PRESIDENCY UNIVERSITY, BENGALURU
SCHOOL OF ENGINEERING

Weightage: 50 %   Max Marks:100   Max Time: 3 hrs.   17 May 2018, Thursday

ENDTERM MAKE UP EXAMINATION MAY 2018

Even Semester 2017-18 | Course: **MEC 101 ELEMENTS OF MECHANICAL ENGINEERING** | III Sem. Petroleum (2016 Batch)

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Instructions:

(i)   Read the question properly and answer accordingly.
(ii)   Question paper consists of 3 parts.
(iii)   Scientific and Non-programmable calculators are permitted

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PART A

(6 Q x 5 M = 30 Marks)

1. List the following under boiler accessories & boiler mountings & mention their function.

   a) Blow off cock   c) Economizer

   b) Steam stop valve   d) Safety Valve

   e) Feed pump

2. Differentiate between fire tube and water tube boilers with examples.

3. Define Pressure. Discuss different types of pressures through simple line diagram.

4. Explain working of a closed cycle gas turbine with a neat sketch.

5. Mention any five differences between 4 stroke petrol & diesel engines

6. Explain the function of following parts of an IC Engine

   a) Piston rings   b) Connecting Rod c) Crank Case   d) Crank   e) Oil rings

PART B

7. A single cylinder 4-stroke IC engine has a bore of 180mm, stroke of 200mm and a rated speed of 300 rpm. Torque on the brake drum is 200Nm and mean effective pressure is 6 bar. It consumes 4 kg of fuel in one hour. The calorific value of the fuel is 42000 kJ/kg. Determine (i) Brake power (ii) Indicated power (iii) Brake thermal efficiency

   (iv) Mechanical efficiency.

8. Define hydraulic turbine & give the complete classification of hydraulic turbines

9. What is air conditioning? Write down operations involved in cooling comfort. Give two reasons why ventilation is essential.

PART-C

(4 Q x 13 M = 52 Marks)

10. With a neat sketch explain the working of Vapour absorption system. Mention any three applications of refrigeration

11. With a neat sketch explain the working of Babcock & Wilcox Boiler. Mention its advantages & disadvantages.

12. Explain working of 4-stroke diesel engine with a neat sketch and P-v diagram.

13. Explain simple impulse turbine with a neat sketch. Differentiate between impulse & reaction steam turbines

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Weightage: 40%   Max Marks: 80   Max Time: 2 hrs.   09 May Wednesday 2018

ENDTERM FINAL EXAMINATION, MAY 2018

Even Sem 2017-18   Course: **MEC 101   ELEMENTS OF   II Sem. Physics Cycle
                                MECHANICAL ENGINEERING**

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Instructions:
(i)   Read the question properly and answer accordingly.
(ii)   Question paper consists of 3 parts.
_____

Part A

(3 x 5 M = 15 Marks)

1. Differentiate between Open belt and Cross belt drives.

2. Define the following:
      i) Ton of refrigeration   ii) Co-efficient of performance   iii) Relative COP

      iv) Refrigerant   v) Refrigeration Effect

3. Describe the principle of Soldering with the neat sketch.

Part B

(2 x 10 M = 20 Marks)

4. Explain the Thermal, Physical and Chemical properties of good refrigerants.

5. Explain the following milling operations with the neat Sketches.
     i) Slot milling   ii) Slab milling

Part C

6. a) With the help of neat sketches explain the working of Oxy-Acetylene Welding.

    b) Differentiate between Chain and Gear drive.

7. Explain the following Lathe operations with the help of suitable sketches.

     i) Thread cutting   ii) Knurling   iii) Turning

8. a) Describe the working of Vapour Compression refrigeration process with the help of

    neat sketch.

   b) Give any five differences between Welding and Brazing.

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Weightage: 20%   Max Marks: 40   Max Time: 1 hr   26 March Monday 2018

TEST – 2   SET B

Even Semester 2017-18   Course: **MEC 101 Elements of Mechanical Engineering**   II Sem Physics Cycle

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Instruction:
(i)   Read the question properly and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and Non-programmable calculators are permitted

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Part-A

(2 Q x 5 M = 10 Marks)

1. Define the following with formulae & mention its Units

   a) Brake Power

   b) Indicated Power

   c) Mechanical Efficiency

2. Differentiate between 4 stroke Petrol & Diesel Engine

Part-B

(2 Q x 8 M = 16 Marks)

3.
   a) Explain open cycle gas turbine with a neat sketch

   b) Differentiate between Impulse & Reaction Steam Turbine

4. Give the complete Classification of water Turbines.

Part-C

(1 Q x 14 M = 14 Marks)

5. Explain working of 4-stroke CI engine with a neat sketch and P-v diagram

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Weightage: **20%**   Max Marks: **40**   Max Time: **1 hour**   21 Feb, Wednesday 2018

TEST – 1

Even Semester 2017-18   Course: **MEC 101 Elements of Mechanical Engineering**   II Sem. Physics cycle

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Instruction:
   (i)   Read the question properly and answer accordingly.
   (ii) Question paper consists of 3 parts.
   (iii) Scientific and Non-programmable calculators are permitted

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Part-A

(5 Q x 2 M = 10 Marks)

1. Define the following & mention their units

   a) Enthalpy   b) Density

2. Classify the boilers under the following

   a) Based on position of furnace   b) Based on water circulation arrangement

3. Classify engines under following

   a) Based on thermodynamic cycle   b) Based on method of ignition

4. Define dryness fraction & mention its value for dry steam & wet steam?

5. Fill in the blank

   a) 1 Pascal =_____bar   c) 273.15 Kelvin =_____Fahrenheit

   b) 1bar   =_____N/m^2 d) 100^0 Celsius   =_____Kelvin

Part-B

(4 Q x 4 M = 16 Marks)

6. Differentiate between renewable and non-renewable sources of energy with examples.

7. List the following under boiler accessories & boiler mountings & mention their function.

   a) Blow off cock   c) Economizer

   b) Steam stop valve   d) Safety Valve

8. Differentiate between fire tube and water tube boilers with examples.

9. Define Pressure. Discuss different types of pressures through simple line diagram.

Part-C

10. With respect to steam formation at constant Pressure, define the following with the help of a neat sketch of complete Temperature-Enthalpy plot.
    a) Sensible heat   b) Latent heat   c) Saturation Temperature d) Amount of Superheat

11. Draw a neat sketch of Babcock & Wilcox Boiler. Mention its advantages & disadvantages.