

1E2407

Roll No.

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B. Tech. II - Sem. (Main) Exam., May - 2019

ESC

2FY3 - 07 Basic Mechanical Engineering

Time: 2 Hours

Maximum Marks: 80

Instructions to Candidates:

Attempt all five questions from Part A, four questions out of six questions from Part B and two 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. NIL2. NIL**PART - A****(Answer should be given up to 25 words only)****[5×2=10]****All questions are compulsory**

- Q.1 Explain the isolated system. [2]
- Q.2 What is IP & BP in the Internal Combustion Engine? [2]
- Q.3 Define the coefficient of performance of Refrigerator. [2]
- Q.4 What is pattern in casting process? [2]
- Q.5 What is computer aided manufacturing? [2]

PART - B

(Analytical/Problem solving questions)

[4×10=40]

Attempt any four questions

- Q.1 Explain the velocity triangle for single stage impulse turbine. [10]
- Q.2 Describe the four stroke Spark – Ignition engine with suitable diagram. [10]
- Q.3 Define construction & working of vapour compression refrigeration system with diagrams. [10]
- Q.4 A belt is running over a pulley of diameter 100 cm at 300 rpm. The angle of contact is 150° and coefficient of friction between the belt and pulley is 0.3. If the maximum tension in the belt is 3000N, find the power transmitted by the belt. [10]
- Q.5 Explain the various operations of drilling machine with diagrams. [10]
- Q.6 Explain the various stages of Heat treatment process. [10]

PART - C

(Descriptive/Analytical/Problem Solving/Design Questions)

[2×15=30]

Attempt any two questions

- Q.1 What is Diesel power plant? Explain Operation, Layout, Requirement and advantage and disadvantage of Diesel power plant. [15]

Q.2 3 kW of power is transmitted by an open belt drive. The linear velocity of the belt is 3 m/s. The angle of lap on the smaller pulley is 150° . The coefficient of friction is 0.3.

Determine the effect on power transmission in the following cases – [15]

- (a) Initial tension in the belt is increased by 10%.
- (b) Initial tension in the belt is decreased by 10%.
- (c) Angle of lap is increased by 10% by the use of an idler pulley, for the same speed and the tension on the tight side.
- (d) Coefficient of friction is increased by 10% by suitable dressing to the friction surface of the belt.

Q.3 Why testing of an internal combustion engine is required? Explain the various testing parameters briefly. [15]