1E3107

Roll No. _____ Total No. of Pages: 2

1E3107

B. Tech. I - Sem. (Main / Back) Exam., - 2023

1FY3 – 07 Basic Mechanical Engineering

Time: 3 Hours **Maximum Marks: 70**

Instructions to Candidates:

Attempt all ten questions from Part A, five questions out of seven questions from Part B and three questions out of five from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

PART – A

[10×2=20]

(Answer should be given up to 25 words only)

All questions are compulsory

Q.1 Describe Law of Thermodynamics?

Q.2 Describe with figure different type of belt drive.

Q.3 Define the coefficient of performance of Refrigerator.

Q.4 What is the pattern in casting process?

Q.5 What is industrial engineering & its scope?

Q.6 Differentiate between water tube and fire tube boiler?

Q.7 Write a short note on different type of power plants.

Q.8 What is the IP & BP in the Internal Combustion Engine?

Q.9 Describe modern tools used in Mechanical Engineering.

Q.10 Differentiate between impulse and reaction turbine?

PART – B

[5×4=20]

(Analytical/Problem solving questions)

Attempt any five questions

Q.1 Explain any one type of water tube boiler with neat sketch.

Q.2 Explain differentiate between 2 stroke & 4 stroke engine.

Q.3 How Cavitation can be eliminated by Pump?

Q.4 Describe with figure different types of belt drive?

Q.5 What is air conditioning? Draw and describe different component used in it.

Q.6 Explain the various stages of Heat treatment process?

Q.7 Write short notes on –

(i) Forging

(ii) Drawing

PART – C

[3×10=30]

(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any three questions

Q.1 What is meant by refrigeration system? Describe vapor compression refrigeration system?

Q.2 What is gear transmission? Describe different types of gear.

Q.3 Describe rolling process with neat sketches.

Q.4 With a suitable sketch explain the working of centrifugal pump.

Q.5 Describe hardening and tempering of steel.

2E3206

Roll No. _____ Total No. of Pages: 3

2E3206

B. Tech. II - Sem. (Main / Back) Exam., - 2023

2FY3 – 07 Basic Mechanical Engineering

Time: 3 Hours **Maximum Marks: 70**

Instructions to Candidates:

Attempt all ten questions from Part A, five questions out of seven questions from Part B and three questions out of five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)

1. NIL 2. NIL

PART – A

[10×2=20]

(Answer should be given up to 25 words only)

All questions are compulsory

Q.1 Explain in brief different types of steam turbines.

Q.2 What is priming in pumps? How it is done?

Q.3 Explain the specific function of fuel pump and injector in a diesel engine.

Q.4 Explain scavenging in a 2-stroke engine.

Q.5 State the desirable properties of refrigerants and also list few of the refrigerants used in Air Conditioning.

Q.6 What are the advantages of rope drive as compared to belt drive?

Q.7 Enumerate the various zones in a cupola furnace.

Q.8 What are the different reactions that take place in oxy-acetylene welding?

Q.9 Explain briefly the hot working and cold working of metals.

Q.10 State the main reasons why pig iron cannot be used for industrial applications?

PART – B

[5×4=20]

(Analytical/Problem solving questions)

Attempt any five questions

Q.1 What is compounding in steam turbine? Explain various types of compounding in impulse steam turbine with suitable schematic diagrams.

Q.2 What are the important differences between reciprocating pump and centrifugal pump? Also gives their applications.

Q.3 Compare and contrast the working of vapour compression and vapour absorption refrigeration systems. Draw schematic diagram of each.

Q.4 Describe the different types of gears with sketches.

Q.5 Explain the five types of pattern allowances with appropriate diagrams.

Q.6 Explain the drawing process with a schematic diagram.

Q.7 What are the applications of mild steel, medium carbon steel and high carbon steel?

PART – C

[3×10=30]

(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any three questions

Q.1 What are the differences between impulse and reaction turbines? Describe the working of Parson's reaction turbine with neat schematic diagram.

Q.2 Explain the differences between a petrol and a diesel engine with neat schematic sketches and diagrams along with suitable examples of some popular models and their applications.

Q.3 What is brazing process? What are brazing materials? Describe various brazing methods and how it is different from braze welding?

Q.4 What are common alloying elements used in steels? Describe the effect of each of them on the properties of steel along with their applications.

Q.5 Describe the Closed-Cycle OTEC System with a neat sketch. How it differs from Open-Cycle OTEC system?

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B.Tech. I Sem. (Main) Examination, April/May - 2022

1FY3-07 Basic Mechanical Engineering

Time : 3 Hours | Maximum Marks : 70

Instructions to Candidates:

Attempt all ten questions From Part A, five Questions out of seven questions from Part B and three questions out of five questions from Part C .

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.

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

Part - A

(Answers should be given up to 25 words only)

All question are compulsory. **(10×2=20)**

1. State the first law of thermodynamics.
2. What do you mean by slip in belt?
3. Which pump require priming ? What is the need for priming.
4. Differentiate between brazing and soldering.
5. Mention the steps involved in designing of a part (Product)
6. Differentiate between COP and efficiency of system.
7. Write two important properties of steam.
8. List the four important properties of molding sand.
9. Give the example of any two allays and state their application.
10. Mention the different fields of mechanical engineering.

Part - B

(Analytical/Problem solving questions)

Attempt any five questions: **(5×4=20)**

1. Give the types of welding and explain any one type of welding with neat sketch.
2. Compare the working of two stroke and four stroke internal compustion engine.
3. How is steam produced in a fire tube boiler. Explain with a neat figure.
4. Discuss any five properties of engineering materials.
5. Write short notes on
   i) Rolling
   ii) Extrusion.
6. Explain any one type of boiler with neat sketch.
7. Mention the difference between open and cross belt drive.

Part - C

(Descriptive/Analytical/Problem solving/Design Questions)

Attempt any three questions. ***(3×10=30)***

1. List out major components of an automobile with their function.
2. Explain the different types of power transmission devices.
3. Explain the working of air-conditioning system.
4. Describe forging process with neat sketches.
5. With a suitable sketch explain the working of reciprocating pump.

1E2407

Roll No

Total No of Pages: 2

1E2407

B. Tech. II-Sem. (Back) Exam., Oct.-Nov. - 2020

ESC

2FY3 – 07 Basic Mechanical Engineering

Time: 2 Hours

Maximum Marks: 65
Min. Passing Marks: 23

Instructions to Candidates:

Attempt all five questions from Part A, four questions out of six questions from Part B and one questions out of three from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL

2. NIL

PART – A

(Answer should be given up to 25 words only) **[5×2=10]**

All questions are compulsory

Q.1 Define Zeroth law of thermodynamics.

Q.2 What is priming in pump?

Q.3 Define coefficient of performance of Refrigerator. Also write its expression.

Q.4 What are the differences between Soldering and brazing?

Q.5 Define toughness and brittleness.

PART – B

(Analytical/Problem solving questions) **[4×10=40]**

Attempt any four questions

Q.1 What do you understand by steam boilers? How they are classified?

Q.2 Describe the four stroke SI engine with the help of PV and TS diagrams.

Q.3 What do you understand by the refrigeration system? Describe the most popular refrigerant cycle used in refrigerators. Explain their components in brief.

Q.4 Describe the different types of the Gear trains with diagram and also derive their expression for speed ratio.

Q.5 Explain the various forging operations with suitable neat diagrams.

Q.6 Explain the various heat treatment methods with the help of suitable diagram.

PART – C

(Descriptive/Analytical/Problem Solving/Design Questions) **[1×15=15]**

Attempt any one questions

Q.1 What is Nuclear power plant? Explain the various components of Nuclear power plant. Describe the working of Nuclear power plant, advantages and disadvantages.

Q.2 An engine, based on air standard otto cycle, is supplied with air at 0.1 MPa and 35°C. The compression ratio is 8. The heat supplied is 500 kJ/kg. For given working air specific heat capacity at constant pressure and at constant volume is 1.005 kJ/kgK, 0.718kJ/kgK respectively, find the following-

(a) Efficiency of an engine

(b) Temperature and pressure at the end of compression

(c) Maximum temperature of the cycle

Q.3 What is Open Belt Drive? Derive the expression for the length of belt of open belt drive.