R16

Max. Marks: 70

Note: 1. Question Paper consists of two parts (Part-A and Part-B)
2. Answering the question in Part-A is Compulsory
3. Answer any FOUR Questions from Part-B

PART -A

1.	a)	Write any four advantages of high pressure boilers.	(2M)
	b)	Write the applications of casting.	(2M)
	c)	Write the uses of compressed air.	(2M)
	d)	Write any four differences of CI and SI engines.	(2M)
	e)	Where do we prefer rope drives?	(2M)
	f)	Define Pitch circle diameter and module of a gear.	(2M)
	g)	Why intercooler is used in a multi cylinder compressor.	(2M)

PART -B

2.	a)	Differentiate between fire tube boilers and water tube boilers	(7M)
	b)	What is the primary function of an economizer in a steam boiler? With a neat sketch explain the working of an economizer.	(7M)
3.	a)	Explain in detail the steps involved in making a casting.	(7M)
	b)	With a neat circuit diagram explain the working of resistance welding.	(7M)
4.	a)	With a neat sketch explain the working of root blower.	(7M)
	b)	Differentiate between vapour compression refrigeration system and vapour absorption refrigeration system.	(7M)
5.	a)	Explain the working of a four stroke CI engine with the help of a neat sketch.	(9M)
	b)	Find the brake thermal efficiency of an engine which consumes 7 kg of fuel in 20 min and develops a brake power of 65 kW. The fuel has a heating value of 42000kJ/kg.	(5M)

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SET - 1

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- 6. a) Derive the expression to find the length of the belt in a cross belt drive. (7M)
 b) A flat belt is required to transmit 35 kW from a pulley of 1.5 m effective diameter running at 300 r.p.m. The angle of contact is spread over 11/24 of the circumference and the coefficient of friction between belt and pulley surface is 0.3. Determine, taking centrifugal tension into account, width of the belt required. It is given that the belt thickness is 9.5 mm, density of its material is 1.1 Mg/m³ and the related permissible working stress is 2.5 MPa.
- 7. a) State and prove the law of gearing. Show that involute profile satisfies the (7M) conditions for correct gearing.
 - b) The speed ratio of the reverted gear train, as shown in figure, is to be 12. The (7M) module pitch of gears A and B is 3.125 mm and of gears C and D is 2.5 mm. Calculate the suitable numbers of teeth for the gears. No gear is to have less than 24 teeth.



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