Scheme – I

Sample Question Paper

Program Name : **Electrical Engineering Program Group**
Program Code : **EE/EP/EU**
Semester : **Second**
Course Title : **Basic Mechanical Engineering**
Marks : **70**

22214

Time: 3 Hrs.

Instructions:

(1) All questions are compulsory.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data if necessary.
(5) Preferably, write the answers in sequential order.

Q.1) A) Attempt any FIVE of the following. **10 Marks**

(a) Define Dryness fraction, Wet steam.
(b) Define Enthalpy, Degree of superheat and state their SI units.
(c) State the use of piston rings in IC Engines.
(d) It is observed that in a device steam pressure decreases and velocity increases in the direction of flow, Identify the device.
(e) Define Brake Power and Brake thermal efficiency.
(f) Define Ton of refrigeration.
(g) State the function of OLP in refrigerator.

Q.2) Attempt any THREE of the following. **12 Marks**

(a) Describe the functions of three parts Cochran boiler using a sketch.
(b) Sketch the layout of a steam power plant and do the following
    i. Label the components.
    ii. Describe the function of any two major components.
(c) List the three methods of compounding steam turbines with a sketch of any one.
(d) Name the hazardous pollutants in a steam power plant with their effect on humans.

Q.3) Attempt any THREE of the following. **12 Marks**

(a) Suggest with justification the remedies in the following situations
    i. A diesel engine is getting heated during the working.
    ii. Smokey exhaust of diesel engine.
(b) List 04 applications of gas turbine.
(c) Compare open and closed cycle gas turbines with respect to components and working.
(d) A dam is constructed to provide a high head of water.
    i. Name the relevant turbine that is to be used to generate power.
    ii. Sketch the turbine you suggest.

iii. Explain the mechanism to stop the turbine that you suggested.

Q.4) Attempt any THREE of the following. 12 Marks

(a) Explain working principle of a centrifugal compressor with sketches.

(b) It was observed that electricity bill due to air compressor is very high. State the remedial action you suggest to reduce the bill.

(c) List four uses of compressed air.

(d) In a diesel engine, heat is supplied at the rate of 19.50 kW. Engine produces power at the rate of 4.2 kW. Estimate brake thermal efficiency.

(e) A turbine is operating on 130 m of water head. The discharge is 3.5 m^3/S. Find the power developed by the turbine neglecting the losses. Take density of water 9.81 KN/m^3.

Q.5) Attempt any TWO of the following. 12 Marks

(a) State the function of components VCC with a sketch of its layout.

(b) Suggest with justification the type of airconditioner in the following situations

i. Computer lab for 60 computers.

ii. A room of 4m x 4 meter.

iii. Multiplex of 500 people capacity

(c) It was observed that when refrigerator is switched on, the compressor does not start. Mention the possible causes with remedies.

Q.6) Attempt any TWO of the following. 12 Marks

(a) Describe the functions performed by the following in a refrigeration system:

i. Starting relay

ii. HP/LP cut outs

iii. Thermostat

(b) Explain the need of boiler mountings and boiler accessories with names of any 3 boiler mountings and three boiler accessories.

(c) Explain constructional features and working of a typical centrifugal pump with a sketch.

Scheme – I

Sample Test Paper - I

Program Name : **Electrical Engineering Program Group**
Program Code : **EE/EP/EU**
Semester : **Second**
Course Title : **Basic Mechanical Engineering**
Marks : **20**

22214

Time: 1 Hour

Instructions:

(1) All questions are compulsory.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data if necessary.
(5) Preferably, write the answers in sequential order.

Q.1) Attempt any FOUR of the following. **08 Marks**

a) Explain the function of a compressor in a gas turbine.
b) Define Degree of super heat and Wet steam
c) Differentiate fire tube and water tube boiler. (Minimum 04 points)
d) Sketch convergent divergent nozzle with labels.
e) State the importance of fusible plug in a boiler.

Q.2) Attempt any THREE of the following. **12 Marks**

a) Explain the function of water level indicator and pressure gauge
b) Explain the factors to be considered to control the pollution due to boilers plants.
c) State the criteria to classify IC engines.
d) Describe any FOUR faults in diesel engines with their remedies.

Scheme – I

Sample Test Paper - II

Program Name : **Electrical Engineering Program Group**

Program Code : **EE/EP/EU**

Semester : **Second**

22214

Course Title : **Basic Mechanical Engineering**

Marks : **20** **Time: 1 Hour**

Instructions:

(1) All questions are compulsory.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data if necessary.
(5) Preferably, write the answers in sequential order.

Q.1) Attempt any FOUR of the following. **08 Marks**

a) Explain multi-staging of compressors

b) State applications of centrifugal compressor.

c) Define the term Ton of refrigeration.

d) State the function of OLP in a refrigeration system.

e) State significance of spiral casing of a centrifugal pump.

Q.2) Attempt any THREE of the following. **12 Marks**

a) State functions of :

i. Defrost system

ii. Thermostat

iii. Starting relay.

b) Explain working of two-stage reciprocating air compressor with sketch.

c) Explain working of Francis turbine with a sketch.

d) List any four faults in domestic refrigerator with it's remedies.