a CNC control system organised ? Briefly explain the functions of any three elements in the control.

Q(2)- Why is a recirculating ball in screw universally used in the actuation system in CNC machine tools ? Give the advantages of recirculating ball screws compared to the conventional Acme screws.

Q(3)-. (a) What are the requirements of tool pre-setting in CNC machining ?
(b) What are the various operations that can be completed in a CNC turning centre ?

Q(4)- What is the importance of preparatory functions in a CNC machining centre programming ? Give the description of any two functions and their application.

Q(5)- What is a modem ? Why is it necessary in certain applications ? Give the application of modem in CNC machine tool application.

Part B

Q(1)- Explain the concept of post processor as used in computer aided part programming.

Q(2)- What do you understand by the word DNC ? What are the situations where DNC will be beneficial.

Q(3). What is a modem ? Why is it necessary in certain applications ? Give the application of modem in CNC machine tool application.

Q(4) What is an AGU ? Explain the procedure used for guiding the AGV along its path.

Q(5) What are the steps involved in developing a cell layout ? Briefly explain the functions.

DEME

[WORKSHOP TECHNOLOGY - III]

Part A

Q(1) Enlist various types of chisels used in carpentry work. Describe any one briefly with the help of a sketch.

Q(2) What are the common allowances provided on patterns and why ?

Q(3) Distinguish between "GREEN-SAND MOULDING" and "DRY-SAND MOULDING" processes ?

Q(4) What do you understand by "GAS-WELDING" ? Explain in brief the equipments required for oxy-acetylene gas welding process..

Q(5)- Enlist different types of Stakes and explain any two with sketches.

Part B

Q(1)- Explain with the help of a neat sketch, the working of Anvil in Smithing work.

Q(2)- What are the main constituents of an oil-paint ? Explain in brief.

Q(3). Describe the functions of lathe machine. What are the main parts of a lathe machine.

Q(4) Define the term "HEAT-TREATMENT". Give a list of 3 types of heat treatment processes and explain any one of them.

Q(5) (a) Name the sharpening and checking tools used in carpentry work.

(b) Enlist two types of patterns in pattern work.

DEME

[WORKSHOP PRACTICE - III]

Part A

Q(1) Explain with a neat sketch the different types of oxy-acetylene flames indicating their applications.

Q(2)- State the causes of the following defects in casting and suggest their remedies :
(i) Blow Hole (ii) Porosity (iii) Shrinkage (iv) Shift

Q(3) Show by a neat sketch the different parts of a Milling machine. State briefly the function of each part.

Q(4)- What is cutting fluid ? State the desirable properties of cutting fluid.

Q(5)- Describe briefly the functions and applications of NC machines. State the fundamental differences between NC and CNC machine tools.

Part B

Q(1)- Explain the following operations performed by a Drilling machine : (i) Counter Boring (ii) Counter Sinking.

Q(2) Explain the following terms : (i) Basic size (ii) Standard size (iii) Nominal size (iv) Tolerance (v) Allowance.

Q(3). For determining accurately the thickness of a thin Mica sheet which instrument should one use ? Explain the working of the instrument. A micrometer has a pitch of 0.5 mm. It has 50 divisions on its circular scale. What is the Least Count of the micrometer?

Q(4) What is a vernier caliper ? State its uses. In a vernier caliper, 24 divisions of the main scale coincides with 25 divisions of the vernier scale. The smallest division of the main scale is 1 mm. What is the least count of the instrument ?

Q(5) Distinguish between Gas welding and Arc welding from the point of view of heat concentration, temperature, ease of operation and running cost.

DEME

[COMPUTER AIDED DRAFTING]

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